M.R.O. 14—10,000—21-4-23

MADRAS RECORD OFFICE.

Government of Madras.

Revenue DEPARTMENT.

G.O. No. 1421 Press ~~Mis.~~

132—135

Dated 20 —10— 1859.

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Read again Extract from the Proceedings of the Board of Revenue, dated 10th December 1858, and recorded in Consultation 18th January 1859, No. 51.

Read also the following Papers.

No. 132. Extract from the Proceedings of the Board of Revenue, dated 3rd May 1859, No. 1554.

Read letter, dated the 5th November 1858, from Mr. Dykes submitting the results obtained by the measurement of four Villages in the Kistna Delta, irrigated from the new Annicut. (In Con. 26th February 1859, No. 459.)

1. The foregoing Report, though dated the 5th November 1858, appears to have been partly written subsequently to that date, and was despatched on the 31st January 1859, and received in the Board's Office on the 4th of the succeeding month. It should not have received a date prior to that of its completion.

2. The measurements reported were made under the orders of Government of the 12th March 1858, which directed scrutiny of villages irrigated by the Godavery as well as the Kistna. Mr. Dykes' report on the former was laid before Government with the Board's Proceedings of the 10th December last.

In Con. 15th March 1858, No. 1141.

3. Mr. Dykes describes the Annicut over the Kistna, and its head sluices, as complete, but the Canals of Irrigation, and Navigation and the drainage works as imperfect to a degree which materially affects the present value of the improvements. Much arable land appears to be flooded; and of the two branches from the main Canal, one running northward to form the high level Canal to Ellore, and the other occupying the course of the Polairoo, an old irrigation channel in the direction of the town of Masulipatam, the former is only completed to the extent of six miles. The latter has 31 miles complete out of 48.

Para. 116.

118 and 119. 152.

4. Mr. Dykes dilates on the great benefits which will be derived from this latter Canal, and the Board quite concur in his appreciation of them; but they do not deem it necessary to repeat what is stated in his report.

121.

5. The villages measured were Cowtarum and Doggypurroo in the Goodewadah Talooks. Cunkipad in the Bezwarah Talook and Cuppalaiswarum in the Nozeed Zemindary—Cowtarum and Cunkipad were selected by the Collector, and Doggypurroo and Cuppalaiswarum by the District Engineer. All four villages are irrigated from the Polairoo channel, and were measured by Officers of the Engineer Department.

6. The circumstances under which the examination was made are stated below in Mr. Dykes' own words, and were so disadvantageous that the results obtained can only be considered an approximation to the truth. Mr. Dykes however states his belief that the villagers have not wilfully concealed the extent of irrigation.

Para. 126.

7. "When I reached Bezwarah on the 16th September, not only was it difficult from the "general state of the country to ascertain, with any exactness, the precise limits of cultivation, but the greater portion of the first crop of "rice in 1858-59 had then been planted; and it was consequently impossible to ascertain with "any accuracy, the extent to which this land had been similarly cultivated in 1857-58 with a view "to comparing it, as had been done in the Godavery Delta, with the returns sent in by the Tahsil"dars for that season—whilst it was equally impossible to compare the area now under irriga"tion with the Revenue returns of the current year, because those returns had not yet been "drawn up. Under these circumstances in order to carry out the orders of Government, "it became necessary to compare the extent of the irrigated area for the crop now on "the land with the Irrigation returns for the similar crop in the past year, and "to endeavour to correct the results as far as possible by local enquiries, as to what "changes had been made in the current year; which was the course finally ordered by "Government to be pursued, on my applying to Government for further instructions with "reference to certain objections made by the District Engineer on this subject. The Government observed that such "a comparison would indicate to a certain extent the accuracy "of the Revenue returns for the past year; whilst the information afforded by the survey as to the present state of things, would give some idea of

Para. 125.

Ex. Mins. Cons. 17th Sep. 1858, R. D., No. 1274.

"the benefits derivable by the Annicut, as well as be serviceable to the Collector in the ensuing "settlement."

8. The mode in which Mr. Dykes estimated the extent of cultivation in 1857-58 was, by deducting from the measured area of cultivation in 1858-59, any lands asserted to have been fallow in the preceding year, and adding any extent admitted to have been then cultivated, though waste in the present year. The measurements, it appears, were made in the gross, without distinguishing between Government land and Inám; so that it formed an imperfect test of the loss sustained by Government, and of the average assessment borne by the Government lands. The Board do not gather from the report why the Inám land was not measured separately.

Para. 129.

9. The following Statement, extracted from para. 138 of the Report, shews the proportion of the cultivation of 1857-58, which Mr. Dykes estimates to have been omitted from the accounts. The average of the whole is only 11 per cent. and in one only, Cunkipad, is the extent such as to lead to a suspicion of wilful concealment. As pointed out by Mr. Dykes, it is not usual to take notice of any variations under 10 per cent. as such may occur unintentionally from a difference in the mode of measurement.

Names of Villages.	Area irrigated according to Tahsildars Returns.	Probable area irrigated according to the Survey.	Proportion of extent of concealed irrigation to area actually irrigated.	Total assessment on irrigated area according to the Revenue authorities.			Average assessment per acre according to the Survey.		
1	2	3	4	5			6		
	Acres.	Acres.	Acres.	Rs.	A.	P.	Rs.	A.	P.
Koutaram	1,125	1,269·4	11 per cent.	3,057	2	...	2	6	6
Doggiparru	911	1,004	9 „ „	2,730	11	10	2	11	6
Kunkipád	469	614	23 „ „	1,282	5	10	2	1	4
Cuppaléiswarum	1,447	1,570	5 „ „	...	...	...	...	...	...
Total...	3,932	4,457·4	11 per cent.	7,070	1	8	1	10	4

Para. 132.

10. The local position of Cunkipad, Mr. Dykes thinks, will go far towards explaining the much larger extent of land not carried to account in comparison with the other three villages.—"The irrigation is new, and the Ryots have the advantage of cultivating on comparatively high ground," the village being situated on the ridge of the Polairoo, and being thus saved from the floods, which he deems a probable cause why the extent of cultivation has been so accurately obtained by the Revenue Authorities of the other three villages. The Board are not sure that they quite understand this reason, unless it is nearly identical with another which is advanced, viz. that, the other villages, have come frequently under the examination of the Government Officers in consequence of their irrigation having been of long standing and the extent of its irrigation consequently well known while the lands of Cunkipad have been newly converted to wet.

11. The extent of Inám land included in the areas shewn above in each of the four villages according to the Tahsildars' returns, is as follows:—

Vide Statements in paras. 128 and 133.

	Acres.	Average Cess to Govt. for water. Rs.	A.	P.
Cowtarum	435	0	6	4
Doggypurroo	365	0	6	4
Cunkipad	59	1	10	6
Cuppalaiswarum	0	0	0	0

12. Why the Inám land in Cunkipad is so much more highly taxed for water than the Cowtarum and Doggypurroo is not stated by Mr. Dykes. The Board therefore resolve to call upon the Collector for an explanation on this point. Cuppalaiswarum has already been stated to be situated in the Nezeed Zemindary, from which no Water Cess has been yet levied.

13. The average assessment exhibited in the statement given in para. 9, is much lowered by the Inám land in the several villages being included in the account. The following table is therefore added to shew the average assessment on the Joint rent lands, separately, according to the Tahsildar's accounts;—

Vide Statements in paras. 128 and 133.

	Acres.	Assessment. Rs.	A.	P.	Average per acre. Rs.	A.	P.
Cowtarum	690	2,882	11	9	4	2	10
Doggypurroo	550	2,584	11	1	4	11	2
Cunkipad	409	1,184	6	0	2	14	4
Cuppalaiswaram	0	0	0	0	0	0	0

14. Cuppalaiswarum, it will be remembered, is in a Zemindary, and Mr. Dykes had therefore no object in obtaining the accounts of the Tahsildar in regard to it.

15. The average assessment per acre must be considered as regards Cowtarum and Doggypurroo very moderate, and that of Cunkipad very low.

16. An important result of Mr. Dykes' examination of the eight Villages irrigated by the Godavery, was the ascertainment that the small amount of the collections of "Water Cess" was in some degree compensated by a continued rise in the "Joint Rents." It is stated by Mr. Dykes, that as regards Cowtarum and Doggypurroo the gross collections (Joint Rent and Water Cess combined) over and above what was realized in 1850-51, was only Rupees 900, which is less than 11¼ per cent. He has therefore not thought it worth while to give the details. In Cuppalaiswarum, being a Zemindary village, there could not of course be any compensation from Joint Rent, and it has been already stated that the levy of Water Cess had not commenced. In Cunkipad, on the other hand, though the rise in the Joint-rent is but small, the collection of Water Cess in 1858-59 is so considerable as to cause a very large increase in the revenue of the village in that year above the revenue realized before the Annicut was constructed as will be seen from the subjoined statement;—

Para. 136.

1	2						3						4			5
Year.	Joint Rent Lands.						Inam Lands.						Total demand against the Village.			Outstanding Balances.
	Joint Rent.			Irrigation Assessment.			Consolidated Assessment.			Quit Rent.			Irrigation Assessment.			Consolidated Assessment.						
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
1850-51	2,230	5	6	..	..	..	2,230	5	6	335	4	9	..	..	..	335	4	9	2,565	10	5	
1851-52	2,309	13	..	..	..	..	2,309	13	..	295	3	..	..	..	..	295	3	..	2,605	..	..	
1852-53	2,348	13	..	..	..	..	2,348	13	..	295	3	..	..	..	..	295	3	..	2,644	..	..	
1853-54	2,458	13	..	..	..	..	2,458	13	..	295	3	..	..	..	..	295	3	..	2,754	..	..	
1854-55	2,621	..	..	..	..	..	2,621	..	..	295	3	..	...	..	..	295	3	..	2,916	13	..	
1855-56	2,621	..	..	..	..	..	2,621	..	..	295	3	..	..	..	..	295	3	..	2,916	13	..	
1856-57	2,586	14	2	135	6	..	2,722	4	2	295	3	..	1	13	11	297	..	11	3,019	5	1	
1857-58	2,680	14	11	539	4	6	3,140	3	5	295	3	..	64	14	10	360	1	10	3,500	5	3	
1858-59	2,601	..	..	2,328	12	6	4,929	12	6	295	3	5	472	5	10	767	8	10	5,697	5	4	

No outstanding Balances.

Para. 137.

17. This statement, Mr. Dykes remarks, "speaks for itself. The total against Cunkipad "on account of Government was Rupees 2,565-10-5 in 1850-51, and it was "Rupees 2,916-3-0 in 1854-55. There was no Annicut, and in five years the "total demand had risen some Rupees 350 or 10 per cent. By that time, however, the Annicut "had been finished at Bezwarah, and the total demand in the last four years has risen 2,781-2-4 "or 95 per cent; whilst the assessment on the Joint-rent land, last year, was only Rupees 2-14-4 "per acre, according to the Tahsildar's own measurements."

18. The Board do not dissent from the opinion, that the Annicut is shewn to have vastly improved the revenue of the Cunkipad village; but they must observe, that the result in Cunkipad cannot be accepted as *full* proof that the expenditure on the Annicut will be profitable. It has never

been doubted, that land under irrigation can afford to pay double the tax on dry land; but the question remains, whether the increase of revenue will be *sufficient* to compensate for the *expense*. The Board are fully satisfied, on a view of *all* the evidence before them from this and other reports, that it will be very amply sufficient; but having quoted Mr. Dykes' comment on the results in Cunkipad, they deem it necessary to show that they do not over-estimate the importance of the outturn of a single village. The yconsider it satisfactory, particularly as it is evident, that a higher revenue can be derived from even the same extent of land without at all distressing the occupant.

19. The Board have noticed above, all the information afforded by Mr. Dykes, relative to the extent of irrigation, the revenue obtained, and weight of assessment in the four villages examined by him. It only remains, on this head, to direct attention to para. 145, of his letter, in which he mentions that the pooty of land measurement in Masulipatam is larger than in Rajahmundry, but that the circumstance was of no consequence as he had received from the Collector an account of the irrigated area in acres, the different standards of measurement being, in Masulipatam, maintained in the different villages. The Board's remarks on Mr. Dykes' reasoning relative to the pooty of Rajahmundry, have already been submitted to Government in their Proceedings of the 29th March last.

20. Mr. Dykes' further instructions as they stood originally were, in concert with the District Engineer, to "cause to be reaped and measured a small portion of the crop in each village, and to calculate from the current prices the value of the whole crop on one acre, including the straw, and to prepare a statement to shew the net profit to the ryot after meeting the expenses of cultivation, and paying the Government demand."

Extract Minutes Consultation 12th March 1858 No. 329, R. D., para. 32 in Con. 15th March 1858.

Para. 142.

21. In regard to the four villages in the Masulipatam District now reported on, he does not appear to have fully carried out these directions. He measured some crops sown broadcast in three of them, and gives the results. He has also, with the permission of Government, (granted on the date noted in the margin,) examined the first crop of transplanted rice for the current season in as *many* villages as the time would permit, but the results he keeps back for the Appendix to the General Report on the Godavery, which the Government on the date, noted marginally above, have permitted him to prepare. The table shewing the result of the measurement of broadcast paddy, gives 654 lbs. as the average weight of the crop per acre, and Rs. 3-6-11 as the average net profit per acre to the Ryot; but Mr. Dykes mentions that the soil of the villages is unfavorable, and states that elsewhere fields sown broadcast have yielded 1,108 lbs. of black rice, and 1,716 lbs. of white rice per acre.

Extract Minutes Consultation 11th December 1858, R. D., No. 1653, in Con. 24th December 1858.

Para. 147.

Para. 148.

Para. 144.

22. Before passing on to various subjects treated on by Mr. Dykes, the Board will first advert to the fact stated by him that the Nozeed and Zemindaries generally pay no additional assessment for benefit of irrigation from the Annicut. The case of the Nozeed Zemindar will be found stated in para. 16 of the Board's Proceedings of the 30th July 1858. He had possessed irrigation before the Annicut was built, by means of a channel dug at his own expense, and was consequently entitled to a supply of water, without extra charge for all land formerly irrigated, but the Board instructed the Collector to charge him for dry land newly brought under wet cultivation. If the instructions in the Nozeed case were not sufficient for the Collector's guidance in regard to other estates, he was directed to lay their several circumstances before the Board. The Government approved of these instructions and the Board resolve to call upon Mr. Knox to report, on an early date, what he has done in pursuance of them.

Paras. 135, 138.

Para. 23.

Extract Minutes Consultation, 22nd Sept. 1858, R. D., No. 1299, in Con. 15th Dec. 1858.

23. The Board proceed now to notice the other subjects alluded to in the preceding para.

24. In this para. Mr. Dykes brings to notice that the Tahsildar of Ralinghy who collects nearly 1,50,000 Rupees receives a salary of only 55 Rupees a month. This remuneration is certainly too small; but as the revision of salaries generally is under

Para. 133.

the consideration of the Board, under instructions from Government, it is inexpedient to take this individual's case up separately.

25. Mr. Dykes here asserts that the Joint Rents, by enabling the richer Ryots to prevent any village laborer from obtaining land in his own name, has reduced this class to a condition of serfdom, to escape from which they enlist in the Army, or emigrate across the sea, while their labor is much wanted at home. This effect of the Joint Rent system is new to the Board; but they have long felt its existence to be, on other accounts, a great impediment to improvement, and when the Survey in progress is completed, there can be no longer any reason to maintain it.

Para. 139.

26. Paras. 149 to 156 inclusive, are devoted to an Engineering subject, viz. the present very imperfect state of internal communication, and the ease with which efficient Canals could be performed. It seems that Mr. Dykes and the District Engineer are not agreed on the point. The matter not lying within the immediate province of the Board, they content themselves with drawing attention to Mr. Dykes' remarks and recommending that they be referred for the consideration of the Department of Public Works.

27. Mr. Dykes next discusses the important subject of the best method of levying an irrigation assessment. The principles he recommends are,

Para. 158.

First. That in all cases an irrigation assessment should be fixed on the land for the first or more valuable crop; and a precise period of time determined within which every crop irrigated should involve an assessment according to the standard value of transplanted rice grown in that season, on similar land, and under similar circumstances.

Para. 173.

Secondly. That where irrigation is on a large scale, and the irrigation establishment is sufficient for the purpose, the irrigation assessment should be fixed on the *water* if available, for the second or less valuable crop of rice.

Thirdly. That the Sub-division of the total supply for each village should be carried out on the horary system, which is now in force and well understood.

28. In support of his first proposition, Mr. Dykes maintains that "the irrigability of land is as much a part of the State assets, as the fertility of the soil; and in fixing the assessment on the land, it is the bounden duty of a settlement Officer to take this most important feature into full consideration. It is further necessary as a matter of Police, for stealing water is considerably easier than stealing land; and it is only by measuring the land that the interests of the State can be effectually guarded. In fact the general interests of Government demand that an irrigation assessment should be fixed invariably on the land, wherever it is available for (capable of) irrigation; and the commutation of this assessment to the more easy system of measuring the water is only justifiable, where land is held on a large scale under the Zemindary tenure" and then as an easy mode of adjusting the claim of Government on the Zemindar, and not to be applied to the Demand of the Zemindar on the ryots.

Para. 160.

29. Mr. Dykes would pursue a different plan in regard to a second crop and levy a water rate "wherever irrigation is carried out on a large scale, and there is an Establishment equal to the duties entailed" by measuring the water, because at the season of the 2nd crop, which he would define to be between the 15th January and the 1st July "water is comparatively scarce" and an assessment at that time in reference to the extent of land leads to a lavish expenditure. He would therefore "encourage, to the utmost, economy of water "and the cultivation of those vegetables and condiments, that form so large a portion of the daily food of the Natives, and can be grown in most places with a tenth part of the water required for rice.

Para. 161.

Para. 164.

Para. 162.

30. In carrying out of the horary measurement of water, Mr. Dykes intends that the total supply for each village should be measured by the foot, and the horary measurement, which is common at present, applied to the distribution to the fields of the Ryots. He adds, that to afford the village supply, he would not propose *the erection now of any expensive works*; and he gives, with reference to the village of Gundraidoo, an example of a rough measurement which he seems to think would answer the purpose. The Board must confess some difficulty in understanding the example, but they will not dwell on the point, as they would propose that the suggestion should be referred for the consideration and report of the Department Public Works.

Para. 166.

Para. 168.

31. In illustrating his argument by means of the village of Gundraidoo, he also explains, as regards his first proposition, that "where land in occupation becomes irrigable by an outlay of the public money, he would not counsel that its irrigation should be made compulsory, that the holder of the land should be compelled to undertake the additional expense of wet cultivation, and the additional liabilities of an irrigation assessment whether he wished it or not. Such a course would, he considers, be an infringe-

Para. 167.

"ment of the rights of private property. But he maintains that the Government can fairly and "justly demand in such cases, in defence of the public revenues, that water once taken "should be taken always, and irrigable and once irrigated should be forthwith included in the "irrigated area and so long as occupied paid for accordingly." In regard to unoccupied waste he would prescribe that when "made irrigable by an outlay of the public capital, it should "only be handed over for occupation, at an irrigation assessment; and so far as the first or more "valuable crop is concerned, all lands, whether irrigated by former works or only by aid of "recent improvements, should be brought within the scope of these rules, which, he states, are "in strict accordance with the existing practice in the south."

32. In the views expressed by Mr. Dykes regarding the taxation of the first crop, the Board fully concur, and when objecting, in their Proceedings of the 19th May 1857, relative to the Godavery Annicut, "to a water rate calculated to give a suitable return for the works with a profit," they used arguments very similar to those now employed by Mr. Dykes. In regard to the second crop if it is found that means exists for measuring out water in the mode Mr. Dykes here recommends, without undue expense or trouble being entailed on Government, the Board would approve a trial being given to the experiment. New ways of employing the water would perhaps then occur more forcibly to the people, and they would be able to try new descriptions of cultivation with less risk and cost than at present. But Mr. Dykes' reasoning is not altogether conclusive, and there is a fallacy in his argument in para. 159 that the present mode of charging for the water supplied for a second or hot-weather crop is "an anomaly in the laws of trade." Water is scantiest undoubtedly in the hot weather, but it does not become thereby more *valuable*, as is the case with articles of trade, whose value is affected by the relation between supply and demand. As far as agriculturists are concerned the value of water depends entirely on the value of the produce which it will raise. A rice crop raised in hot weather has no more value in the market than a crop raised in the old season, and its yield is understood to be less; hence the present system of taxing a second crop more lightly than a first. It is also to be supposed that rice is a more remunerating crop than vegetables, chillies, &c., or the ryots would cultivate the latter in preference even now. If however water was charged for on Mr. Dykes' principle, the ryots would, as already observed, be better able to experimentalize in growing new products, and could give their lands occasional rest by choosing a less exhausting crop than rice for their second cultivation. The Board are therefore willing that his suggestion should be tried, if this can be done without expense and inconvenience.

Para. 29 *and infra.*

33. The Board observe that Mr. Dykes proposes to sell the Ryots the quantity of water taken for the second crop in the current year, at the same price for the next three or five years. The Board are not quite sure that they understand his meaning. The arrangement would not apparently render measurement unnecessary, and with a Survey and Assessment in progress it would seem objectionable to fix a rate for a term of years.

34. The next subject discussed by Mr. Dykes is one already touched upon in para. 22 of these Proceedings the demand to be made on Zemindaries on account of the improvement of irrigation. He contends that not only is a Zemindar liable to pay an extra Cess for "such lands as are irrigated from the Annicut, and were not capable of irrigation when the Zemindar's Peshcush was fixed," but also for any additional advantage supplied to old wet land. In support of the latter principle he defines the right of an ancient Zemindar to be "an hereditary right to be the medium of communication between Government and the Ryots," but the Board must demur to this assertion. The Sunnud Milkut Istimrar made a Zemindar much more than this. It fixed his Peshcush *in perpetuity* and constituted him the absolute proprietor of all the legal collections of the Ryots over and above this. The exaction of an additional sum, without previous compact, in consideration of improved irrigation becomes therefore a delicate matter. There can be no doubt of the equity of the demand, and in respect to land brought under irrigation, which could not be irrigated before, the Collector will not, the Board trust, find any difficulty in securing to Government a fair share of the profit, and it will perhaps be practicable to withhold the water to enforce the demand; but it will be far less easy to appreciate the value of an excess above a former supply.

Para. 178.

Para. 179. It will be received, Mr. Dykes states, two months earlier, but he admits at the same time "that there is a doubt at present how far the Ryots can fully avail themselves of this great difference." The Board however are desirous that this subject, which is of great importance, should be further discussed, and would propose that the paras. of the Report in which it is handled may be referred to the Collector and the Department Public Works for report.

Para. 180. 35. As regards the mode in which an irrigation Cess should be raised from Zemindars, Mr. Dykes strongly advocates measurement of the quantity supplied, which

Para. 181. in respect to the Masulipatam Estates he think will not be difficult, owing to the manner in which they are traversed by the Polairoo Canal. The Board refrain from detailing the means which he proposes, as they cannot, situated as they are, form a

competent opinion as to their adequacy. On this point it is desirable that the Department Public Works should be called upon for an opinion.

36. Any arrangement made should, Mr. Dykes' thinks, be for a term of years, as otherwise the Zemindars would be unable to hold out to the Ryots sufficient inducement to al-

Para. 185. ter the mode of cultivation of their lands. The Board are disposed to concur in this opinion, but they would suggest that it may be referred also for the consideration of the Director of Revenue Settlement.

37. In this para. Mr. Dykes begs to notice that the safety of the banks of the

Para. 186. Canals is endangered by the Ryots being allowed to make rough openings to draw off water, and enlarges on the great necessity of attending to their preservation. It is a rule in most well-regulated Districts, that no water shall be drawn off from the main Channels, except through regular sluices, and the Board deem it necessary that the attention of the Department Public Works should be drawn to the practice animadverted on by Mr. Dykes.

Para. 190. 38. Mr. Dykes, finally, argues, at some length, on the advisability of not levying

Para. 193. the full assessment on account of improved irrigation at once, but gradually. "Register, he says, the value, if the General Survey and assessment is made, and fix the rates of assessment for the present (five years is proposed subsequently) so much below it as to leave a wide margin." The old land would be highly favored, he admits, but not to the prejudice of Government, as the savings of the ryots would be laid out in extended cultivation. The Board are not convinced of the soundness of this argument. If one district alone were to be considered, it would have considerable force; but the partial application of the principal might, they think, operate prejudicially to other districts. Before however, the question is decided, it is desirable that the Collector of Masulipatam should state, whether the ryots of his District are in such a depressed condition, as to need such a concession to enable them to take advantage of the improved irrigation.

39. The Board would here observe, that while they agree with Mr. Dykes in the advisability of a light Assessment, they must point out an error in the argument on which he advocates it in paras. 192 and 193, viz. that Government should follow the trade principle of low profits and quick returns. Now the cases are by no means analogous. A merchant is content with a low profit, on the condition that his capital returns to him quickly, because then it can be re-employed in a new venture. But it is not so with the land revenue of Government, even if each crop was taxed separately, and very lightly, it is impossible to multiply their number beyond a very limited extent. Government cannot therefore, like the merchant, look to *frequent* returns as a compensation for small profits or receipts. The idea that a low Assessment would lead to the quicker occupancy of land *in the first instance* has evidently led Mr. Dykes into this error—an error which, if acted upon, would entail on Government a heavy and permanent loss in exchange for a trivial gain in the commencement. There is no occasion to entice capital to the land on the trade principle adverted to by Mr. Dykes. Give fixity of tenure and such a moderate Assessment as leaves a sure profit to the Ryot, and the available capital of the country will flow to the land without any undue delay. The advantage of a moderate Assessment to the State is that it *attaches* capital permanently to the land and thus ensures a steady revenue. It would not be good policy to bribe the people, at an eventual and permanent sacrifice of revenue, to occupy land more rapidly than their capital and means would otherwise suggest.

40. In concluding this review, the Board desire to express their appreciation of the zeal and intelligence with which Mr. Dykes has executed the task committed to him by the Government. They consider that the effects of the new works are well demonstrated; and that in addition to this, the Report contains much valuable and suggestive matter; but it could have been wished that it were more condensed and better arranged.

(A true Extract.)

(Signed) J. D. SIM, *Secretary.*

No. 133. **Proceedings of the Board of Revenue, dated 17th August 1851, No. 3222.**

Read letter from Mr. Dykes, dated 10th June 1859, reporting the results of experiments made to ascertain the value of rice cultivation to the ryots in the delta of the Kistnah, with remarks in connection with the proceedings of the Board under date 3rd May 1859, on Mr. Dykes' second report.

(In Con. 20th June 1859, No. 2871.)

1. The foregoing is the third report made by Mr. Dykes on the subject of his mission to ascertain the effects of the Godavery and Kistnah annicuts in their bearing on the revenue, present and prospective. Mr. Dykes' first report was intended to shew the actual area irrigated under the Godavery

Dated 11th September, in Con. 8th December 1858, *No.* 4185.

annicut in four villages selected for examination. His second report furnished similar information for the Kistnah delta, also in four villages chosen for the purpose, as well as the results of enquiries made respecting the actual outturn and value of paddy cultivation in the Godavery delta. The letter, the third of the series, which comes now under consideration, shews the further experiments made by Mr. Dykes for the purpose of ascertaining the net value of this description of cultivation in the Kistnah delta.

Dated 5th November in Con. 26th February 1859, No. 459.

Note.—It appears from Mr. Dykes' second report that examinations of transplanted paddy were also made, but that the results were reserved for the General Report, which Government had permitted him to prepare.

2. In his examination of the produce in the Godavery delta, Mr. Dykes confined himself to crops sown broadcast. On the present occasion the calculations have reference to first-crop transplanted paddy, but, as before, the experiments, whatever their intrinsic interest, are on too limited a scale to lead to practical conclusions of general application.

3. The Kistnah villages selected for examination are situated in the Goodiwadah and Bezwarrah talooks and in the Noozeed and Sullapillay Zemindaries, all in the district of Masulipatam. The crops of twenty-six fields or portions of fields in those localities were examined. The selections were made, some by Mr. Dykes, some by the Department Public Works. The villagers also were permitted to choose what crops they thought should be submitted to experiment, but where the produce in such cases was deficient, it was generally excluded in the calculations. In the Bezwarrah talook Mr. Dykes had to select the crops himself, apparently from want of sufficient co-operation on the part of the Revenue officials.

Para. 10. *Enc. No.* 1.

4. Mr. Knox, Collector of Masulipatam, furnished to Mr. Dykes the results of some examinations made by himself in the village of Tamersa in the Goodiwadah talook. The number of experiments made in this village were four. In two instances the crops were apparently selected by Mr. Knox, and the outturn in those cases are considered by him to exhibit "fair average specimens of the yield at Tamersa." In the other two experiments the crops were chosen by the villagers, but "as they were to show the worst crops they have been omitted."

5. It does not appear that descriptions of soils were taken in the village of Tamersa, but in the experiments made under Mr. Dykes' immediate superintendence, the soils were pretty uniform in quality.

6. As the general result of the several experiments Mr. Dykes is of opinion that 20 cwt, per acre or 46 bushels may be considered to be "the average yield at present in the Masulipatam portion of the Kistnah delta," and confidence is placed by him in this view as it bears an affinity to the results obtained in the Godavery delta. In one instance in the village of Cowteram, in the talook of Goodiwadah, the average produce per acre, which included a field of comparatively inferior produce selected by the villagers, was as high as 26 cwt., but Mr. Dykes frankly admits that he was himself surprised at the result of the experiment in this village and that he is not prepared to assert that his calculations in this case would "be borne out by experiments on a more extended scale."

Para. 6.

7. In calculating the net profit to the ryots, after deducting expenses of cultivation and the present assessment to Government, Rupees 18 per pooty of 1,533 lbs. is taken as the market value of the grain. Mr. Dykes observes that this is the price obtained by the ryots some time after the harvest, and he would "guard against being considered to assert that it is an average, on which an assessment might be safely fixed for a single year." The assessment, he remarks, "should be fixed with reference, as near as can be ascertained, to what the standard crop would fetch, if sold within a reasonable time after being cut." From facilities of carriage the grain in the Godavery delta, finds a ready market. The same facilities do not exist it is stated in the Kistmah Delta and the ryot, if he can afford it, keeps back his grain till he can obtain a suitable price for it. The commutation rate of Rupees 18 per pooty chosen by Mr. Dykes, appears to represent the price obtained by the ryot on a favorable turn of the market, and viewed in this aspect it cannot be taken as a fair standard of conversion in calculating the assessment to be paid to Government or the average net profits of the ryots.

Para. 5.

8. The soils selected for experiment were pretty uniform as already observed. The outturn in the several cases does not present the same uniformity, owing in part probably to more pains having been taken, in some instances, in the cultivation of the land. Taking the villages of Cowtaram and Dogypurroo, where experiments were first made, the net profit per acre to the ryots is stated to be Rupees 25-9-10 in the former and Rupees 20-0-2 in the latter case. The average outturn of the produce exceeds in both villages the general average of 20 cwt. per acre assumed by Mr. Dykes as the probable district average at present. In Cowtaram the average of the three experiments gave 26 cwt. per acre and in Dogypurroo it was 22 cwt., but

in the latter village the result is the mean of two experiments, the crop selected by the villagers having been rejected, because of inferior outturn.

9. The cost of cultivation was taken at Rupees 5 per acre the same as in the Godavery delta.

10. The foregoing is a general sketch of Mr. Dykes' experiments. Viewed within the narrow limits they take in they afford interesting results which may be usefully considered with the more minute examinations which are going forward under the instructions of Director of Revenue Settlements. Mr. Dykes sees that they are not on a sufficiently extended scale to be of any practical use, and as regards the commutation rate taken in calculating the net profits in Cowtaram and Dogypurroo, "it must be further remembered," he says, "with reference to previous remarks, that the net profits in either case are based on the prices which obtained three months after the harvest; and that no sales were effected when the crops were cut."

11. To the disqualifying circumstances above mentioned, the Board desire to add that the experiments are practically valueless in consequence of the *very best crops* having been selected for the purpose, so far as the information before them leads them to form an opinion. Mr. Dykes is astonished to find the average produce in Cowtaram, viz. 26 cwt., so high, although it embraces a field of inferior outturn selected by the ryots. But it is only necessary to look at the quality of the crops which furnish that average for a solution of the difficulty. The crop selected by the Department Public Works in Cowtaram gives a produce of 33 *cwt.* per acre. That pointed out by the Tahsildar about 29 *cwt.* per acre. The result in each case greatly exceeds what is stated to be a fair average for the district, viz. 20 cwt. It is observed that the Department Public Works throughout selected the richest crops for experiment. Mr. Knox's examination in the village of Tamersa was confined to two experiments only and though the worst crops were rejected his average barely exceeds 18 cwt. per acre.

12. Mr. Dykes is aware of the great difference between a field in its ordinary state of culture and that on which capital has been expended, but due allowance has not been made for this in his calculations. In fact the field of the village Moonsiff, which "had been well cultivated," was specially selected for experiment. The richness of its produce seems to have constituted its fitness for the purpose. Its average was between 25 and 26 cwt. per acre.

Para. 7.

13. It is not likely that Mr. Dykes' revenue experience would permit him to fix an assessment based on the richest crops; at the same time it may not be altogether irrelevant to point out in this place the importance of the rule that the land tax shall have reference to land only in an ordinary state of culture and to the produce of an ordinary season. The produce of the rich man's field, in which capital has been sunk, is no index to the tax that should be imposed on his land still less is it applicable to that of the poor man.

14. Mr. Dykes speaks disparagingly of his selection of crops in the Bezwarrah talook, but they probably furnish better data for purposes of assessment than those chosen for experiment in the other localities. They shew an average, it is seen, of 19 cwt. per acre.

Para. 10.

15. The several experiments made under Mr. Dykes' immediate inspection are brought together in the statement which accompanies his report. Assuming the results as therein given to be correct column 10 shews that the weight of the grain is pretty uniform throughout, and that it does not vary uniformly with the quantity of the produce.

Enc. No. 1.

16. The objections which have been taken above, in regard to the net profit in Government villages, applies equally to the calculations intended to shew the assessment in Zemindary estates.

Para. 8.

17. The concluding paragraphs of the report under consideration, viz. from paragraph 15 to the end of the report, have reference chiefly to the points adverted to in paragraphs 22 and 34 of the Board's proceedings dated 3rd May 1859, No. 1554. The subject noticed is the water cess in Zemindaries. In paragraph 34 of the proceedings just mentioned, the Board proposed that the paragraphs in Mr. Dykes' report, in which the subject was handled, should be referred to the Collector and the Department of Public Works for report. They would suggest that paragraphs 15 to 22 inclusive of the report, which has been reviewed in these proceedings, may be referred in like manner to those authorities.

(A true Extract.)

(Signed) J. D. SIM, *Secretary.*

No. 134. Proceedings of the Board of Revenue, dated 30th August 1859, No. 3397.

Read letter from Mr. Dykes, dated 10th June 1859, reporting further on the effects of the Godavery annicut.

(In Con. 20th June 1859, No. 2872)

1. Mr. Dykes' previous reports were confined to the examination of the area and produce in a few villages only in the Godavery and Kistnah deltas. The present report embraces the entire delta of the Godavery and aims at showing, firstly, what has been the effect of the annicut on the agricultural state of this tract of country and the condition of the people generally, and, secondly, the bearing of this work as regards the State.

Para. 3.

2. Mr. Dykes premises that, so far as actual experiments are concerned, his attention has been almost wholly given to ascertaining what has been the effect of the annicut on the cultivation of *paddy*, and what is the average yield of that product at present with the benefit of annicut irrigation. Other products of greater value are grown, but *paddy*, from the extent of its cultivation, is considered the standard crop of the delta.

Paras. 5-6.

3. The results of Mr. Dykes' experiments are shown in lbs. Avoirdupois. It was convenient to adopt some common standard of comparison in consequence of the varying capacities of the local measures, but the local measure was used in the first instance and its equivalent in lbs. afterwards ascertained. Coontsum is the name of the local measure.

4. The price at which the crops were selling at the time of experiment, was taken as the standard of conversion.

Paras. 7 *at* 29.

5. Attention is first drawn to the actual produce of the land. Fifty-two fields generally about ¼ acre each, were chosen for examination in different parts of the delta, and the results are shown in a convenient form in the table appended to paragraph 14. The averages of each set of experiments are as follow:—

	Eastern delta. lbs.	Centre delta. lbs.	Western delta. lbs.
Average of fields selected by Department Public Works...	2,633	3,077	2,504
Do. do. do. by the Tahsildar...	2,310	3,152	2,224
Do. do. do. by the villagers ...	1,732	1,953	1,270

Para. 15.

6. In four of the fields in the Eastern delta chosen by the Department Public Works, the second crop is also included. Deducting those fields the average is reduced to 2,557 lbs., or about 23 cwt. per acre; but as the soil of those villages is above the average of the Eastern delta generally, Mr. Dykes thinks that the Tahsildar's average, which is about 20 cwt. or one ton per acre, "may be taken with perfect safety as about the average yield of the Eastern delta in ordinary seasons."

Paras. 9 *and* 15.

7. As the duty of realizing the revenue falls on the Revenue officers, Mr. Dykes thinks that there was a tendency in that class to pass over superior crops in the choice of those intended for experiment. From daily intercourse with the ryots and knowledge of their affairs, the Tahsildar would naturally feel a bias in their favor, but looking to the small amount of difference between the Tahsildar's average in the present case, and that of the Department Public Works and to the actual out-turn of some fields of their selection, there is little room, as it appears to the Board, for supposing that the Revenue officers chose other than *good* crops on this occasion. Out of six selections by this class in the Eastern delta two only fall materially below 2,000 lbs., while in one instance the out-turn was as high as 3,704 lbs. or 33 cwt., and in another 2,520 lbs. or 22 cwt. per acre. The propriety of this remark is still more apparent in the selections of the Tahsildar in the Central delta.

8. The averages of the Department Public Works and of the Tahsildar, necessarily differ from each other from the range of experiments having been far more extensive in the former than in the latter case; but looking to the particular crops chosen, the superior quality of the produce appears to have been the chief guide with both parties, though the Department Public Works kept this object more prominently in view.

CENTRAL DELTA.—The Central delta, which takes in the talooks of Amalapoor and Nuggaram, is a peculiarly rich locality. The greater portion of the crops were still standing when the experiments were undertaken in this portion of the delta, and thus a larger field for selection presented itself there than was afforded elsewhere. "The villages themselves were," Mr. Dykes observes, "fine specimens of a fine talook." Cultivation is carried to a high pitch, and Mr. Dykes noticed in a former report that among the ryots was a body of persons, the descendants of emigrants from Tanjore about two centuries ago, who now occupy many villages. The experiments in this delta exhibit very high averages. That of the Department Public Works is 27 cwt. The Tahsildar's average is still higher, 28 cwt. The villagers' selections exhibit a result of 17 cwt., or a pooty and a half, which the Department Public Works consider a fair average for the delta generally. The irrigated crops in the year of experiment are stated to have been particularly good, and allowing for this circumstance and for the villages selected being the best in this part of the district, Mr. Dykes would take 22 cwt. as the average yield of paddy per acre for the first crop in this delta.

From Mr. Dykes, 11th Sep. in Con. 8th Dec. 1858, para. 10.

Para. 16.

9. WESTERN DELTA.—The disadvantages arising from a small field of selection, in consequence of the crops having been cut, were felt in the experiments made in the Western delta. This delta is to be viewed in two portions. The upper portion is poor, with a scanty population, and has not yet recovered, it is stated, from the rack renting of the Zemindars. The lower portion is thickly peopled, and includes the Oondy talook, the rice of which is more abundant per acre, and of better quality than that in any other talook. Mr. Dykes would fix 18 cwt. as the average for the upper, and 22 cwt. as that for the lower portion.

Paras. 18, 19.

10. The average produce per acre which Mr. Dykes would thus fix for each section of the delta is as follows:—

Eastern delta.....	20 cwts.
Central do.	22 ,,
Western do.	
Lower portion	22 ,,
Upper do.	18 ,,

11. In the Central delta the averages of the Department Public Works and the Tahsildar, were very high, but in fixing a mean produce for the whole of that delta, Mr. Dykes was obliged to allow considerable abatement, as those averages represented the productive power of the finest villages only. The abatement was made on general considerations, and not on data of a definite nature, and the averages already obtained, more or less regulated the conclusions at which Mr. Dykes finally arrived. The same remark applies to the results adopted in the Eastern and Western deltas. The Board are, therefore, led to the view that in fixing his final averages of probable produce, Mr. Dykes has allowed himself to be guided by standards, true in themselves, but not suited for fixing the value of the land to Government, or the net profit to the ryot. The experiments embraced a considerable number of villages, and have been carefully conducted, but still too limited for the great objects in view. The averages of fields of ordinary produce, and in an ordinary state of culture, have found no place among Mr. Dykes' experiments.

Pro. dated 3d May 1859, No. 1554.

12. In reviewing Mr. Dykes' report regarding the average produce per acre in lands irrigated under the Kistnah annicut, the Board pointed out the excessive character of the estimates of produce which had been taken for the purpose, particulary by the Department Public Works. In paragraph 9 of his present report, Mr. Dykes offers an opinion very much in unison with that view, and speaks with hesitation as to the real value of his Godavery experiments. "Recalling to my mind," he says, "the crops that I have seen, and the general nature of the selections made, I do not think that I should be justified in submitting any one of these averages as a strictly correct result of the general, but cursory experiments now made. However much inclined to be strictly just in their selections, I think that the officers in the Department Public Works, on the whole, took a somewhat favorable view of the average out-turn." Besides the instances already adduced, in turning to Appendix II. of Mr. Dykes' report, it is seen that the average of three experiments made by the Department Public Works in the village of Dodeeputla in the Western delta is as high as 37½ cwt., arising, as stated in the column of remarks, from "such fine crops" having been taken.

Price of paddy per cwt.

	Rs.	A.	P.
Eastern delta,	1	4	11
Central, ,,	1	2	2
Western, ,,	1	2	0

13. With the averages noticed in the foregoing paragraphs converted into money at the *then* selling prices, which varied in the three portions of the delta, as shown in the margin, the value of the gross produce per acre, which also includes the value of the straw, is as follows:

Para 28.

	Rs.	A.	P.
Eastern delta.....	26	14	4
Central do.	25	13	2
Western do.			
Lower portion.....	26	4	0
Upper do.	20	12	0

14. The inclusion of the straw protanto swells the amount, and takes from the ryot what he has hitherto enjoyed free of tax. The prices of paddy have been carefully observed, but it

is questionable how far the sudden rise of price in the Eastern delta, noticed by Mr.
Para. 24. Dykes, should have been taken as the basis of conversion for that locality. It appears, from what Mr. Dykes says, that Rupees 13 per pooty was the ordinary rate in the Eastern delta, and that so far from prices being lower in the Central delta, they were a shade higher there, being, as the Board understand, Rupees 13-4 per pooty. The rise from Rupees 13 to 15 in the Eastern delta, was sudden and momentary, and viewed in that aspect, does not represent a fair commutation standard. It should be carefully considered whether fluctuations of price of this description should not merge in one general rate which would be fair to all. The minute distinctions in regard to relative distances from a canal mentioned in paragraph 25 will, in some degree, affect the profits of individuals, but are not sufficiently broad in character for regulating the demand of the State.

15. Mr. Dykes' experiments, as reviewed in the foregoing paragraphs, and his remarks generally show the vast benefits conferred *on the ryots* by the annicut, and the figured statement in paragraph 42 further illustrates this part of the subject. It is there shown, following the estimates of produce adopted in the report, that the assessment of Government in the delta of the Godavery in 1857-58, was about 23 per cent. of the gross produce. Whatever allowance it may be proper to make for the excessive character of Mr. Dykes' returns of produce, the
Para. 42. broad fact, that the ryots have greatly augmented means placed at their disposal for meeting the public demands, stands prominently out. This improved position has been secured to them by the certain and timely supply of water, which the annicut affords. It is quite true that, "as regards the material prosperity of the ryots, the annicut has been an unmixed blessing."

16. The present condition of the delta presents a marked contrast to what it was when
Paras. 30 *to* 39. suffering from the effects of Zemindary misrule, and Mr. Dykes is apparently desirous that the evils of that system should not pass away from remembrance. The subject has been repeatedly under the consideration of Government, particularly in its bearing on the condition of Rajahmundry and need not be again discussed. The only point which it is necessary to bear in mind in this place, in connection with the affairs of Rajahmundry, is the dilapidated state into which the works of irrigation had fallen, when the management came into the hands of the officers of Go-
Para. 46. vernment. The Zemindary of Pittapoor is, apparently, an exception to what is said above, but as regards this estate, the Zemindary system may be said to have been in abeyance in consequence of frequent minority, as observed by Mr. Dykes. At the present time it is under the Collector's management from the same cause, and has surplus collections to the amount of Rupees 2,14,608, which has been invested in the public funds.

Paras. 45-47 *at* 70. 17. In the paragraphs noted in the margin, Mr. Dykes takes up the second of the two points which he proposed to illustrate, viz. the
Para. 45. bearing of the annicut on the land tax, and here he proceeds to show, "*as nearly*" as he can, firstly, the area actually irrigated in 1857-58 and the amount that might be fixed as the consolidated assessment on the joint-rent lands; and, secondly, the increase in the assessment actually realized, over and above the land revenue of the delta before the annicut was begun, and the portion of that increase that may be ascribed to that work.

Paras. 47-48. 18. Mr. Dykes' calculations are based on the view that "the recorded area does not shew any thing like the area actually irrigated in 1857-58." In very limited trials, as single villages, the difference beteewen the two areas was found to be 56 per cent. in Rajahmundry and 87 per cent. in Masulipatam. The difference on the whole extent thus submitted to experiment was 68 per cent., as shown in the margin. The gross area in a circuit of 64 villages, surveyed under the orders of the Superintendent of Survey, was 80,491 acres; by the revenue returns, at 8 acres the pootty, it was 57,348 acres or 40 per cent. less. In 21 villages of this circuit the difference was ascertained to be 50 per cent. Mr. Dykes argues that if a difference of 40 and 50 per cent. occurs in the *gross* area, it is not a matter of surprise that the difference should rise to 87 per cent. on the *cultivated* area, as so much is to be gained by successful concealment; but Mr. Dykes altogether passes over the fact that the entries of land in the revenue accounts are in pootties, and that the conversion of the pootty into acres at eight acres per pootty is little better than nominal, as the pootty varies in extent, reaching to 12 acres and upwards. It has been

Recorded area as per Tahsildar's accounts.	*Area as Surveyed.*	*Difference.*
5,407	9,108	3,700
	or 68 *per cent.*	

Note.—In the latter part of his report in treating the Inams, Mr. Dykes admits that eight acres is not a true equivalent. This point was particularly discussed in para. 9 of Board's Proceedings, dated 10th December 1858, No. 4581.

Col. A. Cotton.

supposed that an average of 10 acres, would represent more fairly the equivalent of the pootty, and, if this standard of conversion is adopted, Mr. Dykes' conclusions would be very materially disturbed.

19. As it is, Mr. Dykes takes 68 per cent. as the deficiency in the revenue accounts, which he applies to the whole delta. Acting on this hypothesis, he estimates the value of the first crop in the irrigated joint-rent villages of Rajahmundry in 1857-58 at Rupees 64,94,938, and including Zemindary and other tenures, the value of the first
Para. 48, *Statement appended.* crop amounts to Rupees 97,64,623.

Para. 52. 20. Taking the average price of the last 38 years, which is below the price of 1858-59, but above that of 1857-58, on which the results noticed in the preceding paragraph are founded, the value of the first crop in the joint-rent villages, stands at Rupees 68,19,163. From this amount the sum of Rupees 15,11,830 being deducted on account of charges of cultivation, it is estimated that the ryots have a net sum of Rupees 53,07,333 at their disposal for subsistence and the assessment of Government. But the consolidated joint-rent assessment being only Rupees 7,77,896, the land tax, according to this estimate, is little more than a mere quit-rent.

Note.—The Board have adopted the calculations in para. 52, but referring to the statement appended to para. 48, the area liable to full assessment seems to be incorrectly stated by Mr. Dykes. Column 6 of that statement includes the extent of Inám with the increase of 56 and 87 per cent. In deducting, therefore, the Inám area in para. 52, allowance should have been made for this. If this view is correct, Mr. Dykes' estimate of net available produce will be protanto reduced.

21.* It was shown in paragraph 15 of these Proceedings, that including the finest crops in the standard of comparison, the land tax in the joint-rent villages of Rajahmundry, was about 23 per cent. of the gross produce. The calculations noticed in the preceding paragraph, reduces it to one-seventh or about 14 per cent. of the entire gross produce. One glance at the list of prices, given in the margin of paragraph 50, will show, how erroneous views as to probable capability, have arisen. Mr. Dykes takes 90 Rupees a garce as his commutation rate, but this sum includes the market value of rice in exceptional years when prices were very high, and does not, therefore, furnish a fair standard of comparison on the present occasion. In 24 out of the whole series of 38 years, prices were below the rate assumed by Mr. Dykes; in most years the difference was very considerable. Famine prices and those of exceptional years ought to have been excluded altogether from the computation. Had this been done, Mr. Dykes would have seen more readily that Rupees 90 a garce was obtained only when markets were *very favorable*, and that the price which the ryots *ordinarily* receive for their grain is very much below that rate.

Para. 53. 22. Mr. Dykes' estimates lead him to the conclusion that the present average tax on the irrigated lands of the whole delta, which includes the portion in Masulipatam, is only Rupees 2-9 per acre.

Para. 54. 23. An instance of improved capability to a considerable extent is adduced in the case of the Zemindary village of Buntoomillay, in the Central delta, but the increase is apparently owing to the reclamation of a salt swamp with the waters of the Godavery, though doubtless the wet lands generally of this village yield much better crops now than formerly, when the irrigation was uncertain and irregular. The benefit conferred on this village by the annicut should not, as Mr. Dykes justly observes, be lost to Government. A water cess of Rupees 161 has been imposed, but its collection appears to be in abeyance pending, for some reason not stated, re-measurement of the lands.

Para. 55 *at* *Para.* 57. 24. In estimating the extent and value of the second-crop cultivation, Mr. Dykes assumes that the area, as per revenue accounts, is less by 84 per cent. than the real area. With correction to this extent and at current prices, the probable gross value of the second crop in 1857-58, is stated to be Rupees 4,66,807. This calculation is intended to embrace the entire delta. The portion appertaining to the joint-rent lands is Rupees 3,00,542, and deducting cost of cultivation, the ryots have a net sum of Rupees 1,84,124 for meeting the Government assessment on account of second crops.

25. In a former paragraph the Board pointed out that Mr. Dykes calculated that the net amount at the disposal of the ryots in the joint-rent villages, on account of the first crop, was Rupees 53,07,333. Adding this sum to that shewn for the second crop in the foregoing paragraph, the entire fund, or to use Mr. Dykes' own words, "the net available value of the crops raised in 1857-58 on the joint-rent lands" at the disposal of the ryots, amounts to Rupees 54,91,757, and taking two-thirds of this sum as the tax to be imposed, the assessment of the delta in its present state of development, would rise to the magnificent sum of Rupees 36,24,559, the present collections being Rupees 7,85,311.

NOTE.—*It does not appear that there is much land that is not occupied. "There is very little waste land of any description in the delta."—From Collector of Rajahmundry, 12th October 1858, in Con. 28th Dec. 1858.*

Para. 60.

Para. 62.

26. Mr. Dykes would not raise the assessment suddenly to the point above indicated, nor is he confident, so far as the Board can understand what he says, that a demand based on his calculations of price, could be enforced every year. Considering the large sums laid out on account of the annicut works, Mr. Dykes seems to think that the assessment must necessarily be fixed high and that the fluctuations in prices may be met by a sliding scale. "The introduction of a sliding scale of assessment," he says, "may be deemed advisable hereafter." Mr. Dykes' remarks on this point are very obscure. In one part he seems to advocate a fixed assessment of Rupees 18,30, 585, being one-third of Rupees 54,91,757, "the net available value of the crops raised in 1857-58 on the joint-rent lands," while in one of the concluding paragraphs of his report (paragraph 77), he states that "the land revenue in the delta talooks might be raised Rupees 15,68,291 over and above what the delta yielded before the annicut was begun."

Paras. 64 *at* 67.

27. After what has been said above on the character of Mr. Dykes' estimates, it is unnecessary to follow him in his remarks regarding Inams. He is of opinion that a large extent of land is fraudulently held as Inam which ought to be resumed. Besides the Inams generally mentioned in the former paragraphs of his letter under consideration, he notices separately in the paragraph noted in the margin, the Inams granted since the permanent settlement, and considering the increased value imparted to the land by the annicut, he thinks that there must have been much fraudulent acquisition under this head. Judging from a few cases in the unirrigated lands which came under his notice, and in which the increase by measurement over the recorded area was 34 per cent., he at once adopts the conclusion that there must be 34 per cent. of land in the irrigated lands also which will come under resumption. Acting on this view he makes the realization of his estimates of revenue, which have been reviewed above, contingent on the settlement of the Inam question and on the abolition of joint rents.

Para. 65.

Para. 67.

28. The Board would here observe that there can be no connection between the Inam estimates and the calculations of probable revenue in the joint-rent villages. They do not perceive how the settlement of the Inam tenures can possibly affect the question of capability in its relation to the joint-rent villages. The expectations held out by Mr. Dykes' Inam estimates are additional to the revenue to be drawn from joint-rent villages, which has been estimated on separate and distinct data. The joint-rents as has been repeatedly observed, are a bar to a healthy administration of the district, but ought not to be any impediment to a gradual increase of the revenue, when it has been ascertained that the delta *in its present state* of progress is under-assessed to the amount of Rupees 28,39,248.

	Rupees.
Value of net produce.....	54,91,757
Assessment at two-thirds.....	36,24,559
Present assessment.....	7,85,311
Difference.....	28,39,248

Para. 67.

29. Quitting estimates of probable assets, Mr. Dykes furnishes a statement shewing the actual land revenue in 1857-58 compared with the gross collections for the five years immediately preceding the commencement of the annicut. The result is an increase of Rupees 5,21,277 for the former period. The increase in the villages which have come under the influence of the annicut amounts to 13 per cent. That of the villages to which the water of that work has not yet reached is 31 per cent.

These per centages apply to the whole delta, but taking the two districts separately the proportions are as follows;—

	Irrigated.	Not yet irrigated
Rajahmundry.....	44 per cent.	22 percent.
Masulipatam.....	41 per cent.	48 per cent.

Para. 69.

30. As most villages in the delta have benefited by the improved means of transport afforded by the canals, and many by the protection from floods secured to them by the river embankments, it would be difficult to pronounce that the beneficial effects of the work have not been general; but "a large portion" of the revenue is paid, Mr. Dykes observes, on account of lands not irrigated at all, and the general prosperity has been swelled, he adds, by a great foreign demand for grains that are independent of irrigation. Unquestionably the quantity of grain now produced in the delta is almost incalculably greater than it was before, and the general wealth of that tract has been increased proportionately with the advantages it enjoys; these effects are to be traced to the certainty imparted by the annicut to the irrigation and to the country being protected from those destructive floods which, as Mr. Dykes justly observes, "left such terrible effects behind them in by-gone years." Government benefit largely though *indirectly* from this improved state of things by the stability given to a revenue which before, with the waters of the river under imperfect control, was fluctuating and uncertain, and impaired perhaps for years, till the waste in capital and stock occasioned by the heavy floods just noticed, had been repaired.

31. As regards *direct* augmentations of revenue, by which is to be understood increase to the present rates of assessment in lands previously irrigated or otherwise, and the assessment of waste lands newly brought under cultivation, it is hardly possible to estimate what these have been or are likely to be under the present revenue system of the two districts; but the facts before the Board would keep them from indulging extravagant expectations on this head. The table of actual returns appended to paragraph 67 of the report and noticed in paragraph 29 above of these proceedings, shews that in the district of Rajahmundry, to which attention is chiefly drawn on the present occasion, the improvement in the revenue of villages, which have not yet been irrigated by the annicut, is as much as 22 per cent. As regards Bickavole entered in Mr. Dykes' table as irrigated from the annicut, and generally all the villages under the Tooliah Bogah and Samulcottah channels, in the Eastern delta, where the increase of revenue has been greatest, it was pointed out on another occasion, that "there had always been irrigation" under these sources, and that "these two channels were cut and improved two years before the annicut was begun." All these localities must have been greatly benefited by certain and regulated supplies of water such as are now furnished, but having been an irrigated tract before, as may be said more or less of the delta generally, the annicut would tell more in adding to the general wealth of the country than on *direct* increase of revenue to Government.

Memorandum by Colonel Cotton 9th July 1855, paras. 17 and 18, page 193 of reports on the direct and indirect effects of the Godavery annicut in Rajahmundry and the Coleroon annicut in Tanjore.

32. To the foregoing must be added the fact, mentioned in the margin of paragraph 25 of these proceedings, viz. that the lands of the delta are for the most part occupied. The words of the Collector on this point, strictly interpreted, imply that the land is actually under cultivation.

33. It is very important to bear in mind that the delta has been a highly cultivated tract of country for years. In passing through the Umelapoor talook in the Central delta, Mr. Dykes was struck with its appearance. "For miles," he says, "it was one unbroken sheet of golden grain; and where a break did come, it was not a break of barren land, but of valuable gardens, date trees, cocanuts, &c." This prosperity was not a new creation, the effects of the annicut, but the normal condition of ages, though that work, it may be readily admitted, has enabled the landholders to obtain better and more certain crops.

Para. 11.

34. It is justly observed by Mr. Dykes that the increase of revenue in the upper talooks of Rajahmundry and the improvement in the Sea Customs in the neighbouring districts, particularly Vizagapatam, shews that other causes, besides public works, have been in operation during the last ten years.

Para. 11.

Para. 71, *et. seq.* 35. The concluding paragraphs of Mr. Dykes' report call for passing brief remarks only.

Para. 71. 36. Mr. Dykes seems to think that the population of Rajahmundry was doubled during the ten years between 1840 and 1850 "by immigration and otherwise." No reason is assigned for this sudden influx of persons into a district already well peopled and well cultivated. The increase is to be attributed to greater accuracy in the latter returns.

Paras. 72, 73. 37. The best mode of imposing the water cess in Zemindaries, is noticed in this paragraph. Considerable progress has been made in the imposition of this tax in the Zemindary of Pittapoor in Rajahmudry, the demand being made on the extent of land watered, but Mr. Dykes is in favor of charging for the quantity of water supplied. Difficulties present themselves to this course, but Mr. Dykes' remarks will be borne in mind.

Para. 75. 38. Mr. Dykes is opposed to the two years' exemption from additional impost on the first use of the water. This exemption was publicly notified and could not be abrogated pending the final arrangements to be made by the Director of Revenue Settlement.

Para. 76. 39. The total expenditure on public work from 1844 to February 1859 in Rajahmundry and to the close of April 1858 in Masulipatam, amounts to Rupees 75,96,700-8-2 according to the Collector's accounts. A discrepancy amounting to Rupees 10,40,472 exists between this sum and that exhibited in the accounts of the District Engineer, regarding which explanation has been called for by Government from the Accountant General and Chief Engineer.

From Govt. 28*th June* 1859, *No.* 855, *in Con.* 29*th June* 1859, *No.* 3132.

Para. 80. 40. An attempt is made to show the extent of land irrigated in 1858-59 by the quantity of water supplied, but the works are not of a nature to show the latter with any approach to accuracy, and the calculations are not, therefore, of any value. Estimated, however, in this way, the area irrigated for a first crop in 1858-59 is 99 per cent. in excess of the area shown in the revenue accounts of the preceding year. Mr. Dykes reduces the excess to 79 per cent. to make the result correspond, as far as possible, with the figures shown in the statement appended to paragraph 48 of his report. Even with this reduction, there is an excess of 53,893 acres to be accounted for, "which might be put down in part," Mr. Dykes thinks, "to an increase in the extent of land irrigated this year."

Para. 83. 41. The Board agree with Mr. Dykes in thinking that the different channels should be designated by fixed names.

Para. 84. 42. The Board also concur in Mr. Dykes' views as to the impolicy of including the value of the straw in fixing the land assessment. In the Ongole and Guntoor districts, where the Jonna straw is so essential as fodder for cattle, the burden of this impost would be severely felt and might interfere with the successful breeding of the fine cattle of those parts.

Paras. 86, 88. 43. The large importation of specie into Rajahmundry, the large sums drawn by Accountant General's bills on the local treasury, and the large amount of expenditure on account of public works shown in these paragraphs, have been important auxiliaries in promoting the prosperity of the district. The export trade, certainly in part, is to be attributed to the annicut. Mr. Dykes mentions that in 1858-59 50,000 tons of paddy were exported from the delta. A great part of this supply of food was taken to Tanjore and other places where scarcity prevailed, and this fact alone would go far, apart from the other benefits conferred by this great work, to show that the money laid out by the State in its construction, has not been an unprofitable expenditure.

44. In concluding this review the Board cannot but record with approbation the marked pains taken by Mr. Dykes to obtain the fullest information in his power on the subjects of his enquiry. No point has escaped his attention, and it is clear that he has gone on with, and completed his task with a deep interest in it. It is to be regretted that he has yielded to excessive estimates which have rendered the results arrived at practically of no use, though they may be compared with advantage, so far at least as regards the estimates of produce, with the enquiries in progress in the department of the Director of Revenue Settlement.

Para. 84. 45. Captain Rundall, District Engineer, Godavery Division, is of opinion that Mr. Dykes' estimates both of land and produce are below the truth. The Board cannot but think, from the information before them that the District Engineer entertains exaggerated views on both points. The fact of his considering the produce underestimated confirms the view taken in these proceedings, that the Department Public Works look to the richest crops alone as furnishing a proper standard of capability and assessment. The Board have carefully considered all that has been stated by Mr. Dykes in his several reports, and they are of opinion that there are abundant grounds for the conclusion they have already formed, viz., that "the works on the Godavery are yielding a higher profit than has generally been supposed."

From Govt. 27*th July* 1859, *No.* 1807, *in Con.* 29*th July* 1859, *No.* 3795.

Pro. 10*th Dec.* 1858, *No.* 4581.

Para. 26.

(A true Extract.)

(Signed) J D. SIM, *Secretary.*

No. 131. A. MINUTE BY THE HONORABLE THE PRESIDENT.

The object of this enquiry was to ascertain the extent of the irrigation which has resulted from the works in the Deltas of the Godavari and Kishna, and the value which that irrigation has added to the land; but it does not appear that any distinct practical object was proposed beyond the elucidation of the conflicting statements of the Revenue and Engineer authorities. Upon this investigation an able Revenue officer has been occupied since May 1858, and he has sent in four Reports consisting of 137 closely printed foolscap pages, besides voluminous appendices. This absence of condensation is much to be regretted, for Mr. Dykes has, no doubt, recorded many valuable observations, which will be lost to persons who are unable to read such long Reports in consequence of their having other important duties to perform.

In this instance, however, no inconvenience will arise beyond the loss of the valuable time to the writer. Nobody who is acquainted with the nature of the works of irrigation and navigation in the Deltas of the Kishna and Godavari, can doubt that they have added greatly to the productiveness of the soil and consequently of the Land Revenue. The only practical question is, in what manner the large extent of irrigated cultivation which has overspread these Districts of late years, can be brought under contribution, at the earliest possible date, with the greatest advantage to the State, and the least inconvenience to the proprietors and cultivators; and the solution of this is to be found in the operations of the Land Revenue Survey and Settlement which have lately commenced in the Masulipatam and Rajahmundry Zillahs. This important subject has already occupied my attention and I hope shortly to submit to the Council the conclusions at which I have arrived.

ON THE GODAVARI, *7th October* 1859.

(Signed) C. E. TREVELYAN.

No. 135. ORDER THEREON, 20th October 1859, No. 1421.

The Government agree in the opinion expressed by the President in his Minute above recorded. They consider it unnecessary and inexpedient to pass any orders on Mr. Dykes' reports, as the Revenue Survey will shortly supply them with more reliable materials for a judgment than it was in Mr. Dykes' power to obtain. The reports will be transmitted to the Director of Revenue Settlement, and to the Inám Commissioner; they will also be communicated to the Chief Engineer and to Colonel A. T. Cotton, and will be laid on the Editors' table.

(Signed) J. D, BOURDILLON,
Secretary to Government.

Copy minute Letter to Govt
Dated 6th April 1860 No. 96

+154-

Revenue 1859 Despatch
Proc. Govmt. 21st October.

No. 1421.

Pro. of the Madras Govmt.
20th October 1859.

Nos. 132-133-134-135 & 136.

Orders on Mr Dykes
reports on the return from the
Godavery and Kistna Amnicuts
considered unnecessary.

From the Board of Rev. 9th Nov. 1859
Nos. 2117. 30th Oct. 95-96

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14

13. It is not likely that Mr. Dykes' revenue experience would permit him to fix an assessment based on the richest crops; at the same time it may not be altogether irrelevant to point out in this place the importance of the rule that the land tax shall have reference to land only in an ordinary state of culture and to the produce of an ordinary season. The produce of the rich man's field, in which capital has been sunk, is no index to the tax that should be imposed on his land still less is it applicable to that of the poor man.

14. Mr. Dykes speaks disparagingly of his selection of crops in the Bezwarrah talook, but they probably furnish better data for purposes of assessment than those chosen for experiment in the other localities. They shew an average, it is seen, of 19 cwt. per acre.

Para. 10.

15. The several experiments made under Mr. Dykes' immediate inspection are brought together in the statement which accompanies his report. Assuming the results as therein given to be correct column 10 shews that the weight of the grain is pretty uniform throughout, and that it does not vary uniformly with the quantity of the produce.

Enc. No. 1.

16. The objections which have been taken above, in regard to the net profit in Government villages, applies equally to the calculations intended to shew the assessment in Zemindary estates.

Para. 8.

17. The concluding paragraphs of the report under consideration, viz. from paragraph 15 to the end of the report, have reference chiefly to the points adverted to in paragraphs 22 and 34 of he Board's proceedings dated 3rd May 1859, No. 1554. The subject noticed is the water cess in Zemindaries. In paragraph 34 of the proceedings just mentioned, the Board proposed that the paragraphs in Mr. Dykes' report, in which the subject was handled, should be referred to the Collector and the Department of Public Works for report. They would suggest that paragraphs 15 to 22 inclusive of the report, which has been reviewed in these proceedings, may be referred in like manner to those authorities.

(A true Extract.)

To

J. D. BOURDILLON, Esq., Secretary to Government, R. D. Secretary.
Copy to Collector of Masulipatam.
,, Mr. Dykes.
,, Director of Revenue Settlement.

Revenue Department

11/6

No. 3222

Proceedings of the Board of Revenue dated 14th August 1859.

Read letter from Mr Dykes, dated 10th June 1859, reporting the results of experiments made to ascertain the value of Rice cultivation to the Ryots in the Delta of the Kistnah, with remarks in connection with the Proceedings of the Board under date 3d May 1859 on Mr Dykes' Second report.

(Inform 20th June 1859 No 2871.)

The foregoing is the third report made by Mr Dykes on the subject of his mission to ascertain the effects of the Godavery and Kistnah Canals on their bearing on the Revenue, present and prospective. Mr Dykes' first report was intended to show the actual area irrigated under the Godavery Canal on Villages selected for examination. His second report furnished similar information for the Kistnah Delta, and in four Villages chosen for the

dated 11th September
inform 8th December
1858 No 4185.

dated 5th Nov 1858.
inform 26th Sept 1859.
No 459.

Rec'd 1st August 1859
Read 4th " "
No 3222

Rec'd 3.

Read 1859 Department
No 1893
Proceedings of the Board
of Revenue.

Dated 11th August 1859
Read 18th " "
No 3222

Returning with Board's
Observations the third Report
of Mr Dykes on the Cultivation
of the Rice on the Godavery and
Kistnah Deltas and Extracts
from the Proceedings of the Board
on the Revenue Department
subjoined.

the purpose, as well as the results of enquiries made respecting the actual out-turn and value of Paddy cultivation in the Godavery Delta. The letter, the third of the series, which comes now under consideration, shows the further experiments made by Mr Dykes for the purpose of ascertaining the net value of this description of cultivation in the Kistnah Delta.

2. In this examination of the produce in the Godavery Delta Mr Dykes confined himself to crops sown broad cast. On the present occasion the calculations have reference to five crops transplanted Paddy, but, as before, the experiments, whatever their scientific interest are, on too limited a scale to lead to practical conclusions of general application.

3. The Kistnah Villages selected for examination are situated in the Goodeundah and Bezwarrah Taloks and in the Nozeed and Sullapully Boundaries, all in the District of Masulipatam. The crops of twenty six fields or

Note. Mr Dykes's letter from Mr Dykes's Journal report that examinations of transplanted Paddy were also made in Cost. The results were reserved for the General Report which if Government had permitted him to have made.

Para 10 Enc: No 1.

portions of fields in three localities were examined. The selections were made, some by Mr Dykes, some by the Superintendent of Public Works. The Villagers also were permitted to choose what crops they thought should be submitted to experiment, but when the produce in such cases was deficient, it was generally excluded in the calculations. In the Bezwarrah Taluk. Mr Dykes had to select both the crops himself, apparently for want of sufficient co-operation on the part of the Native Officials.

4. Mr Knox, Collector of Masulipatam, furnished to Mr Dykes the results of some examinations made by himself in the Village of Tamirra in the Goodivadah Taluk. The number of experiments made in this Village were four. In two instances the crops were apparently selected by Mr Knox, and the cultivation

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in these cases are considered by him to exhibit "fair average specimens of the yield of Tanjore." In the other two experiments the crops were chosen by the Villagers, but "as they were to show the worst crops, they have been omitted."

5. He does not appear what descriptions of soils were taken in the Village of Tanjore but in the experiments made under Mr Dykes' immediate superintendence the soils were pretty uniform in quality.

6. As the general result of the several experiments Mr Dykes is of opinion that 20 Cwt per acre or 40 Buckets may be considered to be "the average yield at present in the Masulipatam portion of the Kistnah Delta," and confidence is placed by him in this view as

para 6.

para 5.

as it bears an affinity to the results obtained in the Godavery Delta. In one instance in the Village of Cawlerane, in the Taluk of Coconada, the average produce per acre, which included a few of comparatively inferior produce selected by the villagers, was as high as 26 Cwt, but Mr Dykes frankly admits that he was himself surprized at the result of the experiment in this village and that he is not prepared to assert that this calculation in this case would be borne out by experiments on a more extended scale."

7. In calculating the net profit to the Ryots, after deducting expenses of cultivation and the present assessment to Government, Rupees 18 per Pooty of 1,533 lbs, is taken as the market value of the grain. Mr Dykes observes that this is the price obtained by the Ryots some time after the harvest

harvest and he would "guard against being considered to assert that it is an average, on which an assessment might be safely fixed for a single year." The assessment he remarks "should be fixed with reference, as near as can be ascertained, to what the standard crop would fetch, if sold within a reasonable time after being cut." From facilities of carriage the grain in the Godavery Delta finds a ready market. The same facilities do not exist it is stated in the Kistna Delta and the Ryot, if he can afford it, keeps back his grain till he can obtain a suitable price for it. The commutation rate of Rupees 18. per Khoty chosen by Mr Dykes appears to represent the Price obtained by the Ryot

Ryot on a favorable turn of the Market and viewed in this aspect it cannot be taken as a fair standard of Conversion in calculating the Assessment to be paid to Government or the average Net profits of the Ryots.

8. The soils selected for experiment were pretty uniform as already observed. The out turn in the several cases does not present the same uniformity, owing in part probably to more pains having been taken in some instances in the cultivation of the land. In both the Villages of Cavtaram and Doggipurrao, where experiments were first made, the net profit per acre to the Ryots is stated to be 25-9-10 in the former, and Rupees 20-2 in the latter case. The average out turn of the produce exceeds in both villages the general average of 20 Cwt per acre assumed by Mr Dykes as the probable District average at present. In Cavtaram the

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the average of these experiments gave 26 Cwt. per acre and on Dogypurro it was 22 Cwt, but in the latter Village the result is the mean of two experiments, the crop selected by the villagers having been rejected, because of inferior out-turn.—

Q. The cost of cultivation was taken at Rupees 5 per acre the same as in the Godavery Delta.

10. The foregoing is a general sketch of Mr Dykes' experiments. Viewed within the narrow limits they take in, they afford interesting results which may be usefully considered with the more minute examinations which are going forward under the instructions of Director of Revenue Settlements. Mr Dykes says that they are not on a sufficiently extended scale to be of any practical use and as regards the Commutation rate

rate taken in calculating the Net profits in Mavtaram and Dogypurro, "it must be further remembered," he says, "with reference to previous remarks, that the net profits in either case are based on the prices which obtained three Months after the Harvest, and that no sales were effected when the crops were cut"

11. To the disqualifying circumstances above mentioned, Mr Bond desires to add that the experiments are practically valueless in consequence of the very best crops having been selected for the purpose so far as the information before them leads them to form an opinion. Mr Dykes is astonished to find the average produce in Mavtaram Viz 26 Cwt. so high, although it embraces a field of inferior outturn selected by the Ryots. But it is only necessary to look at the quality of the Crops which furnish that average for a solution of the difficulty. The crop selected by the D. P. W. in Mavtaram gives a produce of Cwt 33 per acre. That pointed out by the Tahsildar about Cwt 19 per acre. The result in each case greatly exceeds what is stated to be a fair average for the District, Viz 20 Cwt. It is observed that the D. P. W. throughout selected the richest crops for experiment. Mr Knox's examination in the Village of Tamivaram was confined to two experiments only and though the worst crops were rejected, his average barely exceeds 18 Cwt per acre.

12. Mr Dykes is aware of the great difference between a field in its ordinary

ordinary state of cultivation and that on which capital has been expended but due allowance has not been made for this in his calculations. In fact the field of the Village Mannaseiffe, which "had been well cultivated" was specially selected for experiment. The richness of its produce seems to have constituted its fitness for the purpose. Assessment was between 25. and 26 Gul per acre.

13. It is not likely that Mr Dykes' Revenue experience would permit him to fix an assessment based on the richest crop; at the same time it may not be altogether irrelevant to point out in this place the non-performance of the rule that the land tax shall have reference only to the ordinary state of cultivation and to the produce of an ordinary season on the produce of the rich mans field, in which capital has been sunk, is no index to the tax that should be imposed on his land. still less is it applicable to that of the poor man.

14. Mr Dykes speaks disparagingly of his selections of crops in the Bezwarah Taluk but they probably furnish better data for purposes of assessment than those chosen for experiment in the other localities. They show an average, it is seen, of 19. Gul per acre. Para 10

15. The several experiments made under Mr Dykes' immediate inspection are brought together in the statement which accompanies his report. Assuming the results as therein given to be correct Col 10 shews that the weight of the grain is pretty uniform throughout and that it does not vary uniformly with the quantity of the produce. Ans. No 1

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para 8

16. The objections which have been taken above in regard to the net profit in Government villages applies equally to Mr Dykes calculations intended to shew the assessment in Zemindary Estates.

17. The concluding paras of the Report under consideration, Viz from para 15 to the end of the report, have reference chiefly to the points adverted to in paras 22 and 34 of the Board's Proceedings dated 3d May 1854 No 1554. The subject related to the water cess in Zemindaries. In para 34 of the Proceedings just mentioned, the Board proposed that the paras in Mr Dykes' report in which the subject was handled should be referred to the Collector and the Department of P.W. for report. They would suggest that paras 15 to 22 inclusive of the report, which has been reviewed in these Proceedings may be referred in like manner to those authorities.

I have &c

(Signed) H. Sconce

Secretary.

To J. F. Bursillon Esq
Secretary to Government
Revenue Department.

C Bert to

No. 3397.

PROCEEDINGS of the BOARD of REVENUE, dated 30th August 1859.

Read letter from Mr. Dykes, dated 10th June 1859, reporting further on the effects of the Godavery annicut.

(In Con. 20th June 1859, No. 2872.)

1. Mr. Dykes' previous reports were confined to the examination of the area and produce in a few villages only in the Godavery and Kistnah deltas. The present report embraces the entire delta of the Godavery and aims at showing, firstly, what has been the effect of the annicut on the agricultural state of this tract of country and the condition of the people generally, and, secondly, the bearing of this work as regards the State.

2. Mr. Dykes premises that, so far as actual experiments are concerned, his attention has been almost wholly given to ascertaining what has been the effect of the annicut on the cultivation of *paddy*, and what is the average yield of that product at present with the benefit of annicut irrigation. Other products of greater value are grown, but *paddy*, from the extent of its cultivation, is considered the standard crop of the delta.

Para. 3.

3. The results of Mr. Dykes' experiments are shown in lbs. Avoirdupois. It was convenient to adopt some common standard of comparison in consequence of the varying capacities of the local measures, but the local measure was used in the first instance and its equivalent in lbs. afterwards ascertained. Coontsum is the name of the local measure.

Paras. 5-6.

4. The price at which the crops were selling at the time of experiment, was taken as the standard of conversion.

5. Attention is first drawn to the actual produce of the land. Fifty-two fields generally about ¼ acre each, were chosen for examination in different parts of the delta, and the results are shown in a convenient form in the table appended to paragraph 14. The averages of each set of experiments are as follow :—

Paras. 7 at 29.

	Eastern delta. lbs.	Centre delta. lbs.	Western delta lbs.
Average of fields selected by Department Public Works.....	2,633	3,077	2,504
Do. do. by the Tahsildar.....	2,310	3,152	2,224
Do. do. by the Villagers.....	1,782	1,953	1,270

Para 15.

6. In four of the fields in the Eastern delta chosen by the Department Public Works, the second crop is also included. Deducting those fields the average is reduced to 2,557 lbs., or about 23 cwt. per acre ; but as the soil of those villages is above the average of the Eastern delta generally, Mr. Dykes thinks that the Tahsildar's average, which is about 20 cwt. or one ton per acre, "may be taken with perfect safety as about the average yield of the Eastern delta in ordinary seasons."

Paras. 9 and 15.

7. As the duty of realizing the revenue falls on the Revenue officers, Mr. Dykes thinks that there was a tendency in that class to pass over superior crops in the choice of those intended for experiment. From daily intercourse with the ryots and knowledge of their affairs, the Tahsildar would naturally feel a bias in their favor, but looking to the small amount of difference between the Tahsildar's average in the present case, and that of the Department Public Works and to the actual out-turn of some fields of their selection, there is little room, as it appears to the Board, for supposing that the Revenue officers chose other than *good* crops on this occasion. Out of six selections by this class in the Eastern delta two only fall materially below 2,000 lb., while in one instance the out-turn was as high as 3,704 lb. or 33 cwt., and in another 2,520 lb. or 22 cwt. per acre. The propriety of this remark is still more apparent in the selections of the Tahsildar in the Central delta.

8. The averages of the Department Public Works and of the Tahsildar, necessarily differ from

each other from the range of experiments having been far more extensive in the former than in the latter case; but looking to the particular crops chosen, the superior quality of the produce appears to have been the chief guide with both parties, though the Department Public Works kept this object more prominently in view.

CENTRAL DELTA.—The Central delta, which takes in the talooks of Amalapoor and Nuggaram, Para. 16. is a peculiarly rich locality. The greater portion of the crops were still standing when the experiments were undertaken in this portion of the delta, and thus a larger field for selection presented itself there than was afforded elsewhere. "The villages themselves were," Mr. Dykes observes, "fine specimens of a fine talook." Cultivation is carried to a high pitch, and Mr. Dykes noticed in a former report that among the ryots was a body of persons, the descendants of emigrants from Tanjore about two centuries ago, who now occupy many villages. The experiments in this delta exhibit very high averages. That of the Department Public Works is 27 cwt. The Tahsildar's average is still higher, 28 cwt. The villagers' selections exhibit a result of 17 cwt., or a Para. 16. pooty and a half, which the Department Public Works consider a fair average for the delta generally. The irrigated crops in the year of experiment are stated to have been particularly good, and allowing for this circumstance and for the villages selected being the best in this part of the district, Mr. Dykes would take 22 cwt. as the average yield of paddy per acre for the first crop in this delta.

From Mr. Dykes, 11th September in Con. 8th December 1858, para. 10

9. WESTERN DELTA.—The disadvantages arising from a small field of selection, in consequence of the crops having been cut, were felt in the experiments made in the Western delta. This delta is to be viewed in two portions. The upper portion is poor, with a scanty population, and has not yet recovered, it is stated, from the rack renting of the Zemindars. The lower portion is thickly peopled, and includes the Oondy talook, the rice of which is more abundant per acre, and of better quality Paras. 18, 19. than that in any other talook. Mr Dykes would fix 18 cwt. as the average for the upper, and 22 cwt. as that for the lower portion.

10. The average produce per acre which Mr. Dykes would thus fix for each section of the delta is as follows:—

Eastern delta.....	20 cwts.
Central do.	22 „
Western do.	
Lower portion.....	22 „
Upper do.	18 „

11. In the Central delta the averages of the Department Public Works and the Tahsildar, were very high, but in fixing a mean produce for the whole of that delta, Mr. Dykes was obliged to allow considerable abatement, as those averages represented the productive power of the finest villages only. The abatement was made on general considerations, and not on data of a definite nature, and the averages already obtained, more or less regulated the conclusions at which Mr. Dykes finally arrived. The same remark applies to the results adopted in the Eastern and Western deltas. The Board are, therefore, led to the view that in fixing his final averages of probable produce, Mr. Dykes has allowed himself to be guided by standards, true in themselves, but not suited for fixing the value of the land to Government, or the net profit to the ryot. The experiments embraced a considerable number of villages, and have been carefully conducted, but still too limited for the great objects in view. The averages of fields of ordinary produce, and in an ordinary state of culture, have found no place among Mr. Dykes' experiments.

Pro. dated 3d May 1859, No. 1554.

12. In reviewing Mr. Dykes' report regarding the average produce per acre in lands irrigated under the Kistnah annicut, the Board pointed out the excessive character of the estimates of produce which had been taken for the purpose, particulary by the Department Public Works. In paragraph 9 of his present report, Mr. Dykes offers an opinion very much in unison with that view, and speaks with hesitation as to the real value of his Godavery experiments. "Recalling to my mind," he says, "the crops that I have seen, and the general nature of the selections made, I do not think that I should be justified in submitting any one of these averages as a strictly correct result of the general, but cursory experiments now made. However much inclined to be strictly just in their selections, I think that the officers in the Department Public Works, on the whole, took a somewhat favorable view of the average out-turn." Besides the instances already adduced, in turning to Appendix II of Mr. Dykes' report, it is seen that the average of three experiments made by the Department Public Works in the village of Dodeeputla in the Western delta is as high as 37½ cwt., arising, as stated in the column of remarks, from "such fine crops" having been taken.

Price of paddy per cwt.	Rs.	A.	P.
Eastern delta.	1	4	11
Central „	1	2	2
Western „	1	2	0

13. With the averages noticed in the foregoing paragraphs converted into money at the *then* selling prices, which varied in the three portions of the delta, as shown in the margin, the value of the gross produce per acre, which also includes the value of the straw, is as follows:—

	Rs.	A.	P.
Eastern delta.....	26	14	4
Central do.	25	13	2
Western do.			
Lower portion.....	26	4	0
Upper do.	20	12	0

Para. 23.

14. The inclusion of the straw pro tanto swells the amount, and takes from the ryot what he has hitherto enjoyed free of tax. The prices of paddy have been carefully observed, but it is questionable Para. 24. how far the sudden rise of price in the Eastern delta, noticed by Mr. Dykes, should have been taken as the basis of conversion for that locality. It appears, from what Mr. Dykes says, that Rupees 13 per pooty was the ordinary rate in the Eastern delta, and that so far from prices being lower in the Central delta, they were a shade higher there, being, as the Board understand, Rupees 13-4 per pooty. The rise from Rupees 13 to 15 in the Eastern delta, was sudden and momentary, and viewed in that aspect, does not represent a fair commutation standard. It should be carefully considered whether fluctuations of price of this description should not merge in one general rate which would be fair to all. The minute distinctions in regard to relative distances from a canal mentioned in paragraph 25 will, in some degree, affect the profits of individuals, but are not sufficiently broad in character for regulating the demand of the State.

15. Mr. Dykes' experiments, as reviewed in the foregoing paragraphs, and his remarks generally show the vast benefits conferred *on the ryots* by the annicut, and the figured statement in paragraph 42 further illustrates this part of the subject. It is there shown, following the estimates of produce adopted in the report, that the assessment of Government in the delta of the Godavery in 1857-58, was about 23 per cent. of the gross produce. Whatever allowance it may be proper to make for the excessive character of Mr. Dykes' returns of produce, the broad fact, that the ryots have greatly augmented means placed at their disposal for meeting the public demands, stands prominently out. This improved position has been secured to them by the certain and timely supply of water, which Para. 42. the annicut affords. It is quite true that, "as regards the material prosperity of the ryots, the annicut has been an unmixed blessing."

16. The present condition of the delta presents a marked contrast to what it was when suffering from the effects of Zemindary misrule, and Mr. Dykes is apparently desirous that Paras. 30 at 39. the evils of that system should not pass away from remembrance. The subject has been repeatedly under the consideration of Government, particularly in its bearing on the condition of Rajahmundry and need not be again discussed. The only point which it is necessary to bear in mind in this place, in connection with the affairs of Rajahmundry, is the dilapidated state into which the works of irrigation had fallen, when the management came into the hands of the officers of Government. The Zemindary of Pittapoor is, apparently, an exception to what is said Para. 46. above, but as regards this estate, the Zemindary system may be said to have been in abeyance in consequence of frequent minority, as observed by Mr. Dykes. At the present time it is under the Collector's management from the same cause, and has surplus collections to the amount of Rupees 2,14,608, which has been invested in the public funds.

17. In the paragraphs noted in the margin, Mr. Dykes takes up the second of the two points which he proposed to illustrate, viz. the bearing of the annicut on the land tax, and here he proceeds to show, "*as nearly*" as he can, firstly, the area actually irrigated in 1857-58 and the amount that might be fixed as the consolidated assessment on the joint-rent lands; and, secondly, the increase in the assessment actually realized, over and above the land revenue of the delta before the annicut was begun, and the portion of that increase that may be ascribed to that work.

Paras. 45-47 at 70.

Para. 45.

18. Mr. Dykes' calculations are based on the view that "the recorded area does not shew anything like the area actually irrigated in 1857-58." In very limited trials, as single villages, the differences between the two areas was found to be 56 per cent. in Rajahmundry and 87 per cent. in Masulipatam. The difference on the whole extent thus submitted to experiment was 68 per cent., as shown in the margin. The gross area in a circuit of 64 villages, surveyed under the orders of the Superintendent of Survey, was 80,491 acres; by the revenue returns, at 8 acres the pootty, it was 57,348 acres or 40 per cent. less. In 21 villages of this circuit the difference was ascertained to be 50 per cent. Mr. Dykes argues that if a difference of 40 and 50 per cent. occurs in the *gross* area, it is not a matter of surprize that the difference should rise to 87 per cent. on the *cultivated* area, as so much is to be gained by successful concealment; but Mr. Dykes altogether passes over the fact that the entries of land in the revenue accounts are in pootties, and that the conversion of the pootty into acres at eight acres per pootty, is little better than nominal, as the pootty varies in extent, reaching to 12 acres and upwards. It* has been supposed that an average of 10 acres, would represent more fairly the equivalent of the pootty, and, if this standard of conversion is adopted, Mr. Dykes' conclusions would be very materially disturbed.

Paras. 47-48.

Recorded area as per Tahsildar's accounts.	Area as Surveyed.	Difference.
5,407	9,108	3,700
or 68 per cent.		

Note.—In the latter part of his report in treating the Inams, Mr. Dykes admits that eight acres is not a true equivalent. This point was particularly discussed in para. 9 of Board's Proceedings, dated 10th December 1858, No. 4581.

* Col. A. Cotton.

19. As it is, Mr. Dykes takes 68 per cent. as the deficiency in the revenue accounts, which he applies to the whole delta. Acting on this hypothesis, he estimates the value of the first crop in the irrigated joint-rent villages of Rajahmundry in 1857-58 at Rupees 64,94,938, and including Zemindary and other tenures, the value of the first crop amounts to Rupees 97,64,623.

Para. 48, Statement appended.

20. Taking the average price of the last 38 years, which is below the price of 1858-59, but above that of 1857-58, on which the results noticed in the preceding paragraph are founded, the value of the first crop in the joint-rent villages, stands at Rupees 68,19,163. From this amount the sum of Rupees 15,11,830 being deducted on account of charges of cultivation, it is estimated that the ryots have a net sum of Rupees 53,07,333 at their disposal for subsistence and the assessment of Government. But the consolidated joint-rent assessment being only Rupees 7,77,896, the land tax, according to this estimate, is little more than a mere quit rent.

Para. 52.

Note.—The Board have adopted the calculations in para. 52; but referring to the statement appended to para. 48, the area liable to full assessment seems to be incorrectly stated by Mr. Dykes. Column 6 of that statement includes the extent of Inam with the increase of 56 and 87 per cent. In deducting, therefore, the Inam area in para. 52, allowance should have been made for this. If this view is correct, Mr. Dykes' estimate of net available produce will be pro tanto reduced.

21. It was shown in paragraph 15 of these Proceedings, that including the finest crops in the standard of comparison, the land tax in the joint-rent villages of Rajahmundry, was about 23 per cent. of the gross produce. The calculations noticed in the preceding paragraph, reduces it to one-seventh or about 14 per cent. of the entire gross produce. One glance at the list of prices, given in the margin of paragraph 50, will show, how erroneous views as to probable capability, have arisen. Mr. Dykes takes 90 Rupees a garce as his commutation rate, but this sum includes the market value of rice in exceptional years when prices were very high, and does not, therefore, furnish a fair standard of comparison on the present occasion. In 24 out of the whole series of 38 years, prices were below the rate assumed by Mr. Dykes; in most years the difference was very considerable. Famine prices and those of exceptional years ought to have been excluded altogether from the computation. Had this been done, Mr. Dykes would have seen more readily that Rupees 90 a garce was obtained only when markets were *very favorable*, and that the price which the ryots *ordinarily* receive for their grain is very much below that rate.

Para. 53.

22. Mr. Dykes' estimates lead him to the conclusion that the present average tax on the irrigated lands of the whole delta, which includes the portion in Masulipatam, is only Rupees 2-9 per acre.

Para. 54.

23. An instance of improved capability to a considerable extent is adduced in the case of the Zemindary village of Buntoomillay, in the Central delta, but the increase is apparently owing to the reclamation of a salt swamp with the waters of the Godavery, though doubtless the wet lands generally of this village yield much better crops now than formerly, when the irrigation was uncertain and irregular. The benefit confered on this village by the annicut should not, as Mr. Dykes justly observes, be lost to Government. A water cess of Rupees 161 has been imposed, but its collection appears to be in abeyance pending, for some reason not stated, re-measurement of the lands.

Para. 55 at Para. 57.

24. In estimating the extent and value of the second-crop cultivation, Mr. Dykes assumes that the area, as per revenue accounts, is less by 84 per cent. than the real area. With correction to this extent and at current prices, the probable gross value of the second crop in 1857-58, is stated to be Rupees 4,66,807. This calculation is intended to embrace the entire delta. The portion appertaining to the joint-rent lands is Rupees 3,00,542, and deducting cost of cultivation, the ryots have a net sum of Rupees 1,84,424 for meeting the Government assessment on account of second crops.

25. In a former paragraph the Board pointed out that Mr. Dykes calculated that the net amount at the disposal of the ryots in the joint-rent villages, on account of the first crop, was Rupees 53,07,333. Adding this sum to that shewn for the second crop in the foregoing paragraph, the entire fund, or to use Mr. Dykes' own words, "the net available value of the crops raised in 1857-58 on the joint-rent lands" at the disposal of the ryots, amounts to Rupees 54,91,757, and taking two-thirds of this sum as the tax to be imposed, the assessment of the delta in its present state of development, would rise to the magnificent sum of Rupees 36,24,559, the present collections being Rupees 7,85,311.

Note.—It does not appear that there is much land that is not occupied. "There is very little waste land of any description in the delta."—From Collector of Rajahmundry, 12th Oct. 1858, in Con. 28th Dec. 1858.

Para. 60.

Para. 62.

26. Mr. Dykes would not raise the assessment suddenly to the point above indicated, nor is he confident, so far as the Board can understand what he says, that a demand based on his calculations of price, could be enforced every year. Considering the large sums laid out on account of the annicut works, Mr. Dykes seems to think that the assessment must necessarily be fixed high and that the fluctuations in prices may be met by a sliding scale. "The introduction of a sliding scale of assessment," he says, "may be deemed advisable hereafter." Mr. Dykes' remarks on this point are very obscure. In one part he seems to advocate a fixed assessment of Rupees 18,30,585, being one-third of Rupees 54,91,757, "the net available value of the crops raised in 1857-58 on the joint-rent lands," while in one of the concluding paragraphs of his report (paragraph 77), he states that "the land revenue in the delta talooks might be raised Rupees 15,68,291 over and above what the delta yielded before the annicut was begun."

Paras. 64 at 67.

27. After what has been said above on the character of Mr. Dykes' estimates, it is unnecessary to follow him in his remarks regarding Inams. He is of opinion that a large extent of land is fraudulently held as Inam which ought to be resumed. Besides the Inams generally mentioned in the former paragraphs of his letter under consideration, he notices separately in the paragraph noted in the margin, the Inams granted since the permanent settlement, and considering the increased value imparted to the land by the annicut, he thinks that there must have been much fraudulent acquisition under this head. Judging from a few cases in the unirrigated lands which came under his notice, and in which the increase by measurement over the recorded area was 34 per cent., he

Para. 65.

at once adopts the conclusion that there must be 34 per cent. of land in the irrigated lands also which will come under resumption. Acting on this view he makes the realization of his estimates of revenue,

Para. 67. which have been reviewed above, contingent on the settlement of the Inam question and on the abolition of joint rents.

28. The Board would here observe that there can be no connection between the Inam estimates and the calculations of probable revenue in the joint-rent villages. They do not perceive how the settlement of the Inam tenures can possibly affect the question of capability in its relation to the joint-rent villages. The expectations held out by Mr. Dykes' Inam estimates are additional to the revenue to be drawn from joint-rent villages, which has been estimated on separate and distinct data. The joint-rents, as has been repeatedly observed, are a bar to a healthy administration of the district, but ought not to be any impediment to a gradual increase of the revenue, when it has been ascertained that the delta *in its present state* of progress is under-assessed to the amount of Rupees 28,39,248.

	Rupees.
Value of net produce.....	54,91,757
Assessment at two thirds.....	36,24,559
Present assessment.....	7,85,311
Difference.....	28,39,248

Para. 67. 29. Quitting estimates of probable assets, Mr. Dykes furnishes a statement shewing the actual land revenue in 1857-58 compared with the gross collections for the five years immediately preceding the commencement of the annicut. The result is an increase of Rupees 5,21,277 for the former period. The increase in the villages which have come under the influence of the annicut amounts to 43 per cent. That of the villages to which the water of that work has not yet reached is 31 per cent. These per centages apply to the whole delta, but taking the two districts separately the proportions are as follows ;—

	Irrigated.	Not yet irrigated.
Rajahmundry.....	44 per cent.	22 per cent.
Masulipatam.....	41 per cent.	48 per cent.

Para. 69. 30. As most villages in the delta have benefitted by the improved means of transport afforded by the canals, and many by the protection from floods secured to them by the river embankments, it would be difficult to pronounce that the beneficial effects of the work have not been general; but "a large portion" of the revenue is paid, Mr. Dykes observes, on account of lands not irrigated at all, and the general prosperity has been swelled, he adds, by a great foreign demand for grains that are independent of irrigation. Unquestionably the quantity of grain now produced in the delta is almost incalculably greater than it was before, and the general wealth of that tract has been increased proportionately with the advantages it enjoys; these effects are to be traced to the certainty imparted by the annicut to the irrigation and to the country being protected from those destructive floods which, as Mr. Dykes justly observes, "left such terrible effects behind them in by-gone years." Government benefit largely though *indirectly* from this improved state of things by the stability given to a revenue which before, with the waters of the river under imperfect control, was fluctuating and uncertain, and impaired perhaps for years, till the waste in capital and stock occasioned by the heavy floods just noticed, had been repaired.

31. As regards *direct* augmentations of revenue, by which is to be understood increase to the present rates of assessment in lands previously irrigated or otherwise, and the assessment of waste lands newly brought under cultivation, it is hardly possible to estimate what these have been or are likely to be under the present revenue system of the two districts; but the facts before the Board would keep them from indulging extravagant expectations on this head. The table of actual returns appended to paragraph 67 of the report and noticed in paragraph 29 above of these proceedings, shews that in the district of Rajahmundry, to which attention is chiefly drawn on the present occasion, the improvement in the revenue of villages, which have not yet been irrigated by the annicut, is as much as 22 per cent. As regards Bickavole entered in Mr. Dykes' table as irrigated from the annicut, and generally all the villages under the Tooliah Bogah and Samulcottah channels, in the Eastern delta, where the increase of revenue has been greatest, it was pointed out on another occasion, that "there had always been irrigation" under these sources, and that "these two channels were cut and improved two years before the annicut was begun." All these localities must have been greatly benefitted by certain and regulated supplies of water such as are now furnished, but having been an irrigated tract before, as may be said more or less of the delta generally, the annicut would tell more in adding to the general wealth of the country than on *direct* increase of revenue to Government.

Memorandum by Colonel Cotton 9th July 1855, paras. 17 and 18, page 193 of reports on the direct and indirect effects of the Godavery annicut in Rajahmundry and the Coleroon annicut in Tanjore.

32. To the foregoing must be added the fact, mentioned in the margin of paragraph 25 of these proceedings, viz. that the lands of the delta are for the most part occupied. The words of the Collector on this point, strictly interpreted, imply that the land is actually under cultivation.

33. It is very important to bear in mind that the delta has been a highly cultivated tract of country for years. In passing through the Umelapoor talook in the Central delta, Mr.

Para. 11. Dykes was struck with its appearance. "For miles," he says, "it was one unbroken sheet of golden grain; and where a break did come, it was not a break of barren land, but of valuable gardens, date trees, cocoanuts, &c." This prosperity was not a new creation, the effects of the annicut, but the normal condition of ages, though that work, it may be readily admitted, has enabled the landholders to obtain better and more certain crops.

34. It is justly observed by Mr. Dykes that the increase of revenue in the upper talooks of Rajahmundry and the improvement in the Sea Customs in the neighbouring districts, particularly Vizagapatam, shews that other causes, besides public works, have been in operation during the last ten years.

Para. 70.

Para. 71. et seq. 35. The concluding paragraphs of Mr. Dykes' report call for passing brief remarks only.

Para. 71. 36. Mr. Dykes seems to think that the population of Rajahmundry was doubled during the ten years between 1840 and 1850 "by immigration and otherwise." No reason is assigned for this sudden influx of persons into a district already well peopled and well cultivated. The increase is to be attributed to greater accuracy in the later returns.

Paras. 72, 73. 37. The best mode of imposing the water cess in Zemindaries, is noticed in this paragraph. Considerable progress has been made in the imposition of this tax in the Zemindary of Pittapoor in Rajahmundry, the demand being made on the extent of land watered, but Mr. Dykes is in favor of charging for the quantity of water supplied. Difficulties present themselves to this course, but Mr. Dykes' remarks will be borne in mind.

Para. 75. 38. Mr. Dykes is opposed to the two years' exemption from additional impost on the first use of the water. This exemption was publicly notified and could not be abrogated pending the final arrangements to be made by the Director of Revenue Settlements.

Para. 76. 39. The total expenditure on public works from 1844 to February 1859 in Rajahmundry and to the close of April 1858 in Masulipatam, amounts to Rupees 75,96,700-8-2 according to the Collector's accounts. A discrepancy amounting to Rupees 10,40,472 exists between this sum and that exhibited in the accounts of the District Engineer, regarding which explanation has been called for by Government from the Accountant General and Chief Engineer.

From Govt. 23th June 1859, No. 855, in Con. 29th June 1859, No. 3132.

Para. 80. 40. An attempt is made to show the extent of land irrigated in 1858-59 by the quantity of water supplied, but the works are not of a nature to show the latter with any approach to accuracy, and the calculations are not, therefore, of any value. Estimated, however, in this way, the area irrigated for a first crop in 1858-59 is 99 per cent. in excess of the area shown in the revenue accounts of the preceding year. Mr. Dykes reduces the excess to 79 per cent.

to make the result correspond, as far as possible, with the figures shown in the statement appended to paragraph 48 of his report. Even with this reduction, there is an excess of 53,893 acres to be accounted for, " which might be put down in part," Mr. Dykes thinks, " to an increase in the extent of land irrigated this year."

Para. 83. 41. The Board agree with Mr. Dykes in thinking that the different channels should be designated by fixed names.

Para. 84. 42. The Board also concur in Mr. Dykes' views as to the impolicy of including the value of the straw in fixing the land assessment. In the Ongole and Guntoor districts, where the Jonna straw is so essential as fodder for cattle, the burden of this impost would be severely felt and might interfere with the successful breeding of the fine cattle of those parts.

Paras. 86, 88. 43. The large importation of specie into Rajahmundry, the large sums drawn by Accountant General's bills on the local treasury, and the large amount of expenditure on account of public works shown in these paragraphs, have been important auxiliaries in promoting the prosperity of the district. The export trade, certainly in part, is to be attributed to the annicut. Mr. Dykes mentions that in 1858-59 50,000 tons of paddy were exported from the delta. A great part of this supply of food was taken to Tanjore and other places where scarcity prevailed, and this fact alone would go far, apart from the other benefits conferred by this great work, to show that the money laid out by the State in its construction, has not been an unprofitable expenditure.

44. In concluding this review the Board cannot but record with approbation the marked pains taken by Mr. Dykes to obtain the fullest information in his power on the subjects of his enquiry. No point has escaped his attention, and it is clear that he has gone on with, and completed his task with a deep interest in it. It is to be regretted that he has yielded to excessive estimates which have rendered the results arrived at practically of no use, though they may be compared with advantage, so far at least as regards the estimates of produce, with the enquiries in progress in the department of the Director of Revenue Settlements.

Para. 84

From Govt. 27th July 1859, No. 1807, in Con. 29th July 1859, No. 3795.

45. Captain Rundall, District Engineer, Godavery Division, is of opinion that Mr. Dykes' estimates both of land and produce are below the truth. The Board cannot but think, from the information before them, that the District Engineer entertains exaggerated views on both points. The fact of his considering the produce underestimated confirms the view taken in these proceedings, that the Department Public Works look to the richest crops alone as furnishing a proper standard of capability and assessment. The Board have carefully considered all that has been stated by Mr. Dykes in his several reports, and they are of opinion that there are abundant grounds for the conclusion they have already formed, viz. that " the works on the Godavery are yielding a higher profit than has generally been supposed."

Pro. 10th Dec. 1858, No. 4581.

Para. 26.

(A true Extract.)

(Signed) J. D. SIM,
Secretary.

To

J. D. BOURDILLON, Esq., Secretary to Government, R. D.
Copies to Collectors of Rajahmundry and Masulipatam.
,, to J. W. B. DYKES, Esq., and Director of Revenue Settlement.

Rev. 1859 Depart.
Pro. of Govt. 21st Octr.
No. 1584.

Proceedings of the Board of Revenue.

Dated 30th } August 1859.
Dispd 31st }
Recd 31st

No. 3397.

No. 1121. 20th October 1859.

Submitting with the Board's observations a letter from Mr Dykes on Special Duty reporting on the anicut Delta of the Godavery, as well as the effects of the Anicuts on the Agricultural State of the Country, and the condition of the people generally.

No. 134.

17 Octr. Rig.

22
210

In Con. 26th February 1859, No. 459.

From J. W. B. DYKES, Esq., On Special Duty.

dated Masulipatam, 5th November 1858.

With reference to Minutes of Consultation in the Revenue Department under date the 12th and 19th March last, and in continuation of my letter of the 11th September, I have now the honor to submit the results obtained on measuring four villages in the Kistna Delta.

114. The Delta of the Kistna is divided pretty evenly, by the river, between the districts of Guntoor and Masulipatam; but, as it was the order of Government, that all four villages should be selected in the latter district, the following remarks are confined to that portion of the Delta, which lies Eastward of the river, and belongs to the district of Masulipatam.

115. And this division of the Delta of the Kistna suggests a similar arrangement for the Delta of the Godavery, if I may be permitted to refer briefly now, to that important subject. In para. 90 of my letter of the 11th September, I have ventured to affirm that no arrangement could ever give the "clearness and simplicity that would be obtained by placing the whole Delta of the Godavery under the fiscal management of one office." And to that opinion I would still respectfully adhere. But, if this mode of disposing of present difficulties should not meet the approbation of Government, with reference to other considerations, then I beg to submit respectfully, as the next best arrangement, that the whole Western Delta of the Godavery should be handed over to the Masulipatam District. Clearness and precision in comparing the quantity of water, supplied for irrigation, with the revenue realized, would thus be fully obtained. And it must be admitted, as counterbalancing to a certain extent the great advantages of the other scheme, that a wholesome rivalry would thus be created in the Revenue management of the different portions of the Delta. However much uniformity of system may be aimed at, differences of management are sure to creep in; and, as surely, in the course of a few years, fiscal results will shew, with the aid of local enquires, which system is most advantageous in its details; and the Government will be able to take due advantage of the valuable information thus obtainable.

116. Compared to the Godavery, the construction of the anicut across the Kistna is recent; and when the stoppage of Public Works took place last year, the anicut was left in much the same position, as the monster steam ship—built but not equipped. The anicut itself was complete. The head sluices were complete. Large sums of money had been laid out in finishing these works in the most solid and substantial manner; and, so far nothing more remains to be done. But the general irrigation and drainage works, by which alone a fair return on the outlay can be secured, were, and are wanting; and there is now, in consequence, not only a yearly loss in all probability on the capital already expended, but much that had been done towards the completion of these works, is going to wreck and ruin and soon will have to be done over again, de-novo.

117. The stoppage of Public Works, however, is not, in this instance, an unmixed evil. It is in fact, on the contrary, *a very fortunate circumstance.* For, out of a computed irrigable area of 5,00,000 acres, it is calculated that upwards of 2,00,000 acres are held on the Zemindarry tenure; and, as no arrangement has yet been made with the Zemindars, with regard to the enhanced value that will thus be given to their estates, it seems highly desirable, that there should be a stoppage in the formation of the channels; that the water should not be supplied; and the enhanced value should not be given; till the Zemindars have definitely agreed to the terms on which it is to be paid for. As yet, I believe, they have, shown no intention to enter into specific agreements. They probably hope, by holding back, to get the water at nominal rates; and it is obvious that they would have a considerably easier game to play, if the irrigation works had been completed. The Government would have laid down a vast amount of capital; and the Zemindars, would have the cards in their own hands. But I shall have to refer specifically to one of these Zemindarries, in which a village has been selected by the District Engineer, and I shall subsequently beg to submit for consideration, what it seems to me is the course to be pursued with respect to the Zimindarries generally, in the matter of irrigation.

118. As in the Godavery, so here, the whole supply for the irrigation of the Eastern Delta of the Kistna is drawn off, at Bezwarrah, from one set of head sluices. But the main canal, thus drawn off from the river, is divided almost immediately after it leaves the river; and one branch runs Northward to form the high level canal to Ellore; whilst the main body of water is carried along the course of an old irrigation channel in the direction of the town of Musulipatam.

119. With regard to the Kistna and Ellore high level canal, there is little to be said.—It has only been completed for some six miles; and, though doubtless a portion of the water is turned to good account, much, I am informed, runs to waste at present, and finds its way to the Colair by a line of drainage, which will eventually be crossed by an aqueduct.

120. The Masulipatam canal is in a much more satisfactory state. The total length, when finished will be 48 miles, and the canal is now open for 31 miles.

There is therefore only 17 more miles to finish, and then, in addition to the immediate object of irrigation, the two following most important advantages will be secured, and may be here specially referred to.

First, a copious supply of wholesome water will be provided for a large and populous town, where most of the wells are brackish, and fresh water, in the hot weather, is only to be obtained in small quantities; and, secondly, an easy line of water carriage will be substituted for 45 miles of the worst road between the port of Masulipatam and the capital of the Nizam's dominions. And, coming fresh from the traffic laden canals, of the Godavery Delta, it is impossible to refrain from dwelling on the unmixed blessings of such a change in the means of internal communication.

121. It will perhaps be some time before the ordinary traffic of the country is put on the canal, but, as regards other interests, the change will be felt immediately. Not only is Masulipatam the arsenal of the Northern Division of the Madras Army, and of all the Military stations in the Deccan, and to the North of the Deccan that may be temporarily transferred to Madras, but it is also the port by which, from time to time, streams of European Soldiery must be poured into the Deccan, landing perhaps fresh from the climate of England, and called on, at present, to make their first march, under an Indian sun, over a road, that in the dry weather is the hottest as well as the worst part of the march, and in the wet weather is a swamp, that can only be traversed with the greatest difficulty. At the present time* a large body of recruits for H. M. 12th Royal Lancers are making their weary way over this road to Hyderabad; whilst a troop of the same Regiment has just passed through and embarked for service. If the canal had been open, these hundreds of European Soldiery would have been carried en mass to Bezwarrah, in a *single night*! and, at this season of the year, the boats might have taken them fifty miles, further, on their road, by the river. The boats that brought down the troop from Hyderabad for service, would have received, without their ever landing, the recruits now on their way inland; and thus these recruits would have accomplished 100 miles, and got over the worst part of their march, before they could be said to have fairly put their foot ashore, or been exposed for a moment to the thousand and one temptations that beset the young soldier on first landing. Whether as regards a supply of wholesome drinking water for a large town, now ill off in that vital respect; or the carriage of Military stores in addition to the ordinary traffic of the country; or the transport of the troops; it must I think be admitted that the Masulipatam, or "Bunder" canal as it is commonly called, will amply repay any reasonable outlay as regards these interests alone.

* Masulipatam, 5th Nov. 1858.

122. The present irrigated area in the Masulipatam portion of the Kistna Delta, is chiefly supplied from the Poolairoo, which is the irrigation channel referred to in para. 118, and, tradition says, was first excavated by a Hindoo Rajah many hundred years ago. At the first lock, about 12 miles from Bezwarrah, the canal, and the Poolairoo separate, and the Poolairoo, after passing through the Noozeed Zemindarry, trends nearly due East, and irrigating the country between the Colair and the sea, finally falls, after a winding course of 70 miles, into the Oopootair, which I have already described† as the salt water creek that divides the Deltas of the Godavery and Kistna, and connects the Colair with the ocean.

† Report on the Godvary, para. 12.

123. In the latter part of its course, the ridge along which the Poolairoo is carried, forming, as it were, the back bone of the Eastern Delta, tells, in the clearest terms, the geology of the country, and proves that it is the Delta of the rock lined Kistna, and not of the Godavery, that has chiefly formed the vast back water of the Colair—Nor has the labour been in vain. The Colair is no stagnant swamp. But aided by man's art, the sweetened waters, in the hot weather, are made use of for irrigation, and a large crop of rice is annually raised on the rich alluvial soil, which forms the shores of the lake and its islands.

124. Between the Noozeed Zemindarry and the Colair lake, the Poolairoo irrigates a fine tract of country, held direct of Government, and forming the Goodewada Talook. And two of the four villages, to be measured, were situated in this talook. In the first instance, in addition to one of the villages selected by the Engineer, both the villages selected by the Collector were situated in this Talook; but as I found, on my arrival, that there would be considerable difficulty, from local inundations in measuring one of these villages, which was Tamersa on the border of the Colair. Mr. Knox was kind enough at my request to change it, for one on higher land, in another Talook; and the two villages finally measured in the Goodewada Talook were Cowtarum and Dogypurroo, chosen respectively by the Collector and the District Engineer.

125. When I reached Bezwarrah on the 16th September, not only was it difficult from the general state of the country to ascertain with any exactness the precise limits of cultivation, but the greater portion of the first crop of rice for 1858-59 had then been planted; and it was consequently impossible to ascertain with any accuracy the extent to which this land had been similarly cultivated in 1857-58, with a view to comparing it, as had been done in the Godavery Delta, with the irrigation Returns sent in by the Tahsildars for that season. Whilst it was equally impossible to compare the area now under irrigation, with the Revenue Returns for the current revenue year, because those returns had not yet been drawn up. Under these circumstances, in order to carry out the orders of Government, it became necessary to compare the extent of the irrigated area for the crop now on the land, with the irrigation Returns for the similar crop in the past year, and to endeavour to correct the results as far as possible, by local enquiries as to what changes had been made in the current year; which was the course finally ordered by Government to be pursued, on my applying to Government for further instructions with reference to certain objections made by the District Engineer on this subject. The Government observed* that such a comparison would indicate to a certain extent the accuracy of the Revenue Returns for the past year; whilst the information afforded by the survey as to the present state of things, would give "some idea of the benefits derivable from the Anicut, as well as be serviceable to the Collector in the ensuing settlement."

* M. of C. 17th September 1858, R. D. No. 1274.

126. From the nature of irrigation there was every reason to anticipate, that the area irrigated in the past year would be irrigated again this year; but it seemed highly probable, if the extent last year had been much understated in the accounts, that the villagers would endeavour to conceal the fraud, and defeat one object of the enquiry, by asserting that there had been a great increase in the extent of this current year's irrigation; and I was glad to find, on visiting the villages, that, so far, there was no reason to believe the villagers had wilfully attempted to conceal the true extent of the irrigated area. No such statements were made; and, in the depositions which were taken at once from the several Curnums, they only gave such an increase as might reasonably be expected. On making the survey, it however was found that a portion of the land irrigated in the past year in one of the villages had not been irrigated this year; and, before deducting the alleged increase, this portion had to be added, to obtain the true area irrigated from the anicut in 1857-58, 1858-59.

127. In the Delta of the Kistna no separate irrigation assessment has been levied; but, on comparing in detail the results obtained by survey with the Irrigation Returns sent in by the Tahsildars, it will be seen that the irrigated area in each village is divided into two classes, according as it forms part of the area previously irrigable by means of tanks, old channels &c., or has now been irrigated with the aid of the Anicut, for the first time. Such a classification exists still in the Godavery Delta also, but, with one exception, I have there paid no attention to it, as the traces of the old irrigation have been completely effaced, whilst the extent of land actually irrigated, so greatly exceeds the area entered in the accounts, that

it was not necessary to consider how far the rates of assessment had been raised by previous irrigation; and, although it is still possible here to verify the classification to a certain extent; and, under the existing circumstances, I propose giving here the accounts, as they stand in this Delta; still, it seems to me, that, as regards the Joint Rent lands, the sooner these distinctive classes are swept away, the better. For two years the newly irrigated lands are exempt from any additional assessment, and for these two years the newly irrigated lands must of course be shown separately. That is necessary. But, when the two years of grace have expired, it is highly desirable, for obvious reasons, that the newly irrigated lands should be added to the area previously irrigated, and the whole should be assessed at the same rates and entered under the same general head of "the Irrigated area."—The distinctive classification, as shown in the Tahsildar's Returns will be given subsequently; and, in the following table, I beg to give the results obtained by a comparison of the general area, now under irrigation, as ascertained by survey, with the total extent of land shown in these Returns, as having been irrigated for the first crop last year in Cowtarum and Dogypurroo.

STATEMENT showing the results obtained on comparing the irrigated area as entered in the Irrigation Returns sent in by the Tahsildar for the first crop in 1857-58, with the irrigated area as ascertained by Survey, for the first crop in 1858-59, in the two undermentioned villages in the Talook of Goodewada, and District of Masulipatam.

Names of Villages.	Extent of Irrigated area according to the Tahsildar's Return for the first crop in 1857-58.	Extent of the irrigated area according to the Survey for the first crop in 1858-59.	Extent of land irrigated in 1857-58, tho' not in 1858-59.	Total area irrigated in 1857-58, and in 1858-59 for the first crop.	Stated increase in the irrigation of 1858-59.	Probable area of irrigation according to the Survey for the first crop in 1857-58 after deducting stated increase.	Probable extent of concealed irrigation for the first crop in 1857-58.	Proportion of probable extent of concealed irrigation to probable extent of area actually irrigated in 1857-58.
1	2	3	4	5	6	7.	8.	9.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Cowtarum.....	1,125	1,261·4	60	1,321·4	52	1,269·4	144·4	11
Dogypurroo.....	911	1,001	0	1,001	0	1,001	93	9
.Total...	2,036	2,265·4	60	2,325·4	52	2,273·4	237·4	20

128. From the above statement it will be seen that the extent of land actually irrigated for the first crop in 1857-58 over and above the area so entered in the Tahsildars' Returns was probably 11 per cent in Cowtarum and 9 per cent in Dogypurroo. The average therefore on the two villages was only 10 per cent; and, as it is not usual to alter the registered extent of land for any difference below 10 per cent of the *recorded area*, the difference, now ascertained, is almost the lowest that could be recognized under existing rules. The village of Cowtarum was measured by Mr. Ottman 2d Class Sub Engineer, and the village of Dogypurroo was measured by Mr. Wiffen, Asst. Overseer, by whom also, I may as well mention here, Cunkipad, the second village selected by the Collector had been previously measured; whilst Cuppalaiswarum, which made the fourth of the Kistna villages, was surveyed by Lieut. Beatty. In all four villages I understand that the survey was made with the prismatic compass, and that the results were plotted out by the officer who made the survey, but that the area was not calculated by these Officers. Their plans were sent to the District Engineer's Office, and the figures now given, are the results of the calculations made there on the strength of these plans &c. The general statement now given of Cowtarum and Dogypurroo is, I regret, somewhat confused, owing to the Cowtarum ryots having thrown out of cultivation, this year, a portion of the land irrigated last year, which is very much opposed to what might be expected; but an explanation of this may be more fitly attempted after showing the results of a comparison in detail, of the two villages, which I beg to subjoin.

COMPARISON in detail of the results, obtained by Survey, with the irrigation Returns sent in by the Tahsildar for the first crop in 1857-58 in the two undermentioned villages in the Talook of Goodewada and District of Masulipatam.

1	2	3								4	5
Name of Village.	Tenure of Land.	Assessment, and average per Acre, according to the Tahsildar's Returns, on the Area irrigated for the first crop in 1857-58.								Probable area irrigated according to the survey for the first crop in 1857-58.	Average per acre on the area probably irrigated according to the survey for the 1st crop in 1857-58.
		Extent of irrigation for the first crop, in land, irrigable before the Anicut was built.			Extent of irrigation for the first crop, in land, now made irrigable for the first time.			Total extent of irrigation whether in land, previously irrigable or only now made irrigable, by means of the Anicut.			
		Area.	Assessment.	Average per Acre.	Area.	Assessment.	Average per Acre.	Area	Assessment.	Average per Acre.	
		Acres.	Rs. As. P.	R. A. P.	Acres.	R. A. P.	R. A. P.	Acres.	R. A. P.	R. A. P.	Acres.	R. A. P.
Cowtarum.....	Joint rent	564	2,412 13 3	4 4 5	126	469 14 6	3 11 8	690	2,882 11 9	4 2 10		
	Inam.....	403	137 15 5	0 5 1	32	36 6 10	1 2 2	435	174 6 3	0 6 4		
	Total.....	967	2,550 12 8	2 10 2	158	506 5 4	3 3 3	1,125	3,057 2 0	2 11 4	1,269·4	2 6 6
Dogypurroo.	Joint rent	526	2,568 0 0	4 13 10	21	16 10 7	0 12 8	556	2,584 11 1	4 11 2		
	Inam.....	215	70 1 8	0 5 2	150	75 15 1	0 8 1	365	146 0 9	0 6 4		
	Total.....	743	2,638 2 2	3 8 8	172	92 9 8	0 8 7	914	2,730 11 10	2 15 11	1001	2 11 6

129. Owing to the measurements having only been made, in the manner described, for the gross area irrigated in each village and not so as to distinguish what portion of this area was held at the ordinary rates of assessment, and what portion under an Inam Tenure, I have been unable to test the Tahsildar's rates of assessment by the surveyed area any further than seeing what rate this area would give per acre on the gross total of Joint Rents, Quit Rents, and Water Rates; and I will not therefore swell this report by commenting at length on details, for which I possess no satisfactory data. It will be sufficient I believe, if I refer simply to the amount collected in either village on the Inam lands, which it will be observed is, in both alike, at the rate of Rupees 0-6-4 per acre.

130. In the village of Cowtarum the Inam lands paid Rupees 218 quit rent 7 years ago; and this quit rent gradually rose to 394 Rupees in 1855-56. It was the custom to estimate the crop on the land, and fix the quit rent for the year, accordingly. The quit rent was then on the crop. It has since been fixed on the land, and the rate of commutation varies, I am told, in different villages. What the Inamdars have gained by the transaction in this village, may be easily imagined, when I add that the commuted quit rent on the Inam in Cowtarum was Rs. 103 for 1856-57, and Rs. 92 for 1857-58, to which latter sum must be added Rs. 98 for such of the Inam lands as are reported to have benefited this year by Anicut irrigation; and we thus have these fortunate Inamdars of Cowtarum paying positively less than they paid, before the anicut was built. These particulars have been taken from a Statement which I obtained from the Tahsildar of Goodewada, shewing the gross collection in the two villages since 1850-51, and the results in Dogypurroo, as regards the Government, are not much better. The total quit rent in this village was 242 Rupees in 1850-51, and it is 233 Rs. in 1857-58. But here the transmutation of the quit rent to a money payment has not been attended with such marked results, as in Cowtarum, owing, I was informed, to an increase in the extent of cultivation, which had been duly brought to account in this village; and a water rate of Rs. 70 raises the total sum paid by the Inamdars to Rs. 303 in 1857-58, which is an excess of *Rs.* 58 in this village for the benefit of Anicut irrigation. What has been the effect of Anicut irrigation and what has been the sort of crops that this Anicut irrigation has given the Inamdars will be seen subsequently.

* Godavery Report. 131. In para. 71* I have stated that "the interference of the Tahsildar is still in full force here, (Masulipatam District) as regards the extent of each man's cultivation." And in Cowtarum and Dogypurroo it appears from the accounts, shown me by the Tahsildar, that the land cultivated in 1857-58 fell short of the quantity that, it is alleged, the ryots had agreed to cultivate, by upwards of 500 *acres*. Of this quantity 423 acres were to be cultivated with dry crops, and the assessment on this land was 485 Rupees. This sum, I am further informed, was duly collected, though the land had not been cultivated; and I believe this sum might very fairly be carried to the credit of irrigation; for, in all probability, irrigation was the cause of all pleas for remission being refused. Elsewhere a remission would probably have been made; and the peculiar state of things engendered here by the present Joint Rent system may be well illustrated by 60 Acres of this land, which the ryots, it is proved, had cultivated in the preceding year, and the ryots had agreed, it was said, to cultivate this year also; but which as I have already mentioned, had been left waste notwithstanding, and has in consequence swelled the details given in the first statement. The general nature of the Joint Rent system, in these Deltas, has been described * Godavery Report. in para. 24*, and its immediate effects have been cursorily alluded to in para. 112;* but what I ventured to assert in this latter para. must be a result of such a system, has here been proved to be * 13th November 1858 Appendix No. 1. a result. From Mr. Ottman's letter* to Captain Chambers forwarding the plan of Cowtarum, it appears that there were many ready to cultivate these 60 acres of irrigable land, if they could *only have got leave*. The land, the labour, and the water were all at hand; and *in a season of scarcity* the markets were actually deprived of 60 acres of rice in one single village, in compliance, with "a spurious right," that has no foundation, beyond its assertion and the theory of a Joint Rent responsibility; for which there is, happily, now, *no necessity whatever*.

132. STATEMENT showing the results obtained on comparing the irrigated area as entered in the irrigation Returns sent in by the Tahsildar for the first crop in 1857-58, with the irrigated area as ascertained by survey for the first crop in 1858-59 in the two undermentioned villages of Masulipatam.

Names of Villages and where situated.	Extent of irrigated area according to the Tahsildars' Returns for the first crop in 1857-58.	Extent of the irrigated area according to the Survey for the first crop in 1858-59	Stated increase in the irrigation of 1858-59.	Probable area of irrigation according to the Survey for the first crop in 1857-58, after deducting stated increase.	Probable extent of concealed irrigation for the first crop in 1857-58.	Proportion of probable extent of concealed irrigation to probable extent of area actually irrigated in 1857-58.
1	2	3	4	5	6	7
	Acres.	Acres.	Acres.	Acres.	Acres.	
Cunkipad..... Talook of Bezwarrah.....	469	988	374	614	145	28 per cent.
Cuppalaiswarum..... Zemindarry of Noozed.....	1,447	1,570	„	1,570	93	5 „ „
Total.....	1,916	2,558	374	2,184	238	10

It is only in one of these two villages that there is any approach to the results obtained in the Delta of the Godavery; and supposing the surveys here to have been tolerably correct, the local position of the village in question, will I think go far towards explaining the cause of this marked contrast. In Cunkipad where the extent of concealed irrigation, it will be seen, is nigh on 24 per cent, not only is the irrigation entirely new, but the ryots have also the advantage of cultivating on comparatively high ground. The village is situated on the ridge of the Poolairoo. On one side the land slopes down to the Boodomair, on the other, to the low levels round Goodewada; and thus this village is saved from the floods, which are probably one cause, why the extent of cultivation has been so accurately obtained by the Revenue Authorities in the other three villages. Another cause may be found in the fact that these other villages, which are all three situated within a few miles of Goodewada, have had the advantage of irrigation for many years

Q. 25

before the anicut was built, and consequently as regards two of them have been exposed, for as many years, to the scrutiny of the Revenue Authorities; whilst in the third village of Cuppalaiswarum, which belongs to the Noozed Zemindary, the Irrigation Returns are founded on measurements, which had been made a few months before, by native officials, deputed for that purpose, from the Collector's Cutcherry. In this latter village I understand that irrigation has now extended, as far as it can be extended with reference to the means of drainage at present available; and this probably is more or less true as regards the Government villages. With the exception of a few small channels, which are most of them above the Cunkipad lock, the irrigation is almost entirely in the old channels. These channels were, I believe, used in former days as channels of drainage and channels of irrigation, alternately. Hence it may easily be conceived that the advantages obtained by means of the Anicut, in the way of an increased supply are not unfrequently more than neutralized by want of an efficient drainage. An unexpected plump of rains upsets the calculations of the D. P. W., puts the whole country at once under water; and in all probability checks the spread of rice cultivation that might otherwise have been looked for. The average extent of concealed cultivation in those two villages, it will be seen, is the same as in the two preceding villages. In all four villages it is 11 per cent. And with regard to this general result obtained on testing the Tahsildars' Returns for these four villages, it only remains for me to bring respectfully to the notice of Government the position, in a pecuniary point of view, of the local officials, by whom these returns have been drawn out.

* Godavery Report. 133. In para 53* I have inadvertently made a mis-statement which I now request permission to correct. Writing of the village of Chittapet in the Talook of Ralinghy, I have stated, that, "in the Masulipatam District, however, no collections are made for village expenses. The village servants, employed for collecting the revenue, are paid direct from the Treasury &c." And this statement I made on the strength of the accounts then shown me by the Tahsildar of Ralinghy. In explaining those accounts, I understood him to say, that his statements held good for the whole District, and I reported accordingly. But on this latter point, I was probably misstaken; and, on going to Dogypuroo, I found that the village servants, employed in the Goodewada Talook for collecting the Revenue, were by no means paid direct from the Treasury. On the contrary, they are not near so well off as in Rajahmundry. There, they are secured in the realization of their honest dues, by those fees being collected in the same way, and at the same time, as the demand against the land on account of Government. Here, on the other hand, both in Goodewada and Bezwarrah, the village servants employed for collecting the Revenue, which include the village Curnums &c., are left to collect their own fees, and the result is what might be expected. The *legitimate* fees of these officials are withheld by the rich, and only wrung from the poor with more toil and trouble than they are worth.

Whilst on the subject I may perhaps be further permitted to draw the attention of Government to the case of the Tahsildar of Ralinghy, to whom I have already referred, and whose case is, I believe, by no means singular, though, perhaps somewhat stronger than that of any other Tahsildar in this District at present. From the description that I have given of the great change that has taken place in the state of that portion of this District, which is irrigated from the Godavery, whether as regards the results of the Anicut, or the fact that the land has lately passed, for good, under the direct management of Government, it will be seen that a corresponding change has taken place in the duties, and responsibilities of the various Talook Authorities; and I feel certain, that, to secure the immediate attention of Government, it is only necessary for me to mention, as an instance of the effect of the Anicut in this way, that the Ralingly Tahsildar is already responsible for the collection of nigh on a lac and a half of Rupees, and only receives himself fifty five Rupees! a month; which was probably fixed, very properly, as the pay of the Office, when his predecessor, for the time being, was a simple Officer of Police. And considering the great responsibility, which is now thrown on all the local authorities, in the irrigated Talooks, of either Delta, whether as regards the mere collection of the revenue, or still more the bringing to account, from time to time, the extent of land newly brought under irrigation, I sincerely hope that the Government will be pleased to issue orders on the case of these men, at once, and not postpone the consideration of the subject, till the District has been surveyed, and is ready for settlement. Under any circumstances the temptation to betray their trust must be very great, and it is scarce fair to expect the natives of this country to resist such temptation in the

hopes of seeing some day a suitable salary affixed to the Office they now happen to hold, but may be deprived of, before then. I now beg to show in detail the financial results of Anicut irrigation as shown by the Revenue Returns, in the two villages of Cunkipad and Cuppalaiswarum.

COMPARISON in detail of the results obtained by survey with the Irrigation Returns sent in by the Tahsildar for the first crop in 1857-58, and information received from the Collector, for the undermentioned villages in the District of Masulipatam.

1	2	3									4	5
Names of Village.	Tenure of Land.	Assessment and average per Acre according to the Tahsildar's Returns on the Area irrigated for the first crop in 1857-58.									Probable Area irrigated according to the Survey for the first crop in 1857-58.	Average per Acre on the Area probably irrigated according to the Survey for the first crop in 1857-58.
		Extent of irrigation for the first crop, in land irrigable before the Anicut was built.			Extent of irrigation for the first crop in land now made irrigable for the first time.			Total extent of irrigation whether in land previously irrigable or only now made irrigable by means of the Anicut.				
		Area.	Assessment.	Average per Acre.	Area.	Assessment.	Average per Acre.	Area.	Assessment.	Average per Acre.		
		Acres,	Rs. A. P.	Rs. A. P.	Acres,	R. A. P.	R. A. P.	Acres.	Rs. A. P.	R. A. P.	Acres.	R. A. P.
Cunkipad ...	Jointrent	0	0 0 0	0 0 0	409	1,184 6 0	2 14 4	409	1,184 6 0	2 14 4	0	0 0 0
	Inam '...	0	0 0 0	0 0 0	59	97 13 10	1 10 6	59	97 13 10	1 10 6	0	0 0 0
	Total...	0	0 0 0	0 0 0	459	1,282 3 10	2 11 9	459	1,282 3 10	2 11 9	614	2 1 4
Cuppalaiswarum....	Jointrent	0	0 0 0	0 0 0	459	0 0 0	0 0 0	0	0 0 0	0 0 0	0	0 0 0
	Inam ...	0	0 0 0	0 0 0	0	0 0 0	0 0 0	0	0 0 0	0 0 0	1,570	0 0 0
		0	0 0 0	0 0 0	0	0 0 0	0 0 0	0	0 0 0	0 0 0	2,184	0 0 0

134. From this comparatively brief statement, it will be seen that the whole of the irrigation in Cunkipad is in land now made irrigable for the first time by means of the Anicut, and the average per acre is Rupees 2-14-4 in the Joint Rent, and Rupees 1-10-6 in the Inam lands. Taking the consolidated assessment on the Joint Rent, and Inam lands and dividing this sum by the total area under irrigation, according to the Tahsildar's Returns, gives Rupees 2-11-9 as the average per acre without reference to the tenure of the land; and dividing this same sum by the probable extent of the total area according to the survey, reduces this average to Rupees 2-1-4. Thus reduced, this average is little below the similar average in the two Goodewada villages, which it will be remembered was Rupees 2-6-6 in the one and Rupees 2-11-6 in the other. And it is the extent of Inam land in these latter villages that occasions this otherwise incorrect result. Much of the land in Cunkipad has only been brought under irrigation this year, and, as the water rate is only imposed by degrees, it would obviously be contrary to rules, that the rates in Cunkipad should be as high as in villages, that have been irrigated for years. On reference to the tables, it will be seen, in fact, that the average consolidated assessment on the Joint Rent lands is upwards of Rupees 4 in both those villages, whilst in Cunkipad on the other hand, it is below Rupees 3 per acre. But on the Inam land, it will be further seen, the case is reversed. In the Goodewada villages the Inams only pay Rupees 0-6-4 per acre, in Cunkipad they pay even now Rupees 1-10-6 per acre. and thus the total result in this latter village, in which however there is comparatively, but little Inam, is much the same as in the other two.

135. With regard to Cuppalaiswarum, I have been obliged to enter these columns blank; and, from the accompanying copy of a letter from Mr. Knox*, it will be seen that this village is no exception to a general rule. It is on the contrary the general, indeed, the invariable rule as yet, that

* Appendix No. 2.

the villages held under the Zemindarry tenure pay no additional assessment for the benefit of irrigation from the Anicut; and, as the assessment is collected by the Zemindar in kind, there are no details forthcoming whatever, for this statement as regards Cuppalaiswarum. And I will now only add that the Zemindar is supposed to receive two fifths or 40 per cent of the gross produce.

136. In para. 130 I have referred to a statement which I obtained from the Tahsildar of Goodewada, showing the gross collections in the two Goodewada villages for the last 8 years. But it would be little use to follow the system I pursued in my Report on the Godavery, and give such a statement, however abridged for these two villages. There has only been a total increase in the gross collections in these two villages over and above what was so collected in 1850-51 of Rs. 900, which is less than 11¼ per cent. These villages are rapidly increasing in wealth with the aid of the Inam lands; whilst as yet, they show but little increase in the direct returns to Government. But in Cunkipad the case is different. I have already alluded to the large portion of the land held on the Joint Rent tenure; and I may here mention that most of this, that I have seen, is the best description of black cotton soil; and the following statement will show that, if the Cunkipad ryots have outrun the tax-gatherer, on the other hand they have thriven and their prosperity has materially swelled the Government demand against this village.

STATEMENT showing the total demand and outstanding balances from 1850-51 to 1857-58 against the village of Cunkipad in the Talook of Bazwarrah and District of Masulipatam.

1	2			3			4	5
Year.	Joint Rent Lands.			Inam Lands.			Total demand against the Village.	Outstanding Balances.
	Joint Rent.	Irrigation Assessment.	Consolidated Assessment.	Quit Rent.	Irrigation assessment.	Consolidated Assessment.		
	Rs. A. P.	Rs. A. P.	Rs. A. B.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	R. A P.
1850-51	2,230 5 8	0 0 0	2,230 5 8	335 4 9	0 0 0	335 4 9	2,565 10 5	
1851-52	2,309 13 0	0 0 0	2,309 13 0	295 3 0	0 0 0	295 3 0	2,605 0 0	
1852-53	2,348 13 0	0 0 0	2,348 13 0	295 3 0	0 0 0	295 3 0	2,644 0 0	
1853-54	2,458 13 0	0 0 0	2,458 13 0	295 3 0	0 0 0	295 3 0	2,754 0 0	
1854-55	2,621 0 0	0 0 0	2,621 0 0	295 3 0	0 0 0	295 3 0	2,916 13 0	
1855-56	2,621 0 0	0 0 0	2,621 0 0	295 3 0	0 0 0	295 3 0	2,916 13 0	
1856-57	2,586 14 2	135 6 0	2,722 4 2	295 3 0	1 13 11	297 0 11	3,019 5 1	
1857-58	2,680 14 11	539 4 6	3,140 3 5	295 3 0	64 14 10	360 1 10	3,500 5 3	
1858-59	2,601 0 0	2,328 12 6	4,929 12 6	295 3 5	472 5 10	767 8 10	5,697 5 4	

No outstanding Balances.

137. This statement speaks for itself. The total against Cunkipad on account of Government was Rupees 2,565-10-5 in 1850-51 and it was Rupees 2,916-3-0 in 1854-55. There was no Anicut, and in five years the total demand had risen some Rupees 350 or 10 per cent. By that time however the Anicut had been finished at Bezwarrah, and the total demand in the last four years has risen Rupees 2,781-2-4 or 95 per cent; whilst the assessment on the Joint Rent land, last year, was only Rupees 2-14-4 per acre, according to the Tahsildar's own measurements.

138. It will now perhaps be advisable to throw the four villages together and show in one General Statement the total area irrigated according to the survey, the proportion which the area returned by the Revenue authorities bears to these survey results; and the average per acre of the total irrigation assessment similarly obtained and tested.

GENERAL STATEMENT showing the total area probably irrigated in the four villages surveyed in the Delta of the Kistna for the first crop in 1857-58, the proportion of concealed irrigation to this area; and the average assessment per acre on the area irrigated according to the survey.

Names of Villages.	Area irrigated according to Tahsildar's Returns.	Probable area irrigated according to the survey.	Proportion of extent of concealed irrigation to area actually irrigated.	Total assessment on irrigated Area according to the Revenue Authorities.	Average assessment per acre according to the survey.
1	2	3	4	5	6
	Acres.	Acres.	Acres.	Rs. A. P.	Rs. A. P.
Cowtarum...	1,125	1,269·4	11 per Cent	3,057 2 0	2 6 6
Dogypurree...	911	1,004	9 „ „	2,730 11 10	2 11 6
Cunkipad...	469	614	23 „ „	1,282 5 10	2 1 4
Cuppalaiswarum...	1,447	1,570	5 „ „	0 0 0	0 0 0
Total.	3,952	4,457·4	11 per Cent	7,070 1 8	1 10 4

From this General Statement it will be seen that the total area irrigated according to the survey in these four villages was 4,457 acres and the proportion of this area not shown in the Irrigation Returns was almost the smallest error cognizable according to existing rules. But as regards the Revenue the case stands very different. In the three Joint Rent villages the average per acre ranges from Rupees 2-1-4 to Rupees 2-11-6, and on the whole area measured, it descends to Rupees 1-10-4, which at the highest is not a satisfactory average for irrigation. But this average, it is scarce necessary for me to add is not a correct average as regards the General Land Revenue. The village of Cuppalaiswarum, which is entered blank in the Revenue columns, of course contributes to the Land Revenue indirectly; and, as it has always been irrigated more or less, this village probably shows well in the Zemindar's rent roll. As regards the Anicut, on the other hand, the results given by these columns are strictly correct. Not a pice has this village or any other village in the Sullapillay Zemindarry, paid as yet for the enormous benefits that they have derived from the Anicut. And, although these benefits have been in some cases neutralized there, as in the Joint Rent villages, by want of drainage, still the equity of some return being made by the Zemindars *forthwith*, can scarce be denied even by the Zemindars themselves. And further delay on their part, to come to terms, may justly expose them to *demand in arrears*.

139. In my Report on the Godavery Delta I have given a second General Statement, showing to what extent the arable area has been irrigated, in the eight villages surveyed, with the agricultural stock and population. And had it been possible, I would willingly have given the same details for the Kistna Delta. But, owing to the time it has taken to survey the irrigated area only, I have not ventured to ask for further information, and may close this portion of the enquiry by referring to one very striking fact connected with the population of this Delta, which is so generally admitted, that I may state the fact without the authority of the census tables. It is universally admitted that large numbers of young men are being enlisted, and that emigration is going on into the bargain; whilst the crops can not be got into the ground for *want of labour*; and labour is better paid than probably in any other District in India. When the Public Works were stopped the pick of the young men were enlisted. And here is a hint for the future. What better nursery could there be for soldiers, than steady work, and regular hours under European superintendence? But passing by this important feature of the case, as not directly connected with revenue, the question still remains unanswered. Why did the pick of the young men enlist? when prices are very high; and there is plenty of land uncultivated; for which it has been proved, in one case, both labour, land, and water were ready. And why do the natives of this District still cross the sea for Moulmein, when there is more land than Tahsildars can get cultivated? I believe the price of labour at Rangoon and Moulmein is double the wages here, but that would scarce tempt a native to cross the Kalapawnee even under ordinary circumstances, and assuredly would fail altogether under present circumstances, unless there was something more than met the eye at first sight. I have already shown the

direct effect of the joint Rent system in depriving a scarce market of rice; and here, I believe is an indirect result of the same system. The pick of the young men, who enlisted, and the enterprizing labourers, who went across the water, were driven from the land by the Joint Rent tenure. It is well known that both in the Godavery and Kistna Deltas, the villagers are divided into the ryots, and their "Palairs", who are in the strict meaning of the word, "bondmen". By hook or by crook these bondmen have been bound hand and foot. Money has been lent them, or appears to have been lent them, in one way or another, to bury a father, marry a daughter, or adopt an heir to worse than nothing; and with the fear of these bonds hanging over their heads, these bondsmen are but little raised above the condition of slaves. The pick of the young men, who were at the Public Works, having once escaped from this bondage, enlisted sooner than return to slavery. Enterprizing labourers cross the sea, that they may escape from slavery; and whilst the joint Rent system lasts and he stays in his village, no Palair can free himself from this bondage. "The upper crust", if I may use the term, can hinder any village labourer from obtaining land in his own name. The joint responsibility flag is hoistened at once, should the Tahsildar, urged on by the Collector, attempt an attack. And it is easier to stop slavery in the Bight of Guinea, than free these men, not one of whom would give direct help as regards the Origo Mali, as regards the bonds; and every one of whom, till the matter was specially explained, would resent the interference of Government as an attack on their customs—perhaps on their religion, if skilful use was made of the occasion. And there are not wanting those, who would willingly give it such a colour if they could.

140. This system of bondage exists more or less in every District that I have worked in; and is said to be specially marked in Tanjore, which District I only know by report. And I firmly believe that this bondage, *this mitigated slavery*, cannot be grappled with successfully, save by indirect means, the nature of which will be suggested by the peculiar circumstances of the District in question. Here of course there is little room for doubt. Here the means are obvious enough. And I need scarcely add that the abolition of the Joint Rent system in the irrigated villages will be the death blow of bondage under the Anicuts. There will be no violent interposition on the part of Government. The Government will merely give to the deserving, the means of winning an independent livelihood, when they shall have shown themselves fit for the position, by honest labour, and the acquirement of so much capital as will enable them to take up land on their own account. The process will be, must be, gradual—for, however much the Palair may save, it must take sometime, before his savings or his credit can command a pair of bullocks; and thus there will be no grounds for complaint on the part of those, who might perhaps have some show of reason on their side, if the labour market were suddenly deranged on a large scale. What are the prospects of "the deserving", once emancipated, may be easily inferred. Neither is it mere matter of inference. For many of those, who were engaged some years back in the Public Works as heads of gangs, have since with the help of their European Masters, broken through the village exclusiveness; they have been followed by horsekeepers and others of that class; and even those men, who could have known next to nothing of rice growing before they commenced cultivating, are now well to do ryots. What then may not be the results of skilled labour. There can be no doubt surely of its success.

141. The facts now brought forward, apply, I believe, to the Godavery just as much as to the Kistna. There, however the population being more up to the mark, I did not notice the emigration and paid little heed to the enlistment, that was going on. *Here it was too

* Kistna Delta 22d January 1859.

stricking to escape the notice of the most careless; and I shall be truly glad, if I am so fortunate as to help in any way in so good a cause. The growth of sugar cane I have seen regarded, as a help towards putting down the slave trade *abroad*. Whatever may be the external results of Anicut irrigation hereafter, I will not attempt to predict. I will willingly content myself with having shown, as clearly as I can, how Anicut irrigation may put down slavery *at home*; which, I feel sure, will be equally acceptable to those who looked only to more distant effects; and the importance of this subject will, I trust, be held a sufficient excuse for the length of these remarks.

142. Though not contemplated probably in the instructions for the measurement of a "portion of the crop,"* I have nevertheless for the reasons given in paras. 70 and 71† taken upon myself to have measured a small portion of the broad cast rice cultivated this year in three of the Kistna villages; and I beg to give the results in the following table. In the fourth village no broad cast rice is reported as having been irrigated.

* Para 32 M. of C No. 329 Rev. Dept. 1858.

† Godavery Report.

STATEMENT showing the result obtained by measuring a small portion of the first crop sown broad cast in the undermentioned villages, in 1858-59.

1	2	3		4	5	6	7	8	9
Names of the Villages in which the experiments were made.	Description of the soil.	Produce of the crop per acre.		Value of the Paddy.	Value of the Straw.	Total value of the crop per acre.	Cost of the cultivation per acre including estimated value of Straw put back in Manure.	Government's demand per acre.	Net profit to the ryot after deducting the Government's demand and total cost of cultivation.
		Paddy.	Straw.						
		lbs. Avs	Bundls	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Cowtarum.	Tella Ravady.	476	$12\frac{1}{16}$	5 0 6	1 0 7	6 1 1	3 4 5	1 8 $6\frac{1}{4}$	1 4 1
Dogypurroo.	Tella Ravady.	754	$15\frac{13}{16}$	5 0 8	1 6 6	9 7 2	3 8 10	1 8 2	4 6 2
Cunkipad.		527	$24\frac{1}{2}$	5 6 4	2 0 8	7 7 0	4 0 6	1 3 4	2 3 2
Cunkipad.		859	$27\frac{1}{2}$	9 0 8	2 4 4	11 5 0	4 3 3	1 3 4	5 14 5
Average.		654	20	6 15 11	1 11 0	8 9 0	3 12 3	1 5 10	3 6 11

143. The high prices of last year continue to rise; and the grain dealers at Cowtarum and Dogypurroo, (the party in that line at the former place being a well to do ryot) told me that the black rice sown broad cast, which they bought last year at Rs. 13, and Rs. 14, per Masulipatam Pooty, would this year, they expected, fetch Rs. 16; and this rate has been adopted in the above calculations, which have been made in strict accordance with the views, I ventured to put forward in para 102,* The cost of cultivation, exclusive of the value of the straw put back into the land, has been taken at half the estimated cost of transplanted paddy, or Rs. 2-8 per acre. And it will be observed that the average gross profit per acre is Rs. 8-9-0. and after meeting the expenses of cultivation and paying the Government's demand which on the average is Rs. 1-5-10, the net profit to the ryot is similarly Rs. 3-6-11 per acre.

* Godavery Report.

144. The broad cast crops in Cowtarum and Dogypurroo were decidedly below the general average. The soil of Cowtarum is sandy, and Dogypurroo is not much better. In neither of these villages is the land favorable for a good specimen of broad cast. But these were the villages selected for measurement as regards the irrigated area; and, if I had not been thus guided in my choice for the crop, there are not wanting good reasons for a similar selection under any circumstances. It is more important that Government should know the average yield of poor land, than the lucky results of a lucky coincidence of fortunate circumstances. There is generally a wider margin left for error in the assessment of the rich, than of the poor land. In the one case the chances are that the crop will be under-estimated; in the other that it will be over-estimated. On the rich land the error will probably be a rather too free increase in the gains of industry; whilst an over estimate on the poor land is a dead loss to Government and death to the ryot. I myself have this year seen far finer specimens of broad cast rice than those given in the preceding table; and, on the good lands that line the Gundeekodoo, near the town of Goodewada; the average yield this year of the broad cast, much of which had been evidently helped from the channel, would probably fall little, if at all, short of transplanted paddy. And Captain Greenaway informs me* that a field at Ogidy in the Godavery Delta, which he was good enough to have measured, at my request, gave a yield of 1,808 lbs. This was more than a Pooty and a half, Rajahmundry measurement. "It was Yerradum or black rice, sown broad cast, irrigated occasionally with the Anicut water." And Captain Greenaway further informs me, "acknowledged by the ryots to be a fair average crop." Another field similarly measured at Chittapet* by Mr. Harris, the Delta Superintendent, gave a yield of 1,716 lbs. of white rice sown broad cast. The gross value of the paddy and straw is given in Ogidy at Rs. 28-14, and in Chittapet at Rs. 27-4-11, per acre, according to the existing prices.

* 3d Dec. 1858.

* Paras. 51 and 70.

145. And here it would be as well to refer to the differences, which exist in the measurements of capacity and superficial area, between the two districts of Rajahmundry and Masulipatam, and in the two Deltas of the Kistna and the Godavery; indeed, I may add, in the villages also. The Masulipatam Mullika Pooty is larger than the Rajahmundry Mullika Pooty; the two Coontsums differ similarly, and there is a like discrepancy between the land measurements in the two districts. But I have got over this difficulty as regards the crop, by giving the weight of the paddy. Whilst, as regards the land, Mr. Knox was kind enough to give me the irrigated area in acres in Masulipatam, where the different standards of measurement are still observed in the different villages; and, in Rajahmundry, I had no difficulty on this score, as eight acres is every where the officially recognized standard of commutation. In the Western Delta of the Godavery, where the two districts border, there was, I believe, in former days, an approach to the Masulipatam scale, and these local peculiarities will form one very troublesome item in the calculations of the Inam Commissioner: but, as regards the existing state of things and the limits of this enquiry, the official Pooty of eight acres was the only Pooty, I ever heard alluded to, in any of the Rajahmundry villages which were measured. Even in discussing the lunka* rates of assessment, the Tahsildar and village authorities took the Pooty at its official value; and the official rate of commutation was therefore adopted by me for the Rajahmundry District without hesitation. Eight acres was the value at which it was meant I should, and it was the value at which it was known by the local authorities that I did take the Pooty in Rajahmundry. And having found the result thus obtained manifestly false, and in favour of these local authorities and the ryots, I entered the error as wilful on their part. I entered the area, irrigated in excess of the irrigation Returns, as so much "concealed irrigation."

* Report on the Godavery, para 43.

146. When these experiments were made, I expected to be able to send in this report about the beginning of December; but finding that the Survey returns of the last two villages would not be forthcoming much before the middle of the month, by which time the harvest would be on, in the Delta of the Godavery, I applied for permission to return there, and complete the enquiries ordered in Minutes of Consultation of the 12th March 1858, by measuring a portion of the transplanted rice in each of the 8 villages surveyed. The required permission was granted; and, as I did not finally receive the surveys, above alluded to, till the end of last month, it then seemed better to incur some further delay, and send in my report on the Kistna, at the same time as the additional report on the Godavery above referred to.

147. My orders in the first instance were to select, in concert with the District Engineer, what might seem a fair average of the crop on the ground, which, it would have been possible to accomplish satisfactorily before this, for both Deltas, had my enquiries been limited under these subsequent orders to the surveyed villages. As it is, however, the enquiries, which I am now carrying out, embrace a much wider field. In my application to Government I ventured to offer my services towards drawing up, in addition to the Special Report previously ordered, a General Report of the general results of Anicut Irrigation up to this time in the Delta of the Godavery. And, the Government having been further pleased to accede to this request likewise, I have examined the first crop of transplanted rice for the current season in as many villages as time would permit in the Delta of the Godavery. And, leaving that Delta, when the harvest had nearly come to an end, I have pursued the same course here.* There it was with the object of obtaining as much information as possible for the General Report. Here I have had in view the possibility of Government's finding it advisable to make at once definite agreements for 8 or 10 years at least, for the irrigation of the great Zemindaries of Noozeed, Sullapillay, and Wulloor. And, thinking that in such case, all reliable information of this nature would be of much value, as furnishing data for so important a step, I have not confined myself to the experiments, which I could make personally, but I have also requested the assistance of the Department Public Works in the Kistna Delta generally, and have further applied to Mr. Ballard, the Deputy Director of Settlements, as I had to Mr. Master in the Godavery Delta, for some hundred experiments, which I understand have been made by his Department in the lands held direct of Government, and lying just along side of these Zemindaries.

* Kistna Delta 17th Jany. 1859.

148. This extra information will, I find, however, take some time still to receive and arrange sufficiently to permit of its being forwarded for consideration; whilst the requisite Revenue returns for the General Report on the Godavery have not been received as yet from the Collectors of Masulipatam and Rajahmundry; and I have therefore determined to send on, without any further delay, this Special Report on the Kistna, and give the whole of the measurements of the first crop just cut, as an appendix to the General Report on the Godavery; which arrangement will not only keep this special report to its proper character, and give the result of these subsequent enquiries in a more satisfactory shape, but will also enable me to submit for consideration at once, certain facts, that I would respectfully urge, require immediate attention. And to these facts I shall beg leave to append my remarks on the subject of irrigation generally, as well as what it seems to me, both the tenure of the land and the local position of the Zemindaries alike prescribe as the course to be pursued in raising an Anicut irrigation assessment on the three Zemindaries above referred to.

149. Before then entering on this important subject, I would first respectfully beg leave to pause a while, and refer again, as briefly as I can to the internal communications of this Delta, for which I propose to claim an immediate, and I trust favorable consideration.

150. In para 125 I have alluded to the general state of the country when I arrived at Bezwarrah; but at the time I wrote, that is to say, nearly two months later, my personal knowledge of the Delta was confined to the immediate vicinity of the Anicut itself; a sort of oasis, lucus a non lucendo, at Goodewada; and the roads of the Cantonment at Masulipatam, whither I had been obliged to go from severe sickness. And I trust to be able to prove that this want of information was owing to no fault of my own. In a preceding para. (121) I have observed that it will probably be some time before the ordinary traffic of the country, is placed on the Bunder Canal, which, I may as well mention, is now opened, (January 17th) to within 10 miles of the port of Masulipatam, and it was with deep regret that I came to this conclusion. It is with equal pleasure, that I have since heard, how this noble canal might be easily placed in direct connection with the shipping of the Godavery, and thus at once provided with the required means of transport, and at once made available for the ordinary traffic of the country. The Boodomair only requires some four locks, and *a junction canal is in our hands.* And the importance of this junction seems such, as would justify my going out of my way to bring it forward.

151. The Boodomair in the Kistna Delta corresponds pretty nearly with the Waiyairoo in the Godavery Delta. Both were apparently in the first instance outlets of their respective rivers; both were apparently silted up as the Deltas grew; both were apparently cut into, and, in subsequent ages connected with their parent rivers for irrigation purposes; and both, finally, not only transmitted this artificial supply down their time worn channels, but also received severally the drainage of subsidiary basons at the head of their respective Deltas. In the Godavery Delta the drainage, which I have thus described, has been made thoroughly navigable by two locks and some miles of embankments. And in the hands of the skilful Engineer, the very defect of the old drainage line has been made a blessing to the country, instead of a curse; whilst in the Delta of the Kistna nothing has been done to the sister drainage. And as this marked contrast is owing, I believe, to the different theory acted on in the Kistna Delta, I had better perhaps describe what I understand this theory to be, and illustrate its results by the state in which I found the country on my arrival at Bezwarrah, on 16th September last.

152. I understand that it has been the principle in the Kistna Delta to do every thing *first rate.* Existing advantages have doubtless been turned to good account, when first rate results could be obtained; but, if first rate results could not be obtained, first rate natural advantages have apparently, been ignored, without benefit of clergy. And when I arrived at Bezwarah, I saw the commencement of a superb canal, and was told that the country was next thing to impassable. Subsequently I descended this canal for 22 miles, the length of canal then open, to where it ended, abruptly, in some paddy fields; and the line of canal and the lock at Cunkipad was all first rate; but, as regards my movements, at the time in question, neither lock nor canal was of any use whatever; and I therefore enquired what else could be done. The first village to be surveyed lay between Goodewada and Masulipatam; and the reply was that I might get to Masulipatam, with bearers, in 22 hours, if the rains held off, and the forty-five miles of mud, and sand had time to dry; and I might get to Goodewada by a circuitous route, if content to go there in a palankeen. Thither I had sent my tents and servants by the Waiyairoo, which forms the bed of the Akeed

Para. 11 Godavery Report.

canal,* and the Colair lake; and thither I therefore arranged to go, notwithstanding a letter to Captain Chambers, from Mr. Ottman the Executive Engineer, in which a graphic description was given of his having heard a rustling noise a morning or two before, and, on looking out of the window, having seen a flood from the Boodomair pouring far and wide over the rice fields in front of his house. On arriving at Goodewada, as might be expected, I found neither servants nor tents. I found only my horse, which my horse-keeper informed me, that he had saved with difficulty, though he had followed as closely as the depth of water would permit him to judge, the high road between Ellore and Masulipatam. And, after making my breakfast on a loaf of bread that I had luckily brought with me and that luckily had not been, like my tea, drenched, in crossing one of the many streams we had had to ford, I set out for Tamersa, the village to which I have already referred at para. 124. I was determined to see the end of it. I had been told that the country was next to impassable, and I had found it so. I had been told that it was impossible to survey Tamersa; and I wished to see whether it was. And a few hours more proved to my entire satisfaction, or rather dissatisfaction, that this also was equally a fact. The distance between Goodewada and Tamersa might be perhaps in another country an hours walk. I should be sorry to say how long it took me to go there with a full set of bearers. To the village I never got. It could only be approached by a boat; and I did not feel that there was any necessity for trusting myself to the hollowed palmyras that conveyed the villagers and the traffic of the village to their rice fields and the main land. And to get to these rice fields I had to run the gauntlet of two torrents. Twice, if I remember right, my palankeen was poised on the heads of the bearers; and, as I watched them struggling chin deep against the stream, which was running like a mill sluice through the paddy fields, I made myself ready for a swim, should the stream prove too much for them. This will, I well know, seem an exaggerated picture. But I believe I am not singular in my experiences; and though I never had again so much difficulty, and took care, in future, to provide rafts before hand, where requisite, still, as regards the general state of the Delta, from the end of July to the beginning of December the above description is no more than a correct account of what I have seen with my own eyes this last Autumn. And when it is considered that the traffic of the whole Delta is thus locked up for five consecutive months, I trust that I shall be held excused for going into these personal details to make the true state of the case as clear as I can. Entering the Delta with official rank and helped forward by both the Revenue Authorities and the D. P. W., if I had to fight so hard to make my way with a light palankeen, what chance has the ordinary trader of struggling thro' with bullock-bandies and goods? And when I think of the 22 miles of a first rate canal, it seems as if I saw a first rate locomotive waiting for its rails and rail way, amidst the swamps, and corduroy roads of the back woods of America.

153. My tents and baggage, I found it impossible to get to Goodewada from the boat which had brought them and was lying some five miles off in the Boodomair. If I had got them, to say nothing of the expense, I should have seriously interfered with the agricultural arrangements of the ryots of Goodewada, who were then putting out, a good month too late, the last of this season's rice crop; and, finding the Boodomair could be navigated, I finally sent the boat up to Bezwarrah. It was a big boat of some 15 tons which was bigger than I required but was the only boat I could get, when I left Rajahmundry; and I paid for the transport of my tents &c. from Rajahmundry to Bezwarrah 30 Rupees, including the detention at Goodewada. This sum, I may here mention, the Civil Auditor refused to pay, as part of my travelling allowances; and I only mention it, as showing to some extent what are the difficulties to be encountered in ascending the Boodomair, which not only winds a good deal, but has at present a fall of forty feet in as many miles, being the distance from Bezwarrah to the Colair. And if, in spite of these difficulties, boat men can still be found willing to make the attempt; and I found other Godavery boats lying at Bezwarrah, what might not be expected, were Government pleased to sanction the improvement of this navigation by four rough and ready sloped bank locks, such as are used on the Nursapoor canal, and only cost about 8,000 Rupees a piece. Or, if the floods of the Boodomair rendered more substantial works advisable, I would still earnestly urge this most important subject on the favorable consideration of the Government. According to the plans submitted as yet for the consideration of Government, there is, I believe, to be no canal to open out the country between the Ellore high level canal, when finished, and the Bunder Canal, also when finished; and, whatever first rate scheme may be approved of hereafter, for this object, surely the present time is too precious to be lost.

The instantaneous development of agricultural prosperity will amply repay any reasonable outlay, and, perhaps, will necessitate the execution of more theoretically correct works hereafter. And what will be the immediate development of traffic on this despised drainage, may be inferred from last month's Register at the last lock on the Akeed canal above the Colair. The December Register shows that, 336 boats and rafts passed through the Perrimilla lock during that month; and, of this number, 128 boats were either from, or bound to the Colair. In December the water in the Boodomair was very low; and of the 128 boats that entered the Colair, only 1 boat was going up to, and 4 were returning from Bezwarrah by this route. But in the two previous months there had been 34 boats up the Boodomair; and, in the quarter, the total traffic in the Godavery Delta, on the drainage that corresponds with the despised Boodomair, as shown by the Perrimilla Register, was no less than 1116 barges, 14 paddle boats and 17 rafts of timber and bamboos! Finally I would respectfully point out that whilst the high level canal from Bezwarrah to Rajahmundry will furnish, when finished, a direct line for the rapid conveyance of the mails and passengers during the wet season, so in the dry weather, when it is supposed that reservoirs will be required to keep these artificial canals navigable, and the ordinary roads could be turned to better account as regards speed; then these natural drainage lines, could be made available, if once put in proper order for the transit of heavy goods, without a six pence of additional expense.

154. Neither is the Boodomair a singular instance of the difference in the results to be seen of the different system pursued in the two Deltas. When I arrived at Bezwarrah and found a noble canal, useless for the purposes of traffic, at that very time, down the seventy odd miles of the Poolairoo, this very canal was pouring a stream, that could have floated with ease the boat that brought my tents from the Godavery. A lock at the head of the Poolairoo, which leaves the Bunder canal just above the Conkipad lock, would have made the Poolairoo available for navigation for miles. I should have been able to sail down the Poolairoo in a single night to Cowtarum and Dogypurroo, instead of being obliged, subsequently, to send on, *over night* and have a raft prepared, to enable me to cross this Poolairoo in comparative safety, on my way to the survey of these two villages. And the Acting District Engineer, I believe, is anxious to have such a lock built at once.

155. When I heard that the Boodomair might be turned to good account, like the Waiyairoo, and was to all intents and purposes a ready made irrigation canal, I requested the Acting District Engineer to be kind enough to give me, if convenient, his opinion of such a scheme, with a rough estimate of its pro- bable cost &c. A copy of the Acting District Engineer's reply* dated 11th instant and received after writing the above remarks, I beg to annex. The Acting District Engineer is of opinion "that such a project is not at all necessary and likely to prove very injurious; as the attempt of damming "up drainages, especially those that carry off hill torrents for the most part is. The way to communicate "between the Colair and Bezwarrah at all times is by the High Level Channel which should be connected "(beyond its junction with the Godavery water) with the lake by a *flight of locks*."

* Appendix No. 3.

156. And I have no doubt, that, scientifically viewed, the Acting District Engineer's opinion of the way to communicate between the Colair and Bezwarra is most correct. "A flight of locks" would doubtless be a first rate means of communication. But, as the flight of locks would, I fear, involve an expenditure, that is little likely to obtain sanction under present circumstances, and for reasons already given, I cannot agree in the opinion "that such a project (navigation of the Boodomair) is not at all necessary," I would respectfully submit for consideration, whether it is not desirable, that an inferior scheme should be carried out in the meanwhile; if the injury which the Acting District Engineer apprehends might be the result is not so serious, and imminent, as to outweigh the great advantages of opening out the Delta at once, instead of waiting till the Government is prepared to sanction such an expenditure on Public Works, as the flight of locks would require. Doubtless the hills come much nearer to Bezwarrah than Vigaiswarum; and I can easily conceive that the Boodomair is called on to carry off floods, that are unknown in the Waiyairoo. But, on the other hand, even when sanctioned and finished, "the flight of locks," which the Acting District Engineer proposes, would leave the whole tract of country on either side of the Boodomair utterly unprovided with water carriage. And I would fain believe that straightening the channel of the Boodomair for navigation, which the Engineer refers to as increasing the expense, would also increase the drainage powers of the Boodomair, and that the Boodomair by skilful management might be made a decent navigation canal, without becoming more inefficient than it is at present, as a drainage. Perhaps the alterations might improve the drainage. When the rains set in there is now neither roadway nor waterway for the local traffic of the Delta. This dead lock on the local trade is, I believe, as injurious to the revenue as to the ryots and traders. And as I have been informed, by one well qualified to speak on such subjects, that the Boodomair might with safety be made navigable, I trust, I shall be excused for submitting these remarks for consideration, notwithstanding the unfavorable opinion given by the Acting District Engineer.

157. I now beg to offer a few remarks with regard to the best method of levying an irrigation assessment. And I propose to illustrate the conclusions, at which I have arrived, by referring briefly to the village of Gundraidoo in the Delta of the Godavery, and the Zemindary of Noozeed in the Delta of the Kistna.

158. In para. 18 of M. C. under date the 12th March last, the Government has finally condemned the system of taxing particular products; and there is therefore no need for me to swell this report, by entering into the vicious details, which have been fostered by a different policy, and must, I fear, continue to disfigure our revenue system, more or less, till finally swept away by the General Survey and Settlement. I shall confine these remarks, as near as I can, to the broad principles that present themselves in dealing with the irrigation of a new country on a large scale; and I shall only touch on details sufficiently to show how existing rights may be duly recognized, whilst securing to Government a fair return on the capital by which this new irrigation has been created.

159. In one respect it is however necessary that I should refer at length to the existing system. The value of water and its corresponding assessment is, at present, an anomaly in the laws of trade. The value of water is highest, when there is a down right scarcity of the commodity. It is highest, when the South West monsoon is in full force. It is lowest, when, in many localities, men and cattle actually want water to drink. And it is impossible to say, now, with any certainty, whether this anomaly will not continue under a more enlightened policy. The fact is, that the Assessment is fixed at present entirely with reference to the value of the crop irrigated, and it remains to be seen whether the removal of unwise restrictions and a free agricultural development will change so materially existing arrangements, as to give water in the hot weather, even the same value, that it possesses in the cold weather, when it can be used during the S. W. Monsoon for the irrigation of the principal rice crop. The value of the crop irrigated must always be one of the chief data in fixing an Assessment, so far as a standard is concerned; and it will probably depend much on the state of the country, its wants &c. and the nature of the soil, how far the intrinsic value of the water becomes an equally important element in the calculations.

160. When the rate of assessment has been fixed with reference to the value of the standard crop, to which it may be applied, the next step, naturally, is to measure the land on which that or any other crop is grown, and calculate the total amount of each man's assessment by the number of acres he may have under irrigation. It is the course, that has hitherto been pursued, as soon as the fiscal arrangements rise above the rude contrivance of sharing the produce; and it is the course, which, it seems to me, should be pursued in future for the principal crop, wherever the land is held by the ryots direct of Government. I believe it has of late been laid down authoritatively, that the quantity of water, supplied for irrigation, should be measured and a water rate fixed accordingly. But it seems to me that such a theory sacrifices a valuable right. The irrigability of land is as much a part of the state assets, as the fertility of the soil, and, in fixing the assessment on the land, it is the bounden duty of a Settlement Officer to take this most important feature into full consideration. It is further necessary as a matter of Police, for, stealing water as considerably easier than stealing land; and it is only by measuring the land that the interests of the state can be effectually guarded. In fact the general interests of Government demand that an irrigation assessment should be fixed invariably on the land, wherever it is available for irrigation; and the commutation of this Assessment to the more easy system of measuring the water is only justifiable, where land is held on a large scale under the Zemindarry tenure &c., and there too, the principle is still retained. The ryots' hold of the Zemindar with reference to the irrigability of their land, and not with reference to the quantity of water they consume. The change regards Government alone; and it is simply made to save the Government the trouble of watching the numerous petty alterations, that yearly take place in the extent, and distribution of the irrigated area, just as all the lands cultivated and occupied by the ryots were lumped and made over to Zemindars in 1802, to save the Government the trouble of

collecting the general land revenue on a number of small holdings. The valuable quality of the irrigability of land has never yet been lost sight of *in this Presidency*.

161 The right to take advantage of the irrigability of land, not only rests on the established custom of the Country, but, I would respectfully submit, is in strict accordance with the laws of equity, and a fair regard to the interests of the ryots. I would invariably fix an irrigation Assessment on the land for the first or more valuable crop. But it is doubtful whether the principle should be pursued further; whether the Second Crop should be subjected to the same rule; and, indeed, it seems to me, that it should not, wherever irrigation is carried out on a large scale, and there is an establishment equal to the duties entailed by a different system of management. For water is comparatively scarce, when the second crop is grown. Raising an irrigation assessment at such a time with reference only to the extent of land under irrigation, and making rice cultivation the universal standard, legislates inevitably for a lavish expenditure of the water. And, so long as this system is maintained, the only way to escape the profuse consumption of valuable water, involved by the cultivation of rice, inferior in yield and quality to the first Crop, is to abandon the golden rule of *one standard*; recognize the old distinction of Crops; and continue a bonus on fraud, that has now happily been condemned by the Madras Government. A choice of evils, which even if still open, would clearly indicate the necessity for another course of action, wherever possible.

162 A long and careful consideration of the whole subject has led me to believe, that in fixing an irrigation assessment, the true policy is, to fix the assessment on the land, for the first, and on the water, for the second crop wherever the irrigation works are on such a scale, as in the Deltas of the Godavery and Kistna. I would measure the land, for the first or more valuable crop, to secure the just rights of Government, as well as to avoid the immense frauds, that the opposite course would involve, where we find the land much subdivided, and, I would add, every principle of justice forbids our altering arbitrarily existing rights. And I would measure the water for the second crop to protect similarly the interests of Government, by guarding against the waste of valuable water, as far as legislation can do so; and to secure further, as far as possible, the best interests of the ryots and the Government, by encouraging the utmost possible economy of the precious fluid, and the cultivation of all those vegetables and condiments &c., that form so large a portion of the daily food of the natives, and can be grown in most places with a tenth part of the water required for rice.

163. When there is comparatively a small supply of water, and a large extent of land capable of being irrigated, it is most desirable that every inducement should be held out to the ryots to economise the water—whether employed in the cultivation of the second crop of rice, or any other produce. And it is most probable, that, instead of growing an inferior rice, the ryots, if they paid for the water, would make the same quantity of water serve for ten times the extent of land, by growing, where the soil permitted it, garden produce, such as chillies, onions, termeric, tobacco &c., besides the second crop of oil-seeds and other grains, for which it is only necessary to *wet* the ground, perhaps once in fifteen days. It is therefore no exaggeration to say that for every acre of paddy, 10, perhaps 15 acres might thus be brought under cultivation in the hot weather; and under the present system these additional acres must either be locked up by an indiscriminate charge on all irrigated land, as if it were cultivated with rice, or else, as mentioned before, an unlimited opening for fraud must be furnished to those who are none too scrupulous by admitting the distinction of crops. The measurement of water would sweep away both difficulties, and, from the comparatively limited quantity of water available for the second crop, it would be easy to check frauds to any great extent in its measurement; whilst the very fact, that gives this power, is itself the strongest reason for introducing the change.

164. If the water were sold by measurement, in a short time, in fact, as soon as the ryots were convinced that the land was no longer to be measured, ten or fifteen times the area cultivated with rice, would be annually brought under irrigation for the second crop. A premium would be offered for skilful husbandry, instead of for fraud; and the economy, instead of the waste of water, would be directly encouraged. The water would be trickled over the country by the drop, instead of being slushed six inches deep over patches of inferior paddy. And not only would all classes benefit by the increased supply of wholesome food, but a vast demand for labour would thus be provided for the agricultural classes, precisely when most required. I would therefore strongly urge that the assessment for the second crop in the Deltas of Godavery and Kistna should be fixed on the water, instead of on the land; and I believe that the change might be made without any difficulty. If it were determined that the change should be made, and that the irrigation assessment should no longer be fixed on the land for the second crop, it would be necessary to fix the limits of the time to be allowed for the first crop; and it would probably be found that a period of six and a half months commencing on the 1st of July, the commencement of the revenue year, and ending on the 15th of January, would give ample time and opportunity for the cultivation and irrigation of the first crop in both Deltas. For this six and a half months, so long as a sufficiency of water is forth-coming, the only stint on its supply, should be the wholesome restraint referred to in para. 89 of my report on the Godavery. The ryots should not be allowed under any circumstances the use of more water than is required for honest irrigation. But for the second crop, that is to say, from the 15th of January to the 1st of July every cubic foot of water that is led on to the land, should be paid for as such, and no consideration should be allowed to affect the rules laid down on this point. The ryots should be made to understand thoroughly that on this point there is no appeal.

165. I am informed that in the Delta of the Kistna no second crop is grown at present, under direct irrigation from the river. It will therefore take sometime perhaps for the Kistna ryots to change their views and customs in this respect. But the advantages of the change in a pecuniary light will be so manifest that I expect that custom—even "Mamool," will soon give way in this instance; and nothing is so likely to produce this desirable change in the agricultural system, as the proposed change in the fiscal system.

166. There would be no necessity for the D. P. W. to carry the measurement of water, by the foot, down into the minute subdivisions of the ryotwar tenure. The total supply for each village would require to be measured, but, in the internal distribution of the supply, the system of horary measurement might be introduced; if you may so speak of what is already well understood, and is, in truth, the genuine native method of sharing the water under the present revenue system. It would simply be necessary for the D. P. W. to measure the water in comparatively large quantities for the several villages; and, for this purpose, I would not propose the erection now of any expensive works. In the first place nothing is known with certainty as to the quantity of water really required for the different crops, or even for the second crop only, with reference to different soils. And it would therefore be wiser to wait on this account, till a series of rough measurements have laid the foundation for more precise information on this all important subject. And, secondly, all the main channels, and most of the minor channels, will have to be enlarged, in all probability, as irrigation extends, and the measuring apparatus, that may be built now, would thus have to be pulled down, and rebuilt hereafter; if we would preserve that evenness of outline, which is so desirable in works of irrigation. The consideration of the precise nature of what would be required, to carry out the proposed end, belongs, however, more properly to the Department of Public Works, and I would now briefly refer to the village of Gundraidoo in the Godavery Delta, to illustrate my meaning in the preceding remarks more clearly.

167. Gundraidoo* is close to the Chintapillay lock on the Cocanada canal, and about 20 miles from the head sluices at Dowlaiswaram. By the aid of this lock, and the accompanying weir the level of the water has been raised 10 feet above the level of the Thoolia Bagha, by which the village was formerly irrigated. And this improvement thus doubled the irrigable area of the village.* In round numbers, there were formerly 400 acres, there are now 800 acres, under irrigation. Now the theory of a simple water rate would allow those, who occupy these 800 acres, to take the water as they like—take it to-day, stop it to-morrow. But a vast amount of public capital has been expended on these improvements; and I would respectfully maintain, that such liberty, to begin with, is incompatible with the safety of the public revenues. The State has further a fair and just right to share in the irrigable value of the land—to share in the enhanced value given to the land by these great works, whether the water is taken or not. And to adopt a simple water rate, is simply to ignore, to sacrifice, a valuable right. Where land, in occupation, becomes irrigable by an outlay of the public money, I would not for a moment consent that its irrigation should be made compulsory, that the holder of the land should be compelled to undertake the additional expence of wet cultivation and the additional liabilities of an irrigation assessment, whether he wished it or not. Such a course would be a direct infringement of the rights of private property, that no considerations of public or eventually, private good could ever justify. But I do think that the Government can fairly and justly demand in such cases, in defence of the public revenues, that water once taken, should be taken always; there should be no mere

* Godavery Report Para. 17 &c.

* Report on the Godavery Para. 25.

water rate,—no fast, and loose—but irrigable land, once irrigated, should be forthwith included in "the *irrigated area*," and, so long as occupied, paid for accordingly. Similarly I would maintain that unoccupied waste made irrigable by an outlay of the public capital, should only be handed over for occupation and cultivaton, at an irrigation assessment; and so far as the first or more valuable rice crop is concerned, all lands, whether irrigated by former works, or only by the aid of recent improvements, should be brought within the scope of these rules, which are in strict accordance with the existing practice in the South.

168. In Gundraidoo the village lands border the canal for some distance, but it is below the lock, and the supply of water for irrigation is drawn from the canal by a channel that leaves it some two miles above the lock, and irrigates six villages besides Gundraidoo. It is a fine well made channel, entirely new with a head of six square yards, and a capacity of 2¼ square yards at its entry into Gundraidoo. The velocity of the current at this latter place is 1,400 yards; so that 3,700 cubic yards of water can be thrown on the Gundraidoo lands per hour, if the whole supply is taken. And here we have at once the requisite data for a rough measurement, if it should be determined to fix a water rate on the quantity of water supplied for irrigation, for the second crop.

169. The measurements given in the preceding paragraph were given to me by Mr. R. Smith, the Executive Engineer of the Eastern Delta of the Godavery, to whose kindness in supplying me with information I have already referred,* copies of whose letters,† on the subject of irrigation, I beg to annex. From these letters‡ it will further be seen that five of the villages are allowed to dam up the channel and take the whole supply in turn; (the sixth, I had better explain being allowed to take advantage of its position at the head of the channel and draw water as it likes) and that the turns are so arranged, that, according to Mr. R. Smith, the turn of each village comes round once in 10 days, whilst the particular village of Guddraidoo is allowed 2½ days in this period. With a full channel therefore, and taking the supply according to its turn, the village of Gundraidoo is supplied, it will be seen with 925 cubic yards per hour, and, in fixing the water rate for the second crop, it would simply be necessary so far as the quantity of water is concerned, to modify this calculation according to the average depth of water in the channel during the hot weather.

* Godavery Report, para. 17.

† Appendix Nos. 4, 5, and 6.

‡ 16th June, 8th July, 19th July 1858.

170. And here, I would illustrate the urgent necessity for some such record, as I have proposed in para. 89,* by mentioning what occurred to myself with regard to this identical channel. I examined the channel twice, from one end to the other, and I was assured by the Heads of these six villages, in the presence of each other, on the spot, as well as in my tent, in the presence also of the Tahsildar, that their turns only came round once in 12½ days, instead of 10 days, and that Gundraidoo was entitled to, and took the whole supply for 3 days, instead of for 2½ days!! When such a discrepancy, as this, exists in the range of so able an officer as Mr. R. Smith, who is so constantly on the move, from long residence, knows the Eastern Delta so well, and takes such pains with his work, it is not a wonder, that there are occasionally, even now, serious disturbances in carrying out orders for the distribution of water; and it needs no remarks of mine to shew the crying necessity for a written record of rights, when, in the course of time, those charged at present with the distribution of the irrigation supply, shall have retired from their present posts and their duties shall have devolved on others, who must be entirely dependent, without such a record, on the subordinate officials, for local information as to the rights of the different villages.

* Godavery Report.

171. From Mr. R. Smith's letter of the 18th June, it will further be seen, that for the better distribution of the water the Gundraidoo people are allowed to raise 5 dams within the limits of the village, during the 2½ days officially allowed them; two of these dams being for 7½ hours, and three of them for 15 hours; and here would be an additional help to the Revenue Authorities, when required to interfere in realizing the assessment on the internal distribution of the water to the different ryots by horary measurement.

Appendix No. 4.

172. But I will not now go into the details of holdings, for I have neither a statement showing the assessment fixed last year on the second crop, field by field, nor a record of the average supply of water during the hot weather, and such details under any circumstances, would perhaps be out of place in a General Report. I will merely add here, that, for the present, I would not attempt to fix a specific value on the water in assessing either Gundraidoo or any other village. I would simply take the total assessment fixed for the second crop in the current year, when corrected with reference to the Board's orders* under date the 10th December 1858; and I would offer to sell the ryots the same quantity of water, at the same price for the next 3 or 5 years *for certain*, and without any reference whatever, to the use they put it to. And every effort should be made to assure them on this point. They will be slow of belief; they will refuse to believe it at first; for the rates of assessment have been changed so often of late, and the whole subject is still wrapped in such uncertainty, that the extension of irrigation has in many places been seriously retarded in consequence. And, probably at first going off, every village will refuse to have any thing to do with the proposed arrangement. But as soon as one or two villages can be induced to take the lead, in different localities, by the exertions of the Native officials; and the other villages see that acres of dry cultivation are being quadrupled in value, without any corresponding change being made in the assessment; as beneficial a change in the public opinion will inevitably follow, and the ryots will come round, in the course of time, with increasing rapidity, to the new arrangement. And, after the lapse of the agreed term of years, the rates may be adjusted with reference to the experience that will have been acquired in the meanwhile, and the competing offers of the different villages.

* Para. 29.

173. I would therefore recommend, to recapitulate briefly the principles on which the foregoing remarks are found. First, that in all cases an irrigation assessment should be fixed on the land for the first, or more valuable crop; and a precise period of time should be similarly fixed, within which every crop, irrigated, should involve an assessment according to the standard value of transplanted rice grown in that season, on similar land, and under similar circumstances. Secondly, that where irrigation is on a large scale, and the Irrigation Establishment is sufficient for the purpose, the irrigation assessment should be fixed on the water, if available, for the second, or less valuable crop of rice. And, thirdly, that the subdivision of the total supply for each village should be carried out under the horary system, which is now in force and well understood. But how far these last arrangements should be subjected to the professional scrutiny of the D. P. W., I would leave to time to decide.

174. Where the land is held under the Zemindarry tenure, other considerations come into play; and, in referring to the Noozeed Zemindarry, I would wish to guard against being misunderstood with reference to previous remarks. This Zemindarry with many others in the North, is no spurious creation of 1802. The Zemindarry of Noozeed has been so long in existence, that the Zemindar has acquired, as it were, an hereditary right to be the medium of communication between the Government and the ryots. And, assuredly, the present change in the means of irrigation, if wisely taken advantage of, presents to the Zemindar the means of raising an income, such as none of his ancestors ever enjoyed. But with regard to the hereditary rights of the Zemindar, I have no further concern in this matter. I, here, have to look on the Zemindar, merely, as de-facto the channel, through which the General Land Revenue is raised from the various ryots, whose holdings are comprised within the limits of his Zemindarry; and I have to see how far existing arrangements can be made use of, to the advantage of all parties, in realizing in future, the just dues of Government, for the improvements made by the outlay of the public capital on the Kistnah Irrigation works.

175. Almost the whole of the country between the Masulipatam canal, and the left bank of the Kistna, is held on the Zemindarry tenure; and stretching thence across the Ellore high level canal, the Zemindarry of Noozeed extends further to the frontiers of the Nizam's Dominions. And it is computed, that of the irrigable area to the Southward of the Ellore canal and the Eastward of the Kistna, the three Zemindaries of Noozeed, Wulloor, and Sallapilly,* occupy no less than 1,90,000 acres.

* See Rough map annexed.

176. According to the returns received from the Collector, about a thirtieth of this vast tract of rich alluvial soil was irrigated from the Anicut in 1857-58; and not only was no additional assessment paid by the Zemindars for the 6,000 odd acres thus benefited, but no arrangements have yet been made with the Zemindars, with regard to the irrigation of the remaining twenty-nine thirtieths; that is to say, with regard to the irrigation and the payment of an irrigation assessment, on the remaining 1,83,000 acres.

177. With the Masulipatam canal and the Poollairoo flowing right through the Zemindaries for some 12 and 15 miles respectively the three Zemindaries from the area most advantageously placed for the new irrigation; and there can be no doubt that the present uncertainty, as to what rates will finally be

demanded by Government, is one of the principal reasons, why the efforts of the authorities have been so unsuccessful; why irrigation has spread so little, where the works already completed, would have fully allowed of its rapid extension; and it is therefore most desirable that the several points involved in this question should be speedily settled; not only with a view to thus realizing the just dues of Government on the 6,000 acres already benefited, but also to give confidence to the Zemindars, and remove, so far as Government is concerned, what is at present a serious obstacle to thirty times six thousand acres being brought under the fertilizing influence of six months' steady irrigation.

178. If the question were simply what additional assessment should be paid by the Zemindars for such lands as are irrigated from the Anicut, and were not capable of irrigation when the Zemindar's Peishcush was fixed, a satisfactory decision might be given with comparative ease. This season, I understand, numerous experiments will be made by the Officers of the General Survey to ascertain the value of the rice crops both in the Deltas of the Godavery and the Kistna; and from the results thus obtained, it would only be necessary to calculate the enhanced value given to the land by irrigation, and, after making the usual deductions in favor of the Zemindars, fix the additional rate accordingly. But this is not the case. The Poollairoo, it must be remembered, is an old channel. Probably most of the 6,000 odd acres now under irrigation were more or less under the influence of irrigation from the Kistna before the Anicut was built. The Peishcush of the Zemindar was originally fixed with reference to these advantages. And in determining what additional assessment shall be paid by either the Noozeed, or the other Zemindars, for Anicut irrigation, it will be necessary to consider first, what advantages they were previously in the enjoyment of, in the matter of irrigation from the Kistna, and for such advantages it will be necessary to make a suitable deduction, from the total assessment, that could otherwise be justly fixed on the increased quantity of water hereafter supplied. The requisite enquiries as to previous advantages would of course have to be made on the spot; and it is, as I ventured to say before, a very fortunate circumstance, for this reason also, that irrigation has yet made so little progress; that such troublesome enquiries will be confined to so limited an area. According to the Irrigation Returns there are only 20 villages that require to be thus examined, of which 12 villages are in the Noozeed Zemindarry; and 8 villages in the Sullapillay Zemindarry; and on enquiry, it would be found that in all these villages, the Zemindars are considerable gainers by the Anicut, whether more land has been brought under irrigation, or not. The supply from the Kistna in former times was obtained solely when the river rose sufficiently to enter the opening cut in the river bank; and, whether in these 20 villages, or elsewhere, the means of irrigation have now been greatly improved by the Anicut, not only as regards the steadiness of the supply, and the increased quantity of water sent down the channel, by the permanent rise in the level of the river above the Anicut, but, also, as regards the season at which irrigation may be commenced with the aid of the Anicut, which has been much affected likewise by this change of levels. Formerly, it was necessary that the river should rise a certain number of feet, before it even reached the floor of the old head of the Poolairoo; and then a further rise was requisite, before the water could be sent down the channel in any quantity. *Now*, the first small freshes that come down the river in May or June could be made available for cultivation, with the aid of the Anicut. And as a record has been kept for the last six years, of the rise and fall in the Kistna throughout the year, it would be easy to ascertain, at what date cultivation could be commenced, on the average, under the old system, and how much sooner the crop can now be got into the ground. This difference is of the utmost importance to the cultivator. I have already referred* to the effect on the out-turn, where cultivation had been delayed, for want of labour, instead of water, and it is computed that a difference of two months adds more than a third to the value of the produce. There would therefore be for these twenty villages an additional assessment justly claimable, on this account, on all lands under irrigation, if the water were taken earlier than the average of former days; and, in these villages as elsewhere, there would be of course a bonâ fide irrigation assessment claimable for the extent of land now brought under irrigation for the first time, with the help of this increased supply of water.

* Godavery Report. para. 93.

179. With a view to illustrating, is clearly as I could, the bearings of this most important question, I applied to the District Engineer of the Kistna Division for precise information on the difference in the seasons, at which irrigation may be commenced, with, and without, the aid of the Anicut; and I beg to annex copies of the correspondence.* The present head of the Poolairoo is of course the head sluices at Bezwarrah; but, in former times, the head of the Poolairoo was four miles below the Anicut, or, as Captain Chambers expresses it, writing from Bezwarrah, "4 miles South of this"; and, "when the water is standing 6 feet in the Anicut, it would enter into the old sole of the Poolairoo Head."† A Register of the Kistna's height has been kept since 1852; and, this year, with the aid of the Anicut, water for irrigation was sent down the Poolairoo on the 17th May;‡ whilst without the aid of the Anicut, there would have been no water in the Poolairoo before the 18th of July; this gives a clear difference of two months in the season, at which irrigation might be commenced, without taking into consideration, at all the difference of supply, drawn from a dam, and a supply that depends on the *crest of a fresh*. But at the same time it must be admitted that there is a doubt at present, how far the ryots can fully avail themselves of this great difference. It is thought, by some, that the early freshes of the Kistna, coming, like the melted streams of Lombardy, in the height of the hot weather, cannot here be used with safety, save for the nurseries, and there will not perhaps be quite so great a difference, in the season for planting out the crop, should the results now given be borne out by the average of the last six years.

* Appendix, Nos. 7 and 8.

† Para. 2, 6th Dec. 1858, No. 539, Appendix No. 8.
‡ 10th Dec. 1858, No. 553 Appendix No. 10.

180. I have as yet said nothing as to the mode in which this irrigation assessment should be raised. But on that point there seems to me to be no doubt; and I have purposely deferred entering on this portion of the subject, because the very peculiarities of the Noozeed case, point out so clearly the course to be pursued in this matter, and generally, where the Zemindarry tenure exists, and the land is held in large tracts. It is obvious, that, in all such cases, the easiest and readiest way of raising an irrigation assessment, for either crop, is measuring the quantity of water supplied. Whilst on the other hand, where land is held direct of Government, in, comparatively, small quantities; it is equally clear that the number of outlets, and the expensive supervision, that would there be required, completely nullify the advantages of such a system; and there, for the principal crop at all events, it is necessary, if only on this account, to adhere to the old system of measuring the irrigated area. There must be, there, the annual changes and the annual inspections; and, there, the old system answers so far, that the inspections can be made by the same establishment, that is required for the collection of the revenue. But in a Zemindarry no such establishment is available for Government purposes. If Government should determine to realize on the area, it would be necessary to create an establishment for the purpose; and, to adopt for a Zemindarry, the course necessarily pursued, where the land is held on the ryotwar tenure, would be wilfully to throw away the advantages, and burden irrigation with the disadvantages of both tenures.

181. The Poolairoo flows through the Noozeed Zemindarry for 15 miles. A measuring apparatus at either end would give the exact quantity of water consumed in the Zemindarry; and deducting from the total consumption, the quantity of water found, by local enquiry, to have been previously available, will give the additional assessment to be paid by the Zemindar, for the enhanced value given to his Zemindarry by the new works of irrigation, in other words, for all the irrigation in excess of what was possible when the assets of the Zemindarry were originally calculated; to which, must be added the additional rate for the enhanced value given to the land, then irrigable, by changes of levels, and consequently of the time at which irrigation and cultivation may now be commenced.

182. The supply drawn either from the Poolairoo or from the Masulipatam canal for the Sullapilly Zemindarry or for either of the other two Zemindarries could probably be measured with equal ease and equal economy of establishment; and where, minor irrigation channels may be led off from the main lines within the limits of any Zemindarry, to irrigate villages beyond those limits, in which, the land is held direct of Government, it would be only necessary to add one more measuring apparatus in ordinary cases. There must be a measuring sluice at the boundary of the Zemindarry. Whilst in all cases arrangements must of course be made for the general transmission of the surplus water in irrigation, or "Colature" as it is called in Italian law.*

* Baird Smith.

183. There will be some difficulty from the absence of any reliable data, to which I have already referred, in determining the quantity of water, that shall be considered sufficient for the irrigation of an acre of transplanted rice, the standard crop; and, if it were not that some decision must be come to on this point, with reference to the area previously irrigable, it would be better to let this question stand over, and simply ascertain at present what is the present marketable value of so much water; which is apparently the course, that has been pursued in the North West. And, indeed, if there were only the 20 Villages,

above referred to, the question might still be avoided by a general agreement. But it is not only in the Kistna Delta that the question arises. In the Godavery Delta there are Zemindarries, that as yet have not paid a six pence for irrigation from the Anicut. In fact there is only, I believe, the Zemindarry of Pittapoor that has as yet paid any additonal assessment at all on this account; and that is owing to the Zemindarry being under management. No where has an agreement been made with a Zemindar as to what he is willing to pay for the improved irrigation. As Anicut irrigation extends, these questions must be greatly multiplied. And it is most desirable, that the Government should at once take steps to declare the terms on which water, for irrigation, will be supplied for the present to Zemindars, and to others in a similar position.

184. It is computed by the D. P. W. that a cubic yard of water per hour is sufficient for the irrigation of an acre of transplanted Paddy. It is a rough estimate, that ignores the great difference in the requirements of different soils, which probably varies upwards of 50 per cent, and I understand, takes into consideration the rains, which of course must be left out of the account, when arranging what quantity of water will be required by the Zemindar, and what the Zemindar is to pay for this fixed supply. The rains even of the moonsoons, are variable. They cannot be depended upon with safety. The supply must be fixed with reference to the quantity of water required for rice under any ordinary circumstances; and, it will probably be found, when accurate measurements have been made for some years, that one cubic yard per hour is below the mark. On the other hand a system of measuring the water will speedily beget greater economy in the use of the water on the part of the Zemindars, and their officials, as well as their ryots; and the calculation will perhaps not be found quite so wide of the mark, as the above considerations would indicate. As illustrating very clearly the absolute necessity for abstaining from any close calculation on the rains, I beg to annex copies of correspondence, which I have just received from Mr. Knox,* and from which it appears that the later rains this year have been scanty, and there is much fear that the crops will suffer severely; especially where the ryots are only just commencing to avail themselves of the improved means of irrigation. How far it is advisable when endeavouring to introduce wet cultivation, to permit its spread beyond the limits, to which the Engineer can be perfectly sure of meeting the demand for water, is a question of considerable importance at once suggested by this correspondence. But it is foreign to the point now under consideration and any restrictions in that direction could only be carried out by the two departments being thrown more closely into geer, than they are at present. But how little dependance can be placed on the rains, and how easily the crops may be lost under the Kistna notwithstanding the Anicut is fully proved by the correspondence now forwarded. The losses, where the land is held direct of Government can be met by a direct remission; but the losses where the lands are held under the Zemindarry tenure are more difficult to deal with. In fact it is against the law to give the Zemindar any remission, and any arrangements that Zemindars may enter into on the subject of irrigation must be viewed in a very different light to the liabilities of ryots.

* 9th December 1858. Appendix No. 11.

185. Whatever might be the decision finally come to, whether as regards the question of irrigation generally, or the particular questions involved in the case of the Zemindars, it is desirable that the arrangements should be made, not only as soon as possible, but also for a term of years; as otherwise Zemindarry ryots would be unwilling to alter the cultivation of their lands. It is commonly believed, that irrigation unfits the more valuable soils for the cultivation of the dry crops, for which they were previously adopted, and the ryots without a lease would hold back, for fear of finding themselves, left in the lurch, by a sudden rise in the rates, above what they were willing to give. The Zemindar must be placed in a position to assure his ryots on this point. He must be enabled to give them definite agreements for a certain term of years, by being himself similarly guaranteed. But there is no necessity at all that the fixed terms should be for any lengthened period. I have suggested 3 or 5 years in discussing the question of the second crop, where land is held direct of Government; and, although for reasons just given, a longer term would be requisite for Zemindarries, where both crops are involved, still even there agreements for 10 years which is the usual period in Italy,* would I believe be freely taken up every where if couched in a liberal spirit. And, at the end of that period, the Government would be fairly entitled in readjusting the terms to consider the marketable value of the water with regard to the Zemindars also; whilst the experience gained during that time would give ample data for deciding finally the various questions, that now must be more or less matters of conjecture.

* Baird Smith.

186. There is now only one more point connected with the distribution of water for irrigation, to which I would specially call the attention of the higher authorities. And here also immediate action seems to me absolutely requisite. I have already referred to the lax arrangements* which are permitted at present in the distribution of the water, whether the land is held direct of Government or otherwise; and a general reform in this respect can only be of slow growth. But in one particular point a most important reform might be at once effected, and that is in the present practice of drawing off the supply for private irrigation from the main channels. At present a ryot who holds a few acres, is allowed to draw off his private supply, direct from the canal that is to convey, for 30 or 40 miles, the means of irrigating, perhaps 20, or 30 thousand acres. The irrigable area under the Samulcottah canal in the Delta of the Godavery is calculated by the Executive Engineer Mr. Smith to be 28,800 acres, and in the village of Meddapad, where 600 acres are entered in the accounts, and 1700 acres are irrigated in reality,* the ryots have been allowed to make *seven rough openings* in the bank of the canal with hollowed palmyras, in addition to four regular masonry sluices.† It has been, hitherto, done to facilitate the spread of irrigation. It is time, now, that such practises should be finally stopped. There can be no sound reform, in any direction, so long as the ryots are allowed to tap the arteries in that fashion.

*Godavery Report para. 89.

* Para. 14.

† From Mr. R. Smith 8th July 1858. Appendix No. 5.

187. The question, as I have remarked in para. 89,* will become more, and more, important as irrigation extends. Even now it is assuming a deep significance in the Delta of the Godavery. The cry, there, is already, "*more water*"; and the reply made by many is, "raise the anicut." The Government will soon have to decide whether the increased supply of water, is to be obtained by raising the anicut, or economising what we have got. I am aware that I am trenching on the professional grounds of another department; but still there are certain facts patent to all, who visit the Deltas, and use their eyes; and these facts seem to me of so much importance, that I trust to be excused for taking upon myself to bring them forward. In the Godavery, the level of the river bed is palpably, manifestly, rising for miles above the anicut. The capacity of the river bed to hold the Godavery for the same extent of its course, is as surely diminishing, as surely we are entering on the inevitable system, under any circumstances, of embankments. And it is impossible to look on this mighty river in flood, and mark the feeble bank, which alone defends a vast tract of rich and populous Delta land from all the horrors of inundation, without feeling it a bounden duty to give these facts their full prominence, and bring forward every suggestion, that may tend to avert the necessity for increasing these fearful risks. Raising the crest of the anicut must raise the bed of the river; must raise the level, or increase the velocity of a flood; must involve raising or strengthening the banks on either side of the river; and must increase the risk of those banks giving way. Is it fair, is it just, to the people, if we set aside all other considerations, to increase the risks of an inundation, in order to increase the supply of water, when we don't take sufficient care of what we have got? It surely is first our duty to adopt such manifest precautions against waste, as insisting on the due preservation of the main channels of supply. And, when these, and all other such precautions have been taken, then we should be justified, and not before, in considering how far increased risks will be counterbalanced by the public good. Our first duty is clearly to economise to the utmost, what water we have got. No opening for private purposes should be allowed for a moment in a canal, like the Samulcottah, unless the holding was at least 500 acres. But here I am again trespassing on the professional grounds of the D. P. W. Questions are involved, that I am not qualified to deal with; and I will only add that the proposed change, need not involve any great expense, although for a while, at all events, it will avert the necessity for increasing the supply, either by widening the existing channels, or incurring increased risks by heightening the anicut. It would only cost the construction of so many masonry sluices. The channels from these sluices would be formed by the ryots themselves.

*Godavery report.

188. Finally I beg leave to add a few remarks, in concluding this report, on the subject of raising the rates of assessment generally, on account of improved means of irrigation and drainage; increased facilities of transport, and perfect protection of life and property from periodical inundations. It may be thought that I have failed to show a due regard for the interests of Government in proposing to fix

the irrigation assessment on the second crop for the next 5 years, at the same rate, as in the current year;* and it may be said that I do not well to go out of my way, to discuss, now, a subject, for the full consideration of which the requisite data have yet to be collected. But certain facts have been brought to light by these enquiries, which bear strongly on this most important subject. And although these facts, it is true, are there to speak for themselves, it is only to those who have actually gone over the ground and watched from day to day the agriculture of the Deltas, that they assume their full significance. And I would fain convey to Government as *fully* the important considerations, that these facts brought before my eyes considerations, which must, I believe, for some time to come, influence our policy, whether the assessment of the second crop, or the assessment of the first crop is the point specially involved.

* Para. 172.

189. The enquiries show that the assessment might be raised in almost all the villages, measured, with perfect safety, so far as the power of the ryots to pay is concerned. But it remains to be considered, how far this can be done with advantage to the interests of the Government, whether the assessment can be raised now, and Government not suffer hereafter. It used to be thought in by-gone days that a high assessment was absolutely requisite to make the ryots work! I have myself heard this opinion avowed in all sincerity. It was a melancholy state of affairs, if true then, which I dont believe. But is it true now? Is it borne out, in the Deltas of the Kistna and Godavery, by the facts, which have been brought to light by these enquiries? The assumption that the assessment might be raised with safety, so far as the power of the ryots to pay is concerned, has been based on the low rates, which the survey would show* that the ryots are now paying on a greatly increased area of cultivation. It needs no careful measurement of the average out-turn of the first crop to convince any one, who has attended to such matters, that Rupees 2¼, and Rupees 3¼, is below what Delta land can afford to pay for irrigation; and that 4½ Rupees is probably not more than half, what the rich lands of Siddauntum could pay with ease. But do not these self evident facts also prove the utter fallacy of the old theory? When the rates are so low, and the survey proves that cultivation has doubled, in some cases has trebled, even on the accounts, does it not prove beyond a doubt that the ryots need no spur, that the ryots wont let the grass grow under their feet, when it can be turned up to advantage? I would respectfully submit that the one fact is as palpable, as the other. The rates of increase given above only show the extent to which the ryots have outrun the Revenue Records, have outrun the tax gatherer. These rates do not show to what extent the ryots really have availed themselves of the advantages placed within their reach. The actual increase in the extent of the irrigated area must be far beyond the proportions indicated by the extent of concealed cultivation now brought to light. And if this latter information were now available, and were needed, it would not prove more strongly, but it would be so much more indisputable evidence, that a high assessment is not necessary in either Delta, to make the ryots work—to make the ryots exert themselves for there own benefit! strange that there should have been ever a doubt on such a point;—that such information should have been ever needed.

* Godavery Report para. 82.

190. Under any circumstances, to raise the assessment suddenly, will be killing the goose that lays the golden eggs; if I may be permitted the use of this homely proverb, for its truth. Sudden changes are against the universal law. They can be made. They are made. But they cannot last. The man, who invents some article, destined to be of universal use will do well to draw up his plans on a gigantic scale, and lay his foundations accordingly if he has the capital. This is the course that experience directs should be pursued generally, and this is the course that has been pursued in the construction of the anicuts. But, whether in trade, or agriculture, it must not be expected that the development, Minervalike will be immediate, will correspond. The creation of an idea is one thing; the creation of a market is another. The anicuts have been built. But the agricultural development, that shall exhibit the full productive powers of those anicuts, has yet to come. This development needs time and I trust that I shall be excused for enunciating these truisms when the present agitation on this subject is taken into consideration. It is impossible to traverse these rich Deltas, without feeling deeply interested in all that tends to the development of their amazing fertility. And assuredly nothing does affect this question more directly than the coming changes in the assessment. Whether it is simply an adjustment of existing rates, to last only till the General Survey and settlement, or the all important and final decision of the value of the land by the settlement Officer, the progress to be made in the next 10 or 20 years must mainly depend on the present circumstances of the ryots, and the rates of assessment that the Government shall direct for the future. In other words, on the proportion that the future rates of assessment shall bear, to the circumstances of the ryots, as shown by these enquiries.

191. I have, I trust, succeeded in proving that the ryots need no spur in these Deltas to exertion; that they are willing to work. And I have asserted that the anicuts need time to develope their full productive powers. The anicuts need time but not for the creation of a market. The water that grows the rice, gives the ready road to a thousand markets. And if it is considered, as proved, that the ryots are willing to work and the anicuts still need time, it must be for the creation of more labour—more machinery to utilize the vast motive power that has now been so abundantly and bountifully supplied—and this fact I cannot say is directly proved by these enquiries. Indirectly it is proved by the difference in the out-turn, where the second crop was measured;* for if there were not hands enough to get all the second crop into the ground at the proper time, it may be inferred with sufficient distinctness how *far short* the labour market is of supplying, even now, the wants of the country, when the whole of the land in occupation, has to be brought under cultivation for the first crop ——for the principal—the most important crop. But on this point as I already have admitted, I can give no direct proof, and I must rest my case in the testimony of those, who have been eye witnesses. I believe I shall be borne out by all, when I assert that the present labour market is altogether insufficient to meet even the present demand. The rise in the price of labour has taken place elsewhere also, and may be attributed to other causes. But, if the supply of labour were any thing like sufficient, the ryots would not have been planting rice in Pentapad on the 27th August,* and I should not have seen the same operation still going on, when I got to the Delta of the Kistna and visited Capalaiswarum on the 28th of September. The proper season for planting the first crop is the beginning of July, and every day lost is so much dead loss in the out-turn. the actual want of the requisite quantity of labour is the only cause that would satisfactorily account for such general backwardness; and I believe that each Delta needs an extra million, at least with the creation of aggricultural stock in proportion, before there can be any thing like a full or fair development of what will be the ultimate benefits derivable from the anicuts.

* Godavery Report para. 93.

* Godavery Report para 93.

192. The ryots were steeped in poverty before the anicuts were built. The ryots had to be freed from debt, before they could even commence the formation of the requisite capital to enable them to take up more land; and then comes full into view, where these preliminary steps have been taken, one of those great questions of Political Economy, which has still to be decided here—but elsewhere has been affirmed of late years by universal consent. In the Western World men have decided that high profits are not so desirable, as low profits and quick returns, and low profits and quick returns, when applied to the Deltas of the Kistna and Godavery, I would respectfully submit, mean fixing the assessment low; bringing the whole irrigable area under cultivation as quickly as possible; and trusting to the increase in the area taken up at these low rates, and the corresponding increase in the amount of assessment, for a fair return on the capital laid out.

193. There are two courses open to Government. One course is to fix at once what may appear a fair assessment on the land in occupation, and leave time to bring the irrigable waste under cultivation by slow degrees. The other course is to assess the land below its real value for a certain period, and so hasten the spread of cultivation as much as possible—The former course has its advantages. It is a sound policy, and elsewhere, I would be sorry to advocate any other course. Here however it may be fairly styled the restrictive policy and high profits. For unquestionably stringent rules will be required to guard the irrigable waste against fraudulent encroachments; whilst, as surely, the land in occupation will return, acre for acre, a greater amount of revenue than under the opposite system. This opposite system, or the second course, is to decide what would be fair assessment under ordinary circumstances; that is to say, if the ryots were in such circumstances, as would enable them to cultivate all their land at the proper time, and put into the land an ordinary amount of labour and manure. Register this value, if the General survey and settlement is being made. And then fix the rates of assessment, for the present, so much below the real value of the land, as to leave a large margin, even on the newly taken up lands,

for saving capital. This course would apparently favor those, who occupy the old lands, to the wastage of the public revenues. But it does not in reality to the extent indicated at first sight. These men are either saving up their increased gains to spread their cultivation at a corresponding rate, or else, if they are not so well off as that, or want the inclination to do so, then they are still directly affected, with reference to previous profits, by the present pressure on the labour Market of other ryots, who are better off, or are more industrious, than themselves, and, it has already been proved, wont let a moment be lost, when they have got water to ensure a fair return for their exertions. The irrigable waste will be taken up, as fast as it can be with safety. And low rates will hasten this movement, as surely, as what would be fair rates under other circumstances, but now may be termed high rates, will retard it, and breed fraud. It might I am aware, be urged in reply to this, that such policy robs the survey of half its value. Why measure land, when there is no intention to assess it? But the answer is as plain as the question. The survey makes the difference between ill got gains, and legitimate profits. The ryots work now with the terrors of a complicated, I may say vicious, revenue system hanging over their heads. With the survey they would be honest men, trading on their honest profits. Every motive of good Government calls for the survey, and every motive of good Government seems to indicate, as clearly and distinctly, that exceptionally low rates of assessment are the true policy at present. Not only will this policy hasten the occupation of the whole Delta and the eventual realization of an enormous increase of revenue. But men will strive to register, instead of to conceal the true extent of their holdings. Honesty will prove the ryot's best policy And as the Government in this instance is the great capitalist; and has therefore to consider, how the capital expended may be realized on, to the greatest advantage, so, for the same reason, it is not necessary, here, to fix the rates of assessment for a long term of years. The exceptionally low rates might be fixed for a short period of 5 years, and raised at the end of that time, by a per centage increase, with perfect fairness, so far as equity is concerned. All that is required would be a guarantee, that the per-centage should be one general rate; and that no attention would be paid to the changes effected, in the meanwhile, by the outlay of private capital, in the relative value of the different holdings. But whether a limited period of 5 years might not be found too short, on other grounds, is another matter, into which there is no need to enter at present. And I will now only beg to express my firm belief, that the rate of increase in the cultivation of the irrigable area in the Deltas of the Kistna and Godavery, and the eventual gains of Government, will be in precise proportion to the extent of deductions, which the resources of the State may now permit to be made in favor of the ryots.

APPENDIX.

Extract of a letter to CAPTAIN CHAMBERS *from* MR. OTTMANN *received with* CAPTAIN CHAMBERS' *letter of the 11th December.*

No. 1.

No. 1. From A. F. OTTMANN, Sub Engineer K. D.
To CAPTAIN O. CHAMBERS, District Engineer K. D.
dated Masulipatam, 13th November 1858.

In forwarding the survey of the Cowtrum cultivation, I beg to state that offsets could not be taken of many of the fields as the banks were under water, every care was taken to measure even the smallest angle; although this was done, I cannot say the work is very correct, cross measurements were taken and they have been marked on the plan, but in many cases they are not correct, as you are aware that the survey was taken at a time when there was heavy rains and the lands covered with water, and it was not possible to take correct measurements. The survey although not very correct, will so far give a good idea of nearly the amount of land, cultivated this season. I have also measured the lands irrigated last year, but laid waste this season, these lands would have had* been cultivated, had the Ryots holding them allowed others to cultivate them, but it appears to be a practice for them not to give them up.

* Sic orig.

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No. 22.

No. 2. From W. KNOX, Esq., Collector of MASULIPATAM,
To J. W. B. DYKES, Esq., On Special Duty,
dated Masulipatam, 18th October 1858.

With reference to your letter of the 12th instant, I have the honor to inform you that no extra assessment for irrigation from the Anicut, has been fixed for the past or current Fusly on the Capaillaswarum Village.

2. The Board have recommended to charge Tecrawajasty on all dry land, newly converted into wet, in the same proportion to the rate charged to Government Ryots as the peishcush bears to the assets but no final orders have as yet been received.

No. 683.

No. 3. From CAPTAIN O. CHAMBERS, Acting District Engineer K. D.
To J. W. B. DYKES, Esq., On Special Duty,
dated Bozoorah, 14th January 1859.

In reply to your queries regarding the Boodoomair, I have the honor to inform you.

1. That the number of Locks necessary to convert the navigation of the Boodoomair into a still water navigation, cannot be well less than 6 or 7, unless they are to be permanent structures; the fall from the Annicut to the Lake is about 42 feet in the dry weather, and, in my opinion, a Lock without a masonry chamber should not have a greater lift than 6 or 7 feet, if so much: each of these structures with their adjacent stone dams, would not cost less than 10,000 Rupees—13,600 Rupees is the estimated cost of the Lock at Casarapilly which has been sanctioned and shelved, though on it the efficient distribution of the Kistnah water in this Collectorate is dependent. In addition to the Locks and dams, there would be earthwork, such as, straightening the course of the stream, and deepening the channels at the tails of the Locks, amounting to not less than 25,000: the cost of the whole project would then be something under a lac of Rupees.

2. Having said thus much, I have the honor of observing that such a project is, in my opinion, not at all necessary, and likely to prove very injurious. As the attempt of damming up drainages, especially those that carry off hill torrents, for the most part is.

3. The way to communicate between the Colair and Bozoorah at all times is by the high level channel which should be connected (beyond its junction with the Godavery water) with the Lake by a flight of Locks.

4. In my opinion. the Boodoomair should be left entirely for drainage, and should be deepened and straightened considerably, so as to allow it to carry off the drainage sharply, and not to swamp the Goodevadah Talook as occasionally obtains at present:—The channel would continue to be navigated as at present in the monsoon, and the Lock, and Calingalah at Casarapilly would much benefit the local traffic.

5. At present, the Boodoomair is open for traffic from the 1st June to the 15th November.

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No. 4. From R. SMITH, Esq., 4th Class Executive Engineer G. D.
To J. W. B. DYKES, Esq., On Special duty Gundraidoo.
dated Samulcottah, 18th June 1858.

With reference to your letter, of the 7th instant, I have the honor to transmit the annexed statement shewing the existing arrangements for the irrigation of the land, under the Village of Gundraidoo, in the Biccavole Talook.

2. The main feeder is the Kykavole channel, a branch of the Cocanada canal, from that, within the limits of Gundraidoo, 32 small branch channels are taken off, for the distribution of the water, to the different fields of this village.

3. Owing to the great demand for water in 1854, I was obliged, in consequence of the limited number of people, available to superintend its distribution, to adopt an arrangement, which would secure the co-operation of the villagers themselves, and induce them to take an interest in carrying it out; vizt. allowing the five villages, under the Kykavole channel, each in their turn, the entire body of water flowing down it, and to construct temporary dams, of Rubble Stone, or wooden stakes and straw, to retain the quantity they required, this is, no doubt, a primitive method of working, but as our works of irrigation are still in an incomplete state, and it is one the Ryots appreciate, I think I am justified in continuing it, another great benefit derived from it, is, a dishonest peon, or channel superintendant, has but a slight opportunity of selling the water, to those who can afford to pay for it, and robbing the poor Ryot who cannot.

4. By the above mentioned arrangement the whole water, in the Kykavole channel, belongs to the village of Gundraidoo 2½ days in every 10½ or in other words, at intervals of 8 days. In addition to this regular supply, they are allowed to take, should they require it, the water that escapes from the dam at Mamedeadu, so that, strictly speaking, they get water once in 6½ days.

5. For the better distribution of the water, I allow 5 dams to be constructed, across the Kykavole Channel, within the limits of Gundraidoo, there are thrown up and removed in succession, during their turn for the water, after a certain number of hours vizt, two of them are kept up 7½ hours, each, and three of them 15 hours each.

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No. 5. Extracts from two demi Officials from Mr. R. SMITH, to Mr. DYKES, dated as below.
Velegutheloo, 8th July 1858.

There are four masonry and seven Palmyra sluices, within the limits of Meddapad, the former are large ones, their dimensions being 1· 7" × 1· 1"; the diameter, of each of the latter, is about 9".

—

Samulcottah, 19th July 1858.

No. 6. I have much pleasure in sending you the surveys of Gundraidoo and Meddaped, in the former village, 64 acres are watered by *laling*,* in the latter the whole is irrigated by running water.

* Lifting the water by Pycottah.

The lands, under the Samulcottah channel, get water any time they require it.

The *water* section, of the Kykavole channel at its head, is 6 square yards, and 2½ square yards, at its entry into Gundraidoo; the velocity at the *latter* place is 1400 yards an hour, so that 3700 cubic yards, of water, can be thrown hourly on the Gundraidoo lands; this + 60 (the period allowed once in 10 days) gives 222,000 cubic yards, as their supply, which is much more than 1 cubic yard, per hour, per acre, for the land *actually* irrigated.

—

No. 7. From J. W. B. DYKES, Esq., On special duty,
To CAPTAIN CHAMBERS, District Engineer, Acting, Kistna Division
dated Masulipatam, 29th November, 1858.

I have the honor to request that you will be so good as to inform me, whether the records of your office shew the rise and fall of the Kistna during the last few years, and what height of fresh was required for water to be sent down the Poollairoo, for the purpose of irrigation, by the head, that I understand was put to that channel some years back by Captain Buckle, and was in use, when the Anicut was built.

Should this information be on record in your office, I should be obliged by your kindly informing me. now, at what date the river rose sufficiently for the Poollairoo to come into play this year, had there been no Anicut at Bezwarrah; and at what date water was supplied for irrigation for the crop now on the land by aid of the Anicut.

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No. 539.

No. 8. From O. W. S. CHAMBERS, Acting District Engineer Kistnah Division,
To J. W. B. DYKES, Esq., On special duty
dated Bezoura, 6th December 1858.

In reply to your letter of the 29th ultimo, I have the honor to inform you that I have a Register from May 1852 giving the Kistna's height at 3 different times for each day.

By levels and calculations with which I will not trouble you, it may be accepted as a fact that when the water is standing 6 feet on the Anicut it would enter into the old sole of the Poolairoo Head, 4 miles South of this.

This being the case the periods during which the Poolairoo would have been supplied with water this year, had there been no Anicut in existence, are as follows.

Height of water at Anicut above 6 feet point equivalent to sole of Poolairoo channel.

* Captain Chambers only gave the dates of supply. I have drawn out the tables for the whole month to show the proportion.

July. Dates.	Feet	Inches.
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	0	0
16	0	0
17	0	0
18	1	1
19	3	0
20	4	1
21	5	6
22	6	9
23	6	3
24	5	0
25	3	8
26	2	10
27	3	9
28	4	2
29	3	5
30	3	0
31	3	3

August. Dates.	Feet	Inches
1	3	8
2	4	3
3	5	4
4	4	7
5	3	6
6	2	2
7	1	2
8	0	7
9	0	6
10	0	6
11	1	11
12	1	7
13	2	0
14	1	11
15	1	11
16	2	6
17	2	0
18	1	5
19	1	6
20	0	0
21	0	0
22	0	0
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0

Height of water at Aniout above 6 feet point equivalent to sole of Poolairoo channel.

September.

Dates.	Feet	Inches.
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	1	7
14	0	9
15	0	0
16	0	0
17	0	0
18	0	0
19	0	1
20	2	2
21	2	3
22	1	3
23	0	3
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0

October.

Dates.	Feet	Inches.
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	2	0
14	1	3
15	3	3
16	4	9
17	5	3
18	5	5
16	7	9
20	4	9
21	4	10
22	5	5
23	3	10
24	3	0
25	1	0
26	0	6
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0

It thus appears that the Poolairoo would have had water passing down it for 54 days in this year, but for many of these days the supply would have been very scanty.

No. 9.

From J. W. B. DYKES, Esq., On special duty,
To CAPTAIN CHAMBERS,

dated Masulipatam, 9th December 1858.

I have the honor to acknowledge the receipt of your letter of the 6th, and in returning my thanks for the information it conveys, beg to be further informed at what date water was supplied for irrigation for the crop now on the land by aid of the Anicut.

No. 10.

No. 553.

From O. W. S. CHAMBERS, Acting District Engineer Kistna Division,
To J. W. B. DYKES, Esq., On special duty, MASULIPATAM,

dated Camp Bezwarrah, 10th December 1858,

In reply to your letter of the 9th instant No.—I have the honor to inform you that the first fresh of the Kistna was felt here on the 15th May; on the 16th 2', 8" were flowing over the Anicut and the Poolairoo must have received a supply of the fresh water either on that date, or on the 17th of the same month; previous to the fresh some small quantity of water was flowing down the Poolairoo, but only enough for drinking purposes.

No. 11.

No. 573.

From W. KNOX, Esq., Collector of MASULIPATAM,
To J. W. B. DYKES, Esq., On Special Duty,

dated Masulipatam, 9th December 1858.

I have the honor to send for your information copies of a correspondence which has taken place between the District Engineer of the Kistna Division, and the Acting Sub Collector on the subject of the dearth of water for the new wet cultivation in the Bezoorah Talook, and beg you will be pleased when treating of the benefits of the Kistna Anicut, to remember also the uncertainty of the supply of water it affords as I much fear this scarcity will not be a rare occurrence.

From the Acting Sub Collector to the District Engineer K. D. 17th November 1858, No. 162.
To Do. From Do. 27th November 1858.

No. 162.

From M. C. CHASE, Esq., Acting Sub Collector of MASULIPATAM,
To CAPTAIN O. CHAMBERS, Acting District Engineer K. D.

With reference to the enclosed report* of the Tahsildar of Bezoorah, I have the honor to call your attention to the urgent necessity for furnishing it

* To be obligingly returned.

possible a timely and by a day's supply of water to the villages mentioned in his report. It is only the knowledge, that representations from other quarters have been made to you on the subject, that has prevented my addressing you ere this, but as the aid is still withheld and the necessity is most pressing, I feel compelled at length to do.

2. I am aware that the Goodewada wet cultivation is more important, because it is more extensive; but the villagers of this Talook are new to this mode of cultivation and require great encouragement to keep alive their new born zeal and unless a supply of water can be given they will revert next season to their dry crops and all the labour hitherto expended in inducing them to undertake the cultivation of paddy and with so hopeful a commencement will be lost. I trust it is not yet too late to save some of the crops; specimens from all the villages have been shewn me and it is disheartening that crops so promising should when so near the time of yielding be utterly lost.

From CAPTAIN O. CHAMBERS, Acting District Engineer,
To the Acting Sub Collector of MASULIPATAM,

dated Bezoorah, 27th November 1858.

I regret that I cannot comply with the request contained in your letter of the 17th instant No. 162, namely, to supply more water to the villages about Cunkepaud than I have hitherto done.

2. The cultivation benefiting by the Kistna water amounted in 1857-58, according to the Collector's returns, to 51,832 acres, of which 1603 acres were situated in the Bezoorah Talook and from 8,000 to 10,000 under the Boodamair Channel, there was therefore under the Poolair sluice at Cunkepaud an acreage of from 42,229 to 40,229.

3. Now taking the lesser quantity or 40,000 acres and assuming that no increase of wet cultivation has taken place in this year in the Government Talooks and the Zemindarries under the Poolair sluice, and assuming also that the cultivation of the villages above referred to, has this season been raised up to 4,000 acres, though two areas are to one another as 4 to 40 or as 1 to 10.

4. But the water now actually given to your villages is the total discharge of the Poolairoo for 28 hours in the week or, in the proportion to the supply given to the larger acreage, of 28 to 140, or as 1 to 5, that is actually twice more water than they (your villages) are entitled to—in reality the excess is greater even than this, for of course the wet cultivation in Goodewada and its sister Talooks has not stood still.

5. This being the case you must I am sure, at once see how wrong it would be of me on broad grounds to comply with your demand, and I hope that on consideration you will also see that to ruin the cultivation under the Poolairoo in order to keep alive the new born zeal of the Cunkepaud ryots, would be as unjust to the cultivators of Goodewada, as it would be improfitable to Government.

6. In conclusion, it is my opinion that the crops in your villages will be far from utterly lost under the existing arrangements, though doubtless many of the fields on a high level will severely suffer from the shortness of the water supply.

7. Enclosed is a copy of a letter to my address from Mr. Sub Engineer Ottmann which I forward for your information and which shows that the lower Talooks are as badly off for water as the Cunkepaud irrigation.

From A. F. OTTMANN, Sub Engineer,
To CAPTAIN O. CHAMBERS, District Engineer K. D.

dated Panoomillee, 23rd November 1858.

As water is much required (not having had any rain this month) may I request, if it can be possible, to give me a supply of water through the Poolairoo for 6 days running, so that the flow of water in the Poolairoo may flow to a depth of 5 feet, this will enable me to supply all villages with water under the influence of the Poolairoo. I have been in the Kykaloor Talook and there the want of water is much felt, and the wind that has been blowing for the past week has been destructive to the crops. I am doing my utmost to give all a supply but it is not sufficient.

Printed Copy of
No 459.

From
J. W. B. Dykes Esq
On Special Duty
Masulipatam

Dated 5 November 1858

Rec'd 20 Feby 1859.

Encl No. 1
In No. 1554 of 1859.

R 8/5/59

Second Report

Submitting the results obtained by the measurement of four Villages in the Kistna Delta, irrigated from the new Annicut.

21 Oct 1859

39

Rec'd 20 Oct 1859 No

In Con. 20th June 1859, No. 2872.

From J. W. B. DYKES, Esq., On Special Duty,
dated Rajahmundry, 10th June 1859.

In submitting a Special Report* on the Survey of eight villages in the Delta of the Godavery, in accordance to Minutes of Consultation,† under date the 12th March last, I expressed my regret that the season of the year, at which my inquiries were conducted, had prevented my measuring a portion of the principal rice crop; and, on finding that the harvest of this crop would be begun, before the survey, on which I had been subsequently engaged in the Delta of the Kistna, could be brought to a close, I applied to Government for permission to return to the Delta of the Godavery and complete this important portion of the Special Inquiry. I also offered, respectfully, to take the opportunity to draw up a general statement of the total area now under irrigation, &c. And the Government having been pleased to accept* my services, I do myself the honor of submitting, for the consideration of the Board of Revenue, the following Report on the general results of the Annicut and its subsidiary works for the Irrigation and Navigation of the Delta of the Godavery.

* 11th September 1858.

† Revenue Department, No. 312.

* M. of C., 11th December 1858, Revenue Department, No. 1653.

Objects of Inquiry.—2. The several statements to be drawn up being thus of a general nature, I did not confine the present inquiries with regard to grain, to the eight villages referred to by Government in the first instance; experiments were made all over the Delta; and from these experiments, taken in connection with the area actually under irrigation, I trust to be able to show, first, what has been the effect of the Annicut and its subsidiary works on the agricultural resources of the Delta, and the condition of the people generally; and, secondly, what has been up to this time, and what will be, we may expect, hereafter, their results, viewed as the return on a comparatively large investment of the public funds; which latter part of the inquiry, though it must of necessity follow the former, I have nevertheless regarded as by far the more important. For an extraordinary expenditure of the public funds, in a particular District, or in a particular Presidency, can only be justified by extraordinary profit to the public purse.

Standard Crop.—3. The agricultural resources of the Delta include almost every description of tropical produce; and chillies, sugar-cane, tobacco, turmeric, &c., are all, intrinsically, far more valuable than rice. Still, looking to the extent of its cultivation, and the total value of the produce raised, rice, or paddy, as it is called whilst still in the husk, must be considered the standard crop of the Delta; and, so far as actual experiments are concerned, my attention has therefore been almost wholly given to ascertaining what has been the effect of the Annicut on the growth of paddy, and what is the average yield of paddy at present with the benefit of Annicut irrigation.

Early Harvest.—4. I left Masulipatam on my return to this Delta on the 16th December, and commenced my inquiries by measuring the paddy on those lands in Gundraidoo and Meddapad,* in the Eastern Delta,† on which a spring crop of paddy had been grown and measured by me last May. And at this, the very outset of my inquiries, I met with a palpable proof of one great and general benefit conferred by the Annicut on the cultivation of paddy throughout the Delta. With the help of the Annicut, from five to six weeks, I found, had been gained in the harvest season of the autumn crop which I was about to measure. The cultivation of this crop should be commenced by laying down the seed-beds as much before the 1st of July, the beginning of the Revenue year, as the weather will permit. As soon as the hot winds cease, the seed-beds should be sown; and, as soon as the young plants have got sufficient strength, and the Ryot has had water enough to prepare his fields, no time should be lost in transplanting; for the earlier transplanting can be effected with safety, and the longer the transplanted paddy is on the land, the better the yield both in quantity and quality. This fact has always been well known to the ryots. But before the Annicut was built, the ryots were obliged to wait till the river rose 12 or 14 feet; and although the

* Special Report, 11th September 1858, para. 92.

† N. B.—For description of the Delta of the Godavery and its hydrography, see Special Report, para. 6.

season was otherwise most favorable, very likely, transplanting was of necessity delayed, till the channels were filled by the freshes in the beginning of September, and several seed-beds were successively prepared and lost in consequence. The cultivation of transplanted paddy with these risks was therefore expensive and comparatively precarious; and the harvest of this autumn crop, or first crop as it is called, with reference to the Revenue year, was considered to begin in those days about the second week in January. Now the first freshes that come down the river in May, are sent straight down the several channels, by means of the Annicut or Dam across its bed; the cultivation of the first crop may be commenced as soon as the weather permits, and the ryots thinks fit; and by the second week in January the first crop has been gathered, and the land is probably prepared for the second or spring crop of paddy. Thus, I observed, on the 17th December, that a good half of the first crop in the neighbourhood of the Nursapoor canal had been already cut, (I was then on my way to this Delta by the Nursapoor passage boat); which, to begin with, was a good month before the old harvest season; and, on arriving at Gundraidoo, I found that the harvest there was still more forward, and that Mr. R. Smith, the Executive Engineer, who had kindly preceded me, had been only just in time to secure the crops on the lands which I wished to measure, and which, but for his opportune arrival, would have been cut and out of the way several days before I could have got there. At Gundraidoo the harvest had begun with the month. And it will be seen subsequently that the early harvest was the general rule. But the peculiar nature of the past season had doubtless something to do with the extreme earliness of the harvest this year throughout the Delta generally. The South West Monsoon had been very slight. In Rajahmundry itself, no rains had fallen, I was informed, since the 21st of October. And the dry crops, in the upper talooks, I have been further informed, have suffered severely in consequence. On the other hand, I may now mention the yield in the Delta this year has perhaps been above the average! The effect of an unfavourable season, under the Annicut, has been *an early* harvest and *bumper crops*.

English Weights and Measures.—5. Last May, even in making the few experiments that the season permitted, I found great advantages from giving the yield of paddy in lbs. Avoirdupois. It facilitated comparison in considering the yield on different soils, and in comparing the produce of this Delta with crops grown elsewhere. It also, I trust, made my results more intelligible to those for whose information the statements were prepared. And, if this was the case in the two villages then alone under consideration, the necessity for some common standard of measurement was rendered at once apparent, when I commenced these general inquiries. It is true that in the Deltas of the Godavery and Kistna, paddy is everywhere measured with a "Coontsum" and sold by the "Mullika Pooty;" and that the Coontsum, a small handy wooden measure of which 200 every where go to the Mullika Pooty, is always used as a heaped measure and struck into the heap, to be measured, before being heaped itself. But there the uniformity ceases. The capacity of the unit of measurement varies in almost every village, and there is a difference of nearly 2 cwts. of paddy between the contents of the Mullika Pooty of the Eastern and Western Deltas of the Godavery. Paddy was selling at Rupees 15 per Pooty on the Cocanada canal, and at Rupees 15 per Pooty at one village on the Akeed canal; and hence it might be inferred, at first sight, that the ryots were getting the same price for their grain in the Eastern and Western Deltas respectively. In reality, the ryots of the Akeed canal were getting 3 Rupees less per Pooty; there was a difference of 3 Annas 7 Pice per cwt.; and even lower down, where it happened, when I got there, that paddy was selling at Rupees 16, there was still a balance on the wrong side of nearly 3 Annas per cwt. With reference to the yield, there is still more room for error. Comparing the value of land by the total price that the produce fetched, meets of course the difference in the measures of capacity, but endeavouring to compare the productive powers of the soil, by simply comparing the quantity of produce given in local measures of capacity that vary so much, must mislead. The land that yields a Pooty and a half in the Western Delta, according to the Western Delta measurement, is either naturally more fertile or has been considerably better manured and better irrigated than the land that gives a Pooty and a half in the Eastern Delta. In the latter case the paddy would weigh on an average 1,966 lbs. or 17 cwts., in the former, 2,170 lbs. or 19 cwts.;* and in reality there is a difference of 2 cwts. in the productive powers of the

* Abstract. Appendix I.

soil, instead of the produce being alike in the two cases, as would naturally be inferred. I therefore trust that the course which I have pursued of giving the results of my expériments in lbs. Avoirdupois, will be approved of, and I have the more hope, as I have just heard from high authority on this subject, from Mr. W. H. Bayley, C. S., that the system of weighing grain is coming into general use in the corn markets at Home. It is found of great use even there; and I shall perhaps be excused, if, on the strength of such authority, I venture to suggest that the weight of the local measures of capacity used in the several Districts in measuring and selling grain should be ascertained at once, in lbs. Avoirdupois, for the principal grains; and that a Price Current should be published every quarter in the Fort Saint George Gazette, showing the current price of paddy, &c., per cwt. throughout the Presidency. Such information would be very valuable to many, and to the Mercantile community especially; whilst what returns are published at present are comparatively useless, from the difficulty of comparing the numerous local measures of capacity in which alone the information is given.

6. With a view to comparing the returns now given with agricultural returns at Home, and by way of making these returns still more intelligible to English ears, I propose to give subsequently, the yield in Bushels, as well as in lbs. Avoirdupois, having had a peck measure made for this purpose at the workshop at Dowlaiswaram. And I need now only add further on the subject, that the paddy was measured in each instance with the Coontsum of the village where it was grown, or of the neighbouring village where I happened to be; that the price of the produce was calculated as ordered by Government, at the price per Mullika Pooty at which that crop was then selling in the village in question; and that the quantity of the produce was obtained at the same time in lbs. Avoirdupois by weighing, in each instance, the average contents of the Coontsum used in measuring.

Yield in particular Villages, Map.—7. In the Special Report I have stated* that the weight of a Pooty of paddy is 1,200 lbs.; that the average yield per acre for the first crop was calculated by the D. P. W., at a Pooty and a half, or 1,800 lbs. per acre; and that this quantity might, I believed, be taken with safety as the average on the rich two crop lands, the second crop on which had then been measured. On weighing, however, myself the paddy of the first crop, I found that the grain of this crop was far finer and heavier than that of the spring crop which I had weighed in May; that the Gundraidoo Coontsum of new paddy, such as was then being sold, weighed 6 lbs. 5 oz. instead of somewhat less than 6 lbs.; that the Pooty of new first crop paddy in the village of Gundraidoo was 1,269, instead of 1,200 lbs.; and that "the Pooty and a half" instead of being 1,800 lbs, was in reality 1,903 lbs. or 17 cwts. This difference of 103 lbs. of paddy does not appear very large as regards the estimated produce of an acre, but, it is nevertheless a serious error; and I was therefore glad to find that the estimate was well within the mark. The yield of the first crop per acre, in the two fields in Gundraidoo, on which the second crop was measured last May, was 3,440 and 2,751 lbs. or 30 and 24 cwts. respectively; whilst in Meddapad, on the land similarly tested, the yield though somewhat lower, was still 3 cwts. above the estimate. The average yield of the second crop measured in the two villages in May, was 1,281 lbs.; the average yield of the first crop now measured on the same lands was 2,785 lbs.; and the total average yield per acre on these lands during the year, that is to say, between the 1st of January and the 31st of December, is therefore 4,006 lbs. or rather more than 36 cwts. of paddy* per acre. But full details for these two crop lands, with the value of the produce, will be given subsequently; and I will now proceed to give a brief sketch of the other experiments made during the past harvest. The position of the various villages, in which these experiments were made, is shewn in the accompanying Map, which also contains the main lines of irrigation and navigation.

* Para. 100.

* 63 Bushels.

Yield in other Villages of Mr. R. Smith's range.—8. Thanks to the kindness of Mr. R. Smith I was able to measure portions of the first crop in five villages altogether, under the Samulcotta and Cocanada canals. And taking the average of these experiments, fourteen in number, gives a result of 2,590 lbs. or 23 cwts. per acre as the average yield of paddy under the two canals for the first crop. But this average is considerably affected by the crops on the two crop lands

given above; which were decidedly over the average, as had been expected, and could never have been selected as average specimens. The fields were selected in the first instance by the D. P. W. and myself, to ascertain the yield of the second crop; and, having been measured again with a view to showing some examples of the total yield per annum, the results obtained have been allowed a place in the statement of averages, as it was desirable to show together all the results that could be obtained in this hasty examination; and the nature of the inquiry permits of due allowance being made at the proper time for such favourable results. And before going further, it will be proper for me to mention here a change that I found it necessary to make in the instructions laid down by Government for my guidance in measuring the crops in the first instance.

Arrangements in Measuring.—9. In Minutes of Consultation, under date the 12th March last, I was directed to measure "a small portion of the crop, in each of the four villages referred to," in concert with the District Engineer. Although not directly specified, I understood these orders to imply that we were to select an *average* crop; and, from the limited nature of the inquiries then assigned to me, I had comparatively little difficulty in carrying out the presumed spirit of my instructions. When however it came to travelling rapidly and selecting crops in the course of a morning's walk, I found it impossible to form any idea myself of what was the average crop of a village thus cursorily inspected, and I therefore requested the officers of the D. P. W., to excuse my giving an opinion on the subject, and select what they themselves, from their previous acquaintance with the village, &c., considered a fair average specimen. Whenever possible, I had a similar selection made by the Tahsildar of the Talook; and, in most instances, the ryots also were required to select what they considered a fair average. The results thus obtained have been kept quite distinct; and there is thus the Engineer's, the Local Revenue authorities', and the villagers' average yield of paddy for the first crop of 1858-59. But, recalling to my mind the crops that I have seen, and the general nature of the selections made, I do not think that I should be justified in submitting any one of these averages as a strictly correct result of the general, but cursory experiments now made. However much inclined to be strictly just in their selections, I think that the officers of the D. P. W. on the whole, took a somewhat favorable view of the average out-turn; whilst the Local Revenue authorities, bearing in mind that to them would fall the duty of realizing, had this direct motive, if other and less worthy reasons were wanting, to under-estimate; and the villagers, as it was of course expected, did their best to show crops much below the average. Indeed, in some cases, where the crop had entirely failed from being put down too late, &c., it was necessary to reject the proffered specimen; but wherever it was not palpably absurd, the first selection of the villagers was accepted; and the average of the villagers has been further lowered by the addition of the several experiments which were made, where there was no choice left, where all the crops of the village had been cut with one exception before I got there, and the officers of the D. P. W. were kind enough, at my request, to measure the single field of paddy that remained, in order that we might see what the yield could fall to. For these reasons therefore, in my opinion, none of the three averages can be considered strictly correct; but I trust that the general results, and a careful consideration of all three averages will show pretty clearly whereabouts the true average should be placed.

Yield in Eastern Delta.—10. In addition to the five villages already referred to, four more villages were inspected with the assistance of Mr. Tuke, Executive Engineer, in the Eastern Delta, including the crops grown on the French territories at Yanam; and there is a considerable falling off in the general average of these experiments. The general average of these experiments was 1,939 lbs.; whilst the general average of the 5 villages already given, was 2,590 lbs.; and the difference of 651 lbs. is partly owing to the two crop lands, which were included in the experiments under the Samulcotta and Cocanada canals, and partly to most of the crops having been cut before I commenced measuring with Mr. Tuke. In the first batch of experiments, the crops cut were chiefly grown on the first class of black cotton soil; in the second, the crops on this class of soil had all been removed, and the soil, where the crops were still standing, was chiefly "gurrapa," which is a poor reddish soil; whilst what cotton soil there was, was also poor. The French territories at Yanam, and the other lands in which these latter experiments were made, are irrigated from the Coringa and Yanam canals.

Yield in Central Delta.—11. From Yanam I crossed to the village of Cheyair, in the Central Delta, where Captain Stoddard, the Executive Engineer, was kind enough to meet me. Cheyair belongs to the Amalapoor Talook, which is generally considered to be one of the most fertile Talooks in the District, and, as far as my experience goes, justly so. I was perfectly amazed at the crops which I saw in passing through this Talook. For miles it was one unbroken sheet of golden grain; and, where a break did come, it was not a break of barren land, but of valuable gardens, date trees, cocoanuts, &c. As might be expected, the average in such a Talook was high. Including some paddy measured with the assistance of Mr. William Rundall, Executive Engineer, in the talook of Nuggarum, which also belongs to the Central Delta, the average of 13 experiments in this portion of the District of Rajahmundry was 2,748 lbs. or a ton and a quarter of paddy per acre, notwithstanding that, out of the 13 experiments, the selection was made in six instances by the villagers.

12. In Beemanapillay, which was one of the villages measured in the Central Delta, I found, to my astonishment, that the paddy was actually growing on sand. There had doubtless been a deposit of silt; but this was not apparent; and, on taking up a handful of what one might expect would be the soil about the roots of the paddy, it could be dropped grain by grain, like the sand on the sea shore. There had been neither silt nor any other deposit sufficient to give consistency; and yet the average yield of the two fields selected in this village by the D. P. W. and the Tahsildar, was 3,434 lbs., or a ton and a half per acre. Sand, that without water, could have given nothing for man or beast, with water was giving a ton and a half of paddy per acre. Whilst at the village of Anantaram near Cheyair, and also in the Amalapooram Talook, the yield in one instance was actually two tons of paddy per acre. This field was selected by the D. P. W., and doubtless yielded more abundantly than Captain Stoddard had anticipated. The soil was black cotton.

Yield in Western Delta.—13. Whilst measuring grain in the Eastern Delta, I took advantage of Captain Rundall, the District Engineer, having to go down to Nursapoor, to accompany him, with a view to measuring with him, in the absence on leave of Captain Greenaway, what crops were left at Siddantum and Moolapurroo, two of the villages that had been surveyed in the Western Delta, for the Special Inquiry. Captain Rundall and myself visited these villages on the 21th December; and even then we found that in Siddantum the greater part of the paddy had been cut and stacked; and in Moolapurroo the whole crop had been taken off the land. When, therefore, I left the Central Delta ten days later, and returned to the Western Delta with Captain Rundall, on the 3rd of January, I was not surprized to find, that in the Rajahmundry portion of this Delta, the harvest was over. I had expected that this would be the case. The harvest operations were being carried on so rapidly, when I first arrived, that I soon saw I had little chance of measuring the first crop in all parts of the Godavery Delta. And I at once determined to give my attention in the first instance to the Eastern and Central Deltas. As regards that portion of the Western Delta that belongs to Rajahmundry, experiments were being made, I found, on a large scale, under the direction of the Deputy Director of Revenue Settlements; and I trusted to be favored with a copy of his results. Whilst in the Masulipatam portion of this Delta, the ryots had been so late,* in getting the paddy transplanted, that I trusted to the harvest in those Talooks being more backward, and to my being able there to obtain fair average specimens somewhat later on. I regret however to add, that, as regards the Rajahmundry District, the results to be now submitted consist exclusively of what I was able to accomplish myself with the assistance of the D. P. W. Under instructions from the Director of Revenue Settlements, the Deputy Director found himself precluded from furnishing me with the required information. And as regards the Masulipatam Talooks, my anticipations were not better founded. I was agreeably surprised to find on proceeding down the Akeed canal on the 4th January, that almost the whole of the paddy above the Permilla Lock had been cut and stacked. In Casapad, one of the villages surveyed for the Special Inquiry on this canal, there was only one field uncut. The soil of this field, I was informed by the ryots, had been sour or brackish in former days, but having been since washed sweet by the drainage from the irrigated lands above it, its cultivation had been commenced, and the

* Special Report on the Godavery, para. 94.

small crop it had returned had been left to the last. The yield on this field (No. 186), was 1,493 lbs. or 13 cwts. The crop on another field in this village (No. 227), which was also what is called "Poolla Revady," or sour land, reclaimed, had been much better. This crop had been cut previous to my arrival, by Mr. Stephenson, the Overseer at the Permilla Lock, and it has been included amongst the experiments conducted more immediately under my own superintendence, as I saw the stubble and the grain was measured after my arrival. The result in this instance was 1½ ton per acre. In Comera, the second village surveyed last year in this neighbourhood, there were several patches of paddy still standing, when I got there; and here the average yield on some "Poolla Revady" was 1,550 lbs. or 14 cwts.

I refer particularly to the yield of these two villages; because in my Special Report,* I have described how inefficiently the land was cultivated; and my remarks might give a wrong impression. Slovenly cultivation must affect the outturn; but the yield, where the grain was still standing, showed clearly what fine crops had been cut. The better crops are always secured first. The average yield given by the few patches still left is direct proof that a fair and real average would have been higher. And this inference was fully borne out by the stubble, which was far beyond what I expected to see. The same might be said with equal truth of Ogidy, the third village surveyed in the Masulipatam district for the Special Inquiry. When Captain Rundall and myself visited this village in our way up the Nursapoor Canal on the 3rd January, all the paddy had been cut, save one field that belonged to an Inamdar who was too poor even to cut it in proper time; and whose poverty had equally prevented its proper cultivation. The yield on this field was 11 cwts. per acre; whilst almost the whole area of the village had been cultivated with rice, and, with the exception of one or two spots of brackish soil, it was manifest from the stubble, had yielded a first-rate crop. Altogether I examined the crops in seven villages in the Western Delta of the Godavery; the total number of experiments was fourteen; and the general average was 1,955 lbs., or a Pooty and a half Rajahmundry measurement; which it will be remembered, has been taken hitherto by the D. P. W. as the fair average yield of the first crop throughout the Delta generally.

* Para. 93.

Statement of Experiments, Appendix I.—14. From the Western Delta of the Godavery, I proceeded on the 17th January to the Kistna Delta, and I shall do myself the honor of submitting the result of my experiments there, subsequently. The experiments which I have briefly described are all that I was able to make in the Godavery Delta; and I will now exhibit them in a tabular form with reference to those by whom the selections were made. In most instances the extent of land measured was a quarter of an acre; in some few instances it was less; in others it was more; but, as a general rule, the crop in each field, selected, was tested to the extent of a quarter of an acre; as soon as selected it was cut; where possible from the state of the grain, as soon as cut, it was thrashed; and, in many cases, the grain was selected, cut, thrashed, and measured, all in the same day. And I believe that, so far as they go, the experiments which I had the honor of making, in concert with the Officers of the D. P. W., may be relied on, as, in themselves, strictly accurate. In the Central Delta, by remaining out the whole day, Captain Stoddard guarded against the possibility of fraud. Every operation was conducted under his own eye. The paddy was never out of his sight from the moment it was cut, till it had been thrashed and measured; and the results show clearly enough that the trouble and exposure had not been in vain. In all, there were two and fifty experiments made during the three weeks that the harvest lasted, after I reached the Delta of the Godavery; and the results are given in the annexed tabular statement. The exact extent of land measured in each instance, with the precise yield obtained, and the weight in lbs. Avoirdupois of the Coontsum used in measuring, and of the Mullika Pooty used in selling the paddy, will be found in Appendix No. 1, which contains also an abstract shewing the average weight of the Coontsum and Mullika Pooty for each village visited, and for each division of the Delta.

STATEMENT *showing by weight and by measure, the results obtained on measuring a portion of the "First Crop" of transplanted Paddy in 1858-59, in the undermentioned villages in the Delta of the Godavery, and showing further by whom the selections were severally made.*

Division of the Delta.	Name of Villages.	Out-turn of Paddy per acre in lbs. Avoirdupois. D. P. W. Number of field.	D. P. W. lbs. Avoirdupois.	Tahsildar. Number of field.	Tahsildar. lbs. Avoirdupois.	Villagers. Number of field.	Villagers. lbs. Avoirdupois.	Out-turn of Paddy per acre in Bushels. D. P. W. Number of field.	D. P. W. Bushels.	Tahsildar. Number of field.	Tahsildar. Bushels.	Villagers. Number of field.	Villagers. Bushels.
Eastern Delta.	Gundraidoo..... *	7*	3,440	...	...	115	1,438	7	71	...	.....	115	29
		208*	2,751					208	57				
		202	3,541					202	73				
	Meddapad..... *	200*	2,660	...	...	...	...	200	55	...	...	...	...
		15*	2,291					15	47				
	Peddada..... ...	...	...	345	3,704	345	2,319	...	...	345	77	345	48
	Bickavole.....	22	3,771	17	1,765	20	1,905	22	78	17	36	20	39
	Pussalapoody.....	90	2,996	76	2,225	88	1,418	90	62	76	46	88	29
	Moochoomillay.....	296	2,798	264	1,673	266	1,189	296	58	264	34	266	21
	Ootramillay.....	...	1,465	...	1,975	...	2,262	...	30	...	41	...	47
	Vella.....	...	2,867	...	2,520	...	1,562	...	59	...	52	...	32
	Yanam.....	...	1,903	...	...	...	...	...	39	...	...	...	...
		...	1,115						23				
	Average.....		2,633		2,310		1,732		54		48		36
	General Average....		2,303						47				
	Average of Averages		2,225						46				
Central Delta.	Anantarum..... ...	.....	3,477		...		2,437		72		...		50
			4,386						91				
			2,508						52				
	Cheyair.....	109	3,180	108	3,428	378	1,430	109	66	108	71	378	29
	Beemanapillay.....	52	3,575	56	3,293	61	1,012	52	71	56	68	21	61
	Batimillay P.....	247	1,335	254	2,737	252	2,932	247	27	254	57	252	61
	Average.....		3,077		3,152		1,953		64		65		40
	General Average.....		2,748						57				
	Average of Averages.		2,727						56				
Western Delta.	Siddantum..... ...	370	2,229	...	...	141	1,421	370	46	...	...	370	29
		56	2,010					56	42			56	
	Ogidy.....	...	...	...	...	...	1,333	...	...	...	...	...	27
	Casapad.....	227	3,413	...	...	186	1,493	227	71	...	...	186	31
	Vippurroo.....	519	2,484	...	...	654	1,055	519	51	...	...	654	21
		519	2,585					519	53				
	Comara.....	280	2,435	...	...	inam	1,550	280	50	...	...	inam	32
	Gunnaparum.....	...	...	...	...	216	770	...	...	...	...	216	16
	Pedda Caparum.....	55	2,316	50	2,224	...	...	55	48	50	46		
	Average.....		2,501		2,224		1,270		52		46		26
	General Average.....		1,955						40				
	Average of Averages.		2,000						41				

* Villages in which the second crop of 1857-58 was measured.

Average yield for the Eastern Delta.—15. From this statement it will be observed that the average yield in the Central Delta, according to the experiments made this year, is much above the averages of the Eastern and Western Deltas; and there is a considerable difference again in the averages of these two Deltas. And as the area irrigated varies considerably in these natural divisions of the Delta of the Godavery, it is equally manifest that an accurate estimate of the total produce raised, could not be obtained by taking one common average for the whole irrigated area. It will be necessary to ascertain as nearly as possible, what is the true average for each of the three divisions, and then obtain the gross produce by multiplying this average into the number of acres to which water has there been supplied. Whilst it will be seen, subsequently, that in the Western Delta, a further division must be made, and separate averages must be supplied for the upper and lower portions of this Delta. Commencing, however, with the Eastern Delta, it will be observed that the average of the selections made by the D. P. W., was 2,633 lbs., or deducting the two crop lands which have been marked with a cross, 2,557 lbs. which may be taken at 23 cwts. The Tahsildars' estimate, on the other hand, is a few pounds above 20 cwts. per acre. It is in exact figures 2,310 lbs. per acre. And the villagers' estimate is 15½ cwts. Considering the advanced state of the harvest when the measuring of the crops was commenced in the Eastern Delta, there is not, I think, any necessity here to make allowances for the crop of this year being above the general average, for there being a more than ordinary abundance below the Annicut, whilst elsewhere there was scarcity. And so far the D. P. W. average might be taken. But the soil of these villages is above the average of the Eastern Delta generally, I am inclined to think. I would therefore strike an average somewhat lower. And to the best of my belief, the Tahsildars' average of 20 cwts. or one ton should, and may be taken with perfect safety, as about the average yield of the Eastern Delta in ordinary seasons. The crops for the Tahsildars' average were selected by two different Tahsildars, in six different villages; and the selections I thought at the time were made very fairly, considering the interest that the Revenue Officer had in keeping down the average. It will be observed that the difference between the averages of the D. P. W. and the Tahsildars, is 2 cwts. which may perhaps be letting the ryots off too cheaply. Still, the extent to which the Tahsildars may have fallen short in their estimate, cannot be large, and is a margin that may be given with advantage to the great falling off in the productive power of the land nearer the coast.

Average yield for the Central Delta.—16. The experiments in the Central Delta were made under very different circumstances. In the villages measured, the greater portion of the crops were still standing. The villages themselves were, I am inclined to think, fine specimens of a fine Talook; and, in the Central Delta, it will be observed* that there is comparatively a long sea board. A considerable reduction must therefore be made with reference to the inferior yield on the less productive soils of this coast line, and the average, thus lowered, must be lowered still further with reference to the irrigated crops being this year above the average. The high pitch to which cultivation has been carried in this Delta, and the singular immigration of Tanjore ryots has already been referred to;† and it is not surprizing therefore to find that the land yields here according to the D. P. W., 27, and according to the Tahsildars 28 cwts. of paddy per acre. There were not so many selections made here by the Tahsildars; but the average given, is the result of selections made by two different Tahsildars; and even the villagers' average, it will be observed, is above 17 cwts. or a Pooty and a half, the D. P. W. average for the Delta generally. Taking the average of the D. P. W. and Tahsildars' averages, gives an average of 3,114 lbs. or 27¾ cwts.; and taking the average of the three averages, that is to say, of the D. P. W., Tahsildars, and villagers, gives an average for the Central Delta, of 24 cwts. (The general average would be somewhat higher). But taking into account the general appearance of the crops, and of the stubble where the crops had been cut in Nuggarum, I believe that the former average is correct for the villages measured. I have, however, already stated that a considerable reduction must be made in any results, both on account of the season and on account of the position of the villages in question; and, with a view to being well on the safe side, I would submit, as the result of these experiments, that 22 cwts. may be taken as the average yield of paddy per acre for the first crop in the Central Delta of the Godavery.

* See Map.

† Special Report, para. 10.

Average yield for the Western Delta.—17. The Western Delta is double the size of either of the other Deltas, and is divided into two portions, not only artificially, but also as regards soil. The lower portion, which lies on either side of the Nursapoor canal and stretches along the river bank, is far more fertile than the upper portion, which lies on either side of the Akeed canal and stretches along the Ellore canal to the shores of the Colair lake. The lower portion is well peopled; the upper portion has only a scanty population; and finally, in the upper portion the want of stock and the poverty-stricken appearance of the villages genelly, show with equal distinctness and truth, that this country has only recently received the benefits of irrigation, and is still suffering from the rack renting to which it was exposed, whilst in the hands of Zemindars.

18. Obviously, therefore, the average of one portion would be a very wrong average for the other portion of this Delta; and I much regret that various circumstances, to which reference has already been made, have prevented my giving, from actual measurements, the two averages required for this Delta. Measurements were made in the lower portion, in one of the Rajahmundry villages; but the ryots of Siddantum, the village in question, had planted much of the irrigated area this year with chillies; and, when the crops were inspected, there was probably not much more than a tenth of the paddy which had been planted, that was still standing; whilst in the adjoining village of Moolapurroo,* as already stated, there was not a sheaf left on the ground. The whole crop there had been cut and stacked; and, if the stubble told the truth, the ryots of Moolapurroo had gathered in crops equal to most that I had seen. For this portion of the Delta, therefore, I must hazard a mere conjectural estimate, and luckily the character of the country is well known. In my Special Report I have referred to the richness of so much of the lower portion of this Delta as then came under my observation, and what I have been able to learn, since by personal observation and inquiry, inclines me to believe that one of the three Talooks of which it is composed is the finest rice growing country under the annicut. It is commonly said that the Oondy Talook gives a larger yield of paddy and a better quality of rice than any other Talook in the whole Delta. And taking the general character of the three Talooks, which belong to Rajahmundry, in the Western Delta, and form the lower portion of the Delta, I believe I am not far wrong in estimating the average yield of paddy for the first crop at the same rate as that taken for the Central Delta, that is to say at 22 cwts.

* Special Report, para. 45.

19. Some idea may be formed of the advanced state of the harvest, when the crops were measured in the upper portion of the Western Delta, from the fact that in two of the six villages which I visited, there was only one field standing when I got there. The yield in these two villages, viz., Ogidy and Casapad, was 12 and 13 cwts. respectively, and these fields materially affect the villager's average, which fully shows how much does depend on the paddy being planted out at the proper time, and that the great want at present of labour and stock in the upper portion of the Western Delta does affect the yield there in many instances, though not to the extent generally, that I had expected. A field at Casapad had been selected and cut, it will be remembered, before my arrival. And, including this experiment, and including the crops measured in the lower portion of the Western Delta, the D. P. W. average is 22 cwts. Excluding the Siddantum experiments, however, the average would be 23 cwts. Only one selection was made by the Tahsildar; and that experiment gave a result of 20 cwts. within a few pounds; whilst the villagers' average it will be seen was only 11 cwts. Taking the average of the three averages, gives an average of 2,000 lbs. or 18 cwts., all but 16 pounds; and 18 cwts. may I believe be taken with propriety as the average of the upper portion of the Western Delta. From the circumstances under which some of the specimens included in the villagers, average were selected, it may be considered that I am under-estimating the produce. But if I am under-estimating the produce of this part of the Delta, from what has been said of its present condition, the error, it will be seen, is here at all events on the right side; and considering the advanced state of the harvest, when almost all the measurements were made, I do not think on the other hand that there is any fear of 18 cwts. proving an over-estimate.

Summary of Results.—20. It will now be desirable to exhibit at one view the conclusions

which I have formed regarding the average yield of a first crop of transplanted paddy in the Delta of the Godavery.

Eastern Delta, average per acre, 20 cwts.
Central Delta, „ „ 22 „
Western Delta,
Lower portion, „ „ 22 „
Upper portion, „ „ 18 „

A bushel of new Coosumba paddy weigh, 48 lbs. 2 oz. 9dr. Avoirdupois. In the weight of the other kinds of paddy there would be some slight difference; and a further difference would be occasioned according to the age of the paddy. But as this measurement is merely supplementary, great accuracy is not requisite and the bushel has been taken at 48 lbs. Avoirdupois for all kinds of paddy. Taken at this rate it will be observed from the statement at para. 15, that the average yield varies in bushels from 26 to 65 per acre, and that the best crop selected in the Central Delta gave a yield of 91 bushels of paddy per acre.; whilst the averages given in the preceding para. similarly expressed, would be for the Eastern 46, for the Central 51, and for the lower and upper portions of the Western Delta 51 and 42 bushels respectively.

21. Feeling deeply the vast importance of any inquiry, however cursory, from which the Government may be led to form an opinion of the average produce, and the extent to which assessment may be raised in consequence, in the Delta of the Godavery, I have done my best to come to a right view of the case. But when the best has been done, and abilities far beyond what I can bring to the task, have been worked to the utmost, every man must still feel how wide a field is left in such inquiries for error. And in submitting for consideration, the conclusion which I have ventured to form on this all-important subject, it is no small comfort to know, that, within the next three years, their accuracy will be tested by the experiments which are now being carried out on a large scale by the officers of the General Revenue Settlement.

Soils of the Delta, Appendix II.—22. In Appendix No. 2, I beg to submit with remarks, a statement of experiments made in the Delta this year by various officers of the D. P. W., the averages of which are satisfactory to me as supporting opinions that have now been given, and had been formed before these averages where made out. And I will close this portion of my report by submitting the following statement, in which the experiments made by myself, in concert with the D. P. W., have been classed according to the soil on which the crops are grown, and from which it may be inferred that the finest crops in the Godavery Delta are grown on the soil of which there is most. Out of 52 experiments no less than 30, or three-fifths, were crops grown on cotton soil of one kind or another. In the Central Delta I attempted to distinguish between the first and second sort; it will be seen, without much success; and there the average yield in either case was above 26 cwts.; whilst the average yield of paddy for the whole Delta in the best black cotton soil was within 2 lbs. of 25 cwts.; and taking into the bargain every description of inferior cotton soil inclusive of reclaimed lands, and last fields left standing, &c., the yield on this soil was still close upon one ton per acre.

Out-turn of transplanted Paddy in the Godavery Division, classed according to the soil on which it was grown for the first crop of 1858-59.

Division of the Delta.	Out-turn of Paddy per Acre in lbs. Avoirdupois.						
	1		2	3	4	5	6
	Revady or Cotton Soil.		Gurrapa or light coloured reddish soil mixed with clay.	Palasouty, milky coloured.	Yerra Checka.	Mussaka.	Sand.
	First Class.	Second Class.					
Eastern Delta.	2,751 3,704 2,349	1,438 2,996 1,418 2,798 2,867 2,520 1,562 1,115	3,541 2,660 2,291 2,225 1,673 1,189 2,262 1,465 1,975	3,440 1,903	1,905 1,765 3,771		
Average.	2,935	2,089	2,142	2,671	2,481		
Central Delta.	3,477 4,386 2,512 1,430	2,437 3,180 3,428 2,737		1,335			3,575 3,293 1,012
Average.	2,951	2,943		1,335			2,626
Western Delta.	2,346 2,224	1,333 3,413 1,493 2,484 2,585 1,055 2,435 1,550 770				2,229 1,421 2,010	
Average.	2,285	1,902				1,876	
Average for the whole Delta.	2,798	2,206	2,142	2,226	2,481	1,876	2,626

Water Carriage.—23. Having ascertained the average yield for the several portions of the Delta, the next step is to estimate the value of the produce, at the current prices, at which the grain was selling in the villages, where the experiments were made. And in considering this part of the subject, at the risk of swelling my report beyond the limits to which I would wish it kept, I must call attention at length to two or three points in the following statement, which mark very clearly the results of good water carriage. The map already given only shows the main lines of navigation. From a map, to be given subsequently, it will be seen that besides these main lines there are several drainage lines, &c., which also afford fair navigation during six or seven months in the year; and, thus supplied with the means of cheap transit, the Delta gains at once by any favourable change in markets. A rise in prices in Ceylon is telegraphed; the news is no sooner received, than the canals are covered by a fleet of boats—the required supply is obtained from the villages where paddy is stored along

the banks;—and, in a fortnight from the receipt of the news, the ryots have sold their crop, and the grain is, probably, all collected, ready for shipment. Elsewhere the news travels with equal rapidity; but the process of collecting the requisite supply is very different; and the cost of transit gives famine prices, when in the very next District, there is a glut of grain in the markets. And I can illustrate these remarks by referring first of all to a rise of prices on the Western Delta in the first week in January, and secondly, to the difference in prices between the markets of the several divisions of the Godavery Delta itself.

Statement of current Prices.—24. I have already mentioned that I made a hastly run from the Eastern Delta to measure the crops at Siddantum; and, when I was there on the 24th December, the price of paddy was 13 Rupees per Pooty. When I returned to this Delta on the 3rd of January, I found that the price of paddy had risen to 15 Rupees per Pooty. News, it was said, had been received of a rise in prices in the South; the banks were lined with boats, into which the grain was being poured as fast as bought; and the prices having risen 15 per cent. in ten days, the ryots were gaining 15 per cent. on every cwt. they chose to sell. Here the advantages of a free water carriage come fully into view. But before I thus returned to the Western Delta, I had been measuring the abundant crops in the Central Delta. There I had found the finest soil and the finest crops. But great natural advantages are there, comparatively of little value for want of the means of transport. The ryots of Amalapoorum have no canals available for navigation; and the ryots of Amalapoorum were no gainers by the rise in prices. Whilst I was engaged in the Eastern Delta, paddy was selling there, in every village that I visited, with two exceptions, for 15 Rupees and upwards per Pooty, which is about Rupees 1-5 per cwt. At Yanam the price of paddy was higher, it was 16 Rupees per Pooty or Rupees 1-6 per cwt. And when I crossed the Eastern branch of the Godavery to Cheyair in the Central Delta, I found paddy selling at Rupees 13-4 per Pooty or Rupees 1-2 per cwt. It will be seen from the map that Cheyair is not far from Yanam, and only a few miles from the river bank; and though the paddy at Cheyair was probably finer than that selling at Yanam, still there was 22 per cent. difference in prices; and, admitting that paddy would any way sell higher at Yanam than in the neighbouring villages, still the ryots of Cheyair are at a great disadvantage; they were getting 13 per cent. less for their grain than the growers of paddy on the Cocanada and Coringa canals. Nor was there any improvement to speak of in the prices in the Central Delta till I got to Razole in the Nuggarum Talook. There the price of the paddy cut at Beetamullay Poodysivarum in the neighbourhood was quoted at Rupees 1-2-7 per cwt.; and at that very time in the Nursapoor market, at a distance of some nine miles, the same paddy was selling at Rupees 1-5 per cwt. or thereabouts. The want of a ready means of transport made a difference to the ryots in all the southern villages of 13 per cent. in the valne of their produce.

Statement showing the current price of the First Crop of transplanted Paddy in 1858-59, in the villages in which it was measured in the Delta of the Godavery, and the value of the produce per acre for each experiment.

1	2	3	4	5	6	7	8
Division of the Delta.	Names of Villages.	Current price of Paddy per Pooty.	Weight of Pooty of Paddy in lbs. Avoirdupois.	Current price of Paddy per cwt.	Value of Paddy per Acre at current price of the village.	Value of Straw per Acre at Rs. 0-1-4 per bundle of 75 lbs. each.	Total value of produce per Acre.
		R. A. P.	lbs.	R. A. P.	D. P. W. Number of field. R. A. P. / Tahsildar. Number of field. R. A. P. / Villagers. Number of field. R. A. P.	D. P. W. Number of field. R. A. P. / Tahsildar. Number of field. R. A. P. / Villagers. Number of field. R. A. P.	D. P. W. Number of field. R. A. P. / Tahsildar. Number of field. R. A. P. / Villagers. Number of field. R. A. P.
Eastern Delta.	Gundraidoo	15 0 0	1,269	1 5 2	7,40 3 5 / .. 0 0 0 / 115 17 11 2	7 5 8 9 / 208 4 8 3 / .. 0 0 0 / 115 1 10 8	7 45 7 2 / 208 36 12 1 / .. 0 0 0 / 115 19 5 10
	Meddapad	14 10 8	1,268	1 4 8	202,40 15 11 / 200 30 14 6 / .. 0 0 0 / .. 0 0 0	202 46 1 1 / 200 35 14 6 / .. 0 0 0 / .. 0 0 0	202 48 1 1 / 200 35 14 6 / .. 0 0 0 / .. 0 0 0
	Peddada	15 0 0	1,238	1 5 4	15,20 5 7 / .. 0 0 0 / 345 28 8 10	15 30 6 6 / .. 0 0 0 / 345 28 8 10	15 30 6 6 / .. 0 0 0 / 345 31 1 7
	Bickavole	15 0 0	1,278	1 5 0	22,44 11 7 / 17,20 13 7 / 20 21 15 7	22 46 6 3 / 17 25 2 11 / 20 24 15 7	22 46 6 3 / 17 25 2 11 / 20 24 15 7
	Pussalapoody	14 10 8	1,271	1 4 8	90,33 10 3 / 76,26 0 2 / 68 16 9 3	90 38 3 7 / 76 29 2 4 / 68 16 9 3	90 38 3 7 / 76 29 2 4 / 68 16 9 3
	Moochoomillay	15 0 0	1,311	1 4 6	206,32 2 2 / 264,19 3 3 / 266 13 11 4	206 34 7 6 / 264 21 3 2 / 266 15 2 8	206 34 7 6 / 264 21 3 2 / 266 15 2 8
	Gotramillay	15 0 0	1,278	1 5 0	.. 17 7 6 / .. 23 2 2 / 31 11 4 0	.. 19 2 3 / .. 25 2 2 / 31 11 4 0	.. 19 2 3 / .. 25 2 2 / 34 0 8
	Vella	15 0 0	1,266	1 5 2	.. 33 9 7 / .. 30 0 0 / 18 9 7 0	.. 37 4 3 / .. 32 5 4 / 20 14 11 0	.. 37 4 3 / .. 32 5 4 / 20 14 11 0
	Yanam	16 0 0	1,240	1 6 11	.. 24,13 4 6 / .. 0 0 0 / .. 0 0 0	.. 23 10 0 11 / .. 0 0 0 / .. 0 0 0	.. 23 10 0 11 / .. 0 0 0 / .. 0 0 0
	Average	15 0 7	1,271	1 5 2	30 15 2 / 27 4 9 / 20 3 9	34 10 0 / 34 5 7 / 21 14 2	34 10 0 / 34 5 7 / 21 6 9
	General Average						
	Average of Averages						
Central Delta.	Anantarum	13 4 0	1,304	1 2 2	.. 35 6 11 / 46 0 8 / 24 13 5	.. 43 14 0 / 57 11 4 / 30 15 2	.. 43 14 0 / 57 11 4 / 30 15 2
	Cheyair	13 4 0	1,314	1 2 0	109,31 12 9 / 52,37 3 3 / 378 14 9 2	109 43 7 6 / 52 42 1 5 / 378 18 9 2	109 43 7 6 / 52 42 1 5 / 378 18 9 2
	Beemanpilley	13 4 0	1,316	1 2 0	56 13 9 0 / 61 9 14 10	56 13 10 6 / 61 12 9 6	56 13 10 6 / 61 12 9 6
	Betamillay	13 5 4	1,237	1 2 7	247 14 6 3 / 252,31 9 8	254 32 15 3 / 259 33 3 0	254 32 15 3 / 259 33 3 0
	Average	13 4 4	1,293	1 2 2	31 14 2 7 / 20 3 9 0	40 6 0 1 / 24 5 3	40 6 0 1 / 24 5 3
	General Average				24 7 5 4	35 6 1 1	35 6 1 1
	Average of Averages				28 3 4	34 15 1	34 15 1

Statement showing the current price of the First Crop of transplanted Paddy in 1858-59, &c., (Continued.)

1	2	3	4	5	6	7	8
Division of the Delta.	Names of Villages.	Current price of Paddy per Candy.	Weight of Paddy in lbs. Avoirdupois.	Current price of Paddy per cwt.	Value of Paddy per Acre at current price of the village.		Total value of produce per Acre.
					D. P. W.	Tahsildar.	D. P. W.	Tahsildar.	Villagers.	Villagers.
		R. A. P.	lbs.	R. A. P.	Number of field. / R. A. P.	Number of field. / R. A. P.	Number of field. / R. A. P.	Number of field. / R. A. P.	Number of field. / R. A. P.	Number of field. / R. A. P.
Western Delta.	Siddantum	15 0 0	1,216	1 3 1	370 / 5 3 4	.. / 0 0 0	370 / 12 10 6	.. / 0 0 0	141 / 1 3 3	141 / 1 3 3
	Ogaly	15 0 0	1,300	1 4 6	56 / 3 3 4	.. / 0 0 0	56 / 2 2 1	.. / 0 0 0	.. / 15 6 2	.. / 17 3 6
	Casipad	15 0 0	1,525	1 1 7	227 / 2 10 7	.. / 0 0 0	227 / 7 2 2	.. / 0 0 0	166 / 14 10 1	166 / 16 4 4
	Pipurroo	14 8 0	1,487	1 1 5	519 / 1 12 5	.. / 0 0 0	519 / 4 2 3	.. / 0 0 0	654 / 10 4 2	654 / 11 9 5
	Comara	16 0 0	1,563	1 2 3	280 / 2 0 0	.. / 0 0 0	280 / 24 15 0	.. / 0 0 0	Inam / 15 12 3	Inam / 17 6 10
	Ganaparum	16 0 0	1,512	1 2 1	.. / 0 0 0	.. / 0 0 0	.. / 0 0 0	.. / 0 0 0	246 / 8 2 5	246 / 8 13 1
	Tedda Caparum	16 0 0	1,525	1 2 0	55 / 2 0 0	50 / 2 0 0	55 / 24 9 10	50 / 23 5 5	.. / 0 0 0	.. / 0 0 0
	Average	15 1 1	1,418	1 2 8			25 5 1	23 5 5	13 3 6	14 11 9
	General Average						15 15 10			
	Average of Average						20 10 0			

N. B.—This Statement corresponds with the Statement given at para. 14, as regards the grain. From column 4 it will be observed that the size of the Pooty varies, more or less, in every village. The actual variations in the price of paddy are shown in column 5. The yield of straw in kind has been given in detail in Appendix I, and the price of the straw has been estimated for the whole Delta at the same rate, which shows too high a value for the Central Delta under existing circumstances, whilst under any circumstances, it must not be inferred that it would be possible for the ryots to realize on the whole of their straw to the value shown in this Statement.

Average of current prices in each division of the Delta.—25. In estimating the value of the produce for a whole Delta, it is of course necessary to consider the situation of the villages where the market price was ascertained. And, excluding Yanam, six out of the eight villages visited in the Eastern Delta were situated, it may be said, at an average distance from the banks of the canals. The average of the prices in these villages may therefore, I think, be taken for the Eastern Delta generally. With Yanam the average price was Rupees 1-5-2 per cwt.; without Yanam the average price is Rupees 1-4-11 per cwt.; and I propose therefore to take the average price of paddy in the Eastern Delta this year at Rupees 1-4-11 per cwt. In the Central Delta, it will be seen from what I have already stated, the average price may be taken as it stands, at Rupees 1-2-2 per cwt. But in the Western Delta the average shown by the Statement must be corrected; and here the correction is more difficult. The greater portion of the villages were either on the canals or close to them, and the average price in these villages, taken together, was Rupees 1-2-8 per cwt. But a rough deduction must be made in this average for the markets of those villages which are at a distance from the canals, and the ryots, consequently, do not get the price for their grain that is given where no expensive transfer is necessary. And fixing the extent of this deduction must, under any circumstances, be more or less conjectural. Excluding Vippurroo, which is some little distance from the canal, the average price of paddy on the canals in the Western Delta was Rupees 1-2-10. An ordinary cowery load, which is the cheapest way the paddy can be carried to the boats, weighs somewhat less than 1 cwt., and a deduction of 10 Pice per cwt. will be the deduction of somewhat less than half a day's labour on all the grain moved. Taking the whole of the villages, half a day's labour seems to me a fair average, and, making this deduction, leaves Rupees 1-2 as the average price of paddy per cwt. in the Western Delta, which I propose to adopt. The average prices for the three Deltas will therefore stand thus:—

Eastern Delta.	Price of paddy per cwt.	Rupees	1	4 11
Central Delta.	„ „ „	„	1	2 2
Western Delta.	„ „ „	„	1	2 0

26. Taking the average yield and the average prices as my guide, I shall endeavour to calculate subsequently the total value of the first crop of transplanted paddy in the Delta of the Godavery and so show the general results of the Annicut and its subsidiary works. But before entering on this branch of the inquiry, it will be as well to refer briefly to the cost of cultivation, and to other information given in the preceding statement, which, besides the value of the paddy, gives also the estimated value of the straw and the total value of the produce per acre, in each instance. From these data some idea may be formed of the effects of the Annicut viewed more closely.

Para. 06. *Returns and cost of Cultivation.*—27. In the Special Report I have given the cost of cultivation, for the first crop, at Rupees 5 per acre; and subsequent inquiries lead me to think that the estimate is not far from the truth, and that the error, if any, is on the right side. But the details require correction. In making the estimate, I have included in "transplanting" the cost of the seed, which should have been shown in the nursery expenses; and the following is a more correct statement of the details for the cultivation of 8 acres, which is the quantity of land usually taken for making such calculations. Cost of nursery including the price of the seed, Rupees 8; ploughing, Rupees 7; transplanting, Rupees 9; weeding, Rupees 2; reaping and stacking, Rupees 7; thrashing, Rupees 3-8; and sundries, Rupees 2; in all Rupees 38-8, or, in round numbers, Rupees 40 for 8 acres; and Rupees 5 per acre. As regards the seed grain I find from Mr. R. Smith that at the Government Gardens, 54 lbs. of seed is the average quantity required to give sufficient seedlings for an acre of land. But from what ryots have told me as to the cost of seed, I have calculated that 30 lbs. are enough; and with these data we have the following results:—Taking the lowest average yield of paddy per acre as shewn in the statement at para. 20 at 18 cwts. and the highest at 22 cwts., the return in paddy at present, on the seed sown, is according to Mr. R. Smith, 37 and 45, and according to the ryots' calculations, 67 and 82 fold. And comparing the total cost of cultivation with the average value of the paddy in the subsequent statement at para. 25, gives a still more distinct idea of the returns

now obtained by means of the Annicut on a small outlay of the ryots' capital. It will be observed that, excluding the assessment, at a cost of Rupees 5 per acre, the returns on the grain alone, rose in the Eastern to 618, and in the Central Delta to 657 per cent.! In the Western Delta the value of the average yield, according to the villagers, is Rupees 13, and the return on the ryots' outlay falls here to 264 per cent. But I have already stated the various causes by which this average was affected. And I will not now refer further to this portion of the information contained in the statement, as its averages have been considerably modified to meet the changes necessarily made as regards the average yield and average prices for whole divisions of the Delta.

Total available value per Acre.—28. The want of water carriage, already referred to in the Central Delta, shows itself in this statement. The good soil makes little difference to the ryot. But when the value of the straw has been added, in column 8, to the value of the grain, in accordance to the orders* of Government, the difference between the two Deltas becomes marked again; because in calculating the value of the straw, which is all along an estimate, I have kept to one standard of 1 Anna 4 Pice per bundle. But the value of the straw should also be reduced in the Central Delta for want of carriage. Nine Pice per bundle is perhaps a fair calculation; and at this rate I propose to calculate it, in following out the orders of Government with reference to the general averages.

* Para. 32, Minutes of Consultation, Revenue Department, No. 329 of 1858.

For this purpose I beg to annex the marginal statement taken from Appendix I, and showing, according to actual experiment, the average yield of straw per acre in bundles of 75 lbs. each compared with the average yield of paddy in cwts. According to this statement it would appear that a good yield in grain is accompanied by a much greater increase in the quantity of straw. How far this is generally true is doubtful; and much depends of course on the way the field is reaped. If the straw is very large and strong in the stalk, a ryot reaping on his own account will leave a two, or two and a half feet stubble on the ground; for the lower portion of such paddy straw is not fit for the cattle to eat. And many other considerations affect the yield of straw viewed as a source of profit. But, on referring to Appendix I, it will be seen the averages now given are borne out pretty closely by the details in all three Deltas; and bearing in mind the proportions to which these averages were modified for the paddy, I propose to take the yield of straw per acre at 36 bundles in the Eastern, 72 in the Central, and 72 and 24 bundles in the lower and upper portions of the Western Delta respectively, which would give $1\frac{1}{2}$ bundle in the Eastern, $3\frac{3}{17}$ bundles in the Central, and $3\frac{3}{17}$ and $1\frac{1}{2}$ bundles of straw per cwt. of grain in the Western Delta. Deducting three-quarters of the straw, with reference to the reasons given in my Special Report,* to be put back into the land, leaves 9, 18, 18 and 6 bundles as the quantity

* Para. 102.

Division of the Delta.		Out-turn of Paddy per Acre in cwts.			Out-turn of Straw per Acre in bundles of 75 lbs. each.		
		D. P. W.	Tahsildar.	Villagers.	D. P. W.	Tahsildar.	Villagers.
		Cwts.	Cwts.	Cwts.	Bundles.	Bundles.	Bundles.
Eastern Delta.	Average.....	23	20	15	44	33	26
	General Average...	20			36		
	Average of Averages	29			34		
Central Delta.	Average.....	27	28	17	101	91	47
	General Average...	24			82		
	Average of Averages	24			70		
Western Delta.	Average.....	22	19	11	29	24	18
	General Average...	17			23		
	Average of Averages	17			23		

of straw to be added to the value of the paddy in the Eastern, Central and two divisions of the Western Delta, in order to obtain the total available value of produce per acre; and then the account will stand thus:—

Eastern Delta, 20 cwts. of paddy at Rupees 1-4-11 per cwt....	Rs.	26	2	4
,, ,, 9 bundles of straw at Rupees 0-1-4 per bundle....		0	12	0
Total available value of produce per acre...		26	14	4
Central Delta, 22 cwts. of paddy at Rupees 1-2-2 per cwt...	Rs.	24	15	8
,, ,, 18 bundles of straw at Rs. 0-0-9 per bundle...		0	13	6
Total available value of produce per acre....		25	13	2
Western Delta,				
Lower portion, 22 cwts. of paddy at Rs. 1-2-0 per cwt....	Rs.	24	12	0
,, ,, 18 bundles of straw at Rs. 0-1-4 per bundle.....		1	8	0
Total available value of produce per acre...		26	4	0
Upper portion, 18 cwts. of paddy at Rs. 1-2-0 per cwt...	Rs.	20	4	0
,, ,, 6 bundles of straw at Rs. 0-1-4 per bundle.....		0	8	0
Total available value of produce per acre...		20	12	0

Returns without Annicut Irrigation.—29. In my letter of the 1st February 1849,* I have given my reasons for not having gone, in my Special Report, into the details of assessment as shown on each field in the village accounts, when the joint rent tenure is in force; and for the same reasons I will not now swell this report by remarks on data that in all probability are inaccurate. When the estimated area under irrigation has been given, it will be possible to show with some approach to accuracy, what is the real rate of assessment at present. And this portion of the inquiry may be fitly closed by giving the result of some experiments made to ascertain the cut-turn this year of transplanted paddy, where the ryots have not had the benefit of Annicut irrigation. One of these experiments was made in the Eastern Delta, under the Lingal tank, which is in the neighbourhood of Bickavole, and just above the Samulcotta canal. I selected the finest crop I could find, and it yielded, on being measured by Mr. R. Smith, not quite 11 cwts.; whilst below the canal, where the land had the benefit of Annicut irrigation, the yield, even on the land selected by the villagers, which it may be imagined was far from the best, was 17 cwts.; and the field selected by the D. P. W. gave 33 cwts. per acre! There could not well be a more striking contrast. The second experiment was made in the Polaveram lunka in the Central Delta. It is a large tract of rich land separated from Cheyair and Anantarum by a branch of the Godavery; and, hearing accidentally, when at Cheyair, of the lunka or island being thus cut off from Annicut irrigation, I requested Captain Stoddard to have the kindness to measure a portion of the crop there. Two fields were selected; and the first gave a yield of 14, the second of 23 cwts. per acre, which in other parts of the Delta would be a fair average yield. But on comparing the yield on these lands with the villages of Anantarum and Cheyair,† the benefit of Annicut irrigation becomes at once apparent; and Cassim Coroo, where the measurements were made, was the only village where any crop had been saved. This village lies low. In all the other villages the transplanted paddy had entirely failed. And here again no remarks of mine are needed to show clearly the effects of Annicut irrigation, and place in its true light the contrast between the blighted tract, across the river, of some 14,000 acres, and the miles and miles of rich golden crops which I measured and have described as covering the other parts of the Amalapooram Talook.

* Para. 9.

† Para. 11.

Plan for ascertaining the effects of the Annicut.—30. I am sorry that it was not in my power to make some more comparisons between the crops within and without the influence of the Annicut;

for they are admirable evidence of the effects of Annicut irrigation in exceptional years. But I had neither the time nor the opportunity; and I feel myself deeply indebted, as it is, to Captain Rundall and the several Executive Engineers, by whose cordial co-operation I have been enabled to make upwards of 50 experiments where the land had the benefit of Annicut irrigation, and submit for consideration what is, I believe, a fair approximation to the present average yield in the different divisions of the Godavery Delta. These results, taken in connection with the area actually under irrigation, will, I trust, show clearly what are the agricultural resources of the Delta, and what is the general condition of the people at *present*, which may be further tested by the Export and Import Returns. But when this information has been all given, it still remains to be ascertained, how far the present state of prosperity and the present rise in the revenue is due to the Annicut, and to the Annicut and its subsidiary works alone. This is, of course, the main object of the inquiry; and this all-important point may, I trust, be shewn satisfactorily by determining, as accurately as possible, what was the condition of the country generally, and of the Delta, when the Annicut was begun; and comparing the progress made since, where the people have, and have not had the benefit of Annicut irrigation. For the former purpose, I shall quote the official opinions recorded on the subject at the time, and test the accuracy of those opinions, by fiscal returns, which are alas, in some cases, only too true a register. For the latter purpose, the Collectors of Rajahmundry and Masulipatam have kindly furnished me with comparative statements of the progress made since 1845-46, in the irrigated and un-irrigated portions of their respective Districts, as shown by the revenue of 1857-58, compared with the average revenue for the five years immediately before the Annicut was built, viz. from 1841 to 1845. But as that all-important average in the district of Rajahmundry is much below the revenue which the District yielded when the permanent settlement was introduced, and the agricultural resources of the District were then calculated with very great care, it is desirable that a brief sketch should be given of the intermediate *forty years*, and the accuracy of the average, and of the official opinions already referred to, will thus be further tested by the experience and teaching of the past.

Land Revenue of the district of Rajahmundry under the Permanent Settlement.—31. The District of Rajahmundry was acquired in 1768, and had, consequently, been thirty-four years under the English rule when the permanent settlement was introduced. The total assessment to be paid by the several Zemindars, amongst whom the District was divided in 1802, was fixed at Rupees 18,05,623; and partly by bringing to account certain villages which had been fraudulently kept out of the accounts at the time of the settlement, and partly in consequence of the assessment on some of the Zemindaries having been fixed on an ascending scale, the total assessment was subsequently raised to Rupees 19,21,907. But it cannot be said that the Government ever realized this sum from the District under the permanent settlement. For, taking the result of the first ten years, and including sale proceeds for arrears, which amounted to no less than 8,49,952 Rupees, the average sum collected under the head of Land Revenue was Rupees 18,21,488; and, in the next ten years, including in like manner the proceeds realized on sales for arrears of revenue, the average collections were only Rupees 18,84,319; which, according to this mode of taking the average revenue, was the highest average yielded by the District under the permanent settlement, and may be taken as the revenue that the District yielded when the permanent settlement was introduced. This sum, it will be seen, is far in excess of the average revenue for the five years from 1841 to 1845. But it was only collected for a comparatively limited period. For the next ten years, that is to say, from 1823 to 1833, the average land revenue collected was Rupees 17,91,241; which was a falling off of nearly a lac on the average collections of the previous ten years. And then the fall became more rapid. In 1838-39 the land revenue collections were only 13,69,599 Rupees; in 1843 the average on the previous ten years was Rupees 16,02,065; and, in 1844, the total collections under the head of land revenue fell to 12,32,036 Rupees; and the permanent settlement, it was found, had permanently broke down. So rapid a fall in the revenue having arrested the attention of Government, Sir Henry Montgomery was sent as Commissioner to inquire into the state of the District. And the above particulars, with the exception of the revenue for 1843-44, have been taken, after deducting Moturpha collections,

* Para. 20.

from a statement given in the able and valuable Report,* which Sir Henry forwarded to Government on the 18th March 1844; and which,

with other reports similarly sent to Government during the course of the same years, gives full particulars as to the actual state of the District at that time. But, before availing myself of the information thus afforded, which fully applies to three of the five years in question, it will be as well to consider the nature of the system, under which this rapid fall in the revenue had taken place.

Nature of the Zemindary system.—32. The tenure of the land in Rajahmundry was originally Zemindary; and, of the 15 Zemindaries of which the District was composed, 13 were in the hands of Zemindars when the permanent settlement was introduced. If the permanent assessment was fixed fairly, here the people were prepared in a measure for the new arrangements; and here, if any where, the stability and success of the permanent settlement might be looked for with confidence. But the Zemindary system under the native rule differed widely from the ideas of 1802. Under the native rule the Zemindar was simply a farmer of the revenue. He screwed what he could get out of the ryots, and was himself subjected in turn to the same process by the Government. His principles were never severely tried by a large surplus, and custom put a limit to the demands both of the Government and the Zemindars. Zemindars being responsible for the collection of the revenue, succession to the office, when a Zemindar died, was not left to the guidance of the laws of primogeniture alone, still less to the decision of Courts of law, on Pundits' interpretations of the sayings of Menu. And a radical change had been made in the system, when the Government determined to consider the Zemindar as simply the owner of an estate, for the possession of which he was to pay a *fixed* land tax, and, carrying out this thoroughly English idea to the full, gave up all control as to who should fill the important office of Zemindar, and left the Courts of law to decide, when a death occurred, whether the new farmer of the revenue should be, perhaps, a Hindoo widow, perhaps, a child, perhaps, an imbecile! Nor was the position of the ryots improved under the laws of 1802. For, in former days, the ryots could make common cause, when the Zemindar or his agents passed beyond the bounds of custom or mamool, and they could generally resist his attempts with success. But what could ryots do against the regular troops of the new rule; and, if sensible and respectable Zemindars dealt fairly, on the other hand, it is easy to see what would follow when ryots were left to the mercy of the unscrupulous adherents of a puppet. And, although the revenue of the District, by the help of repeated sales, was kept up for nearly thirty years, it is pretty certain that there had been a great change in the state of the District, and that the agricultural resources of the District had seriously deteriorated in that time. Sales of land under the Ryotwar Tenure are a healthy sign. They show that capital has been sunk in the land. And every facility should be given to land-holders for thus realizing on their outlay. But all sales of Zemindaries are sales of powers, that should never have been given by the British Government *to any man that chose to buy them*. If land is su-blet under the Ryotwar Tenure, arrears of rent can only be recovered like other debts; and each case must be decided, man to man, in the Civil Courts. Under the other tenure, every purchaser of a Zemindary, however bad his character, buys legal rights and privileges, that are necessarily given for the realization of the public revenues, and rides rough-shod over the ryots. The effect of such a system, as regards the agricultural resources of a District, is to encourage rack-renting of the worst kind; and the result of such a system may be anticipated.

Sir H. Montgomery's opinion of the Peishcush; Zemindary of Peddapoor.—33. After a careful and minute examination of the fiscal statistics of the District of Rajahmundry, Sir Henry Montgomery gave it, as his opinion,* that a deduction had been granted in 1802, of a third of the gross collections, in favor of the 13 Zemindars then in possession. A calculation in each case had been made of the "average gross collections" for the preceding 8 to 13 years, according as the accounts could be found. And so far as the permanent assessment was concerned, the state of the District, when Sir Henry Montgomery wrote, ought to have been, at the least, much the same as when the permanent settlement was introduced. But the faults of that system told at once; and, as a good illustration of the general effects of the permanent settlement, I beg respectfully to give now a short history of what happened to the Zemindary of Peddapoor, which was specially reported on by Sir Henry,† and "at the time of fixing the permanent assessment in this District was the

* To Government, March 18 1844, para. 6.

† Sir Henry Montgomery to Government, 31st January 1844, paras. 2, 3, 4, 5.

most extensive and important estate in it." A deduction was made in the Zemindar's favor of 3,36,703 Rupees. The gross collections of the Zemindary had been fixed at Rupees 9,94,623 on an average of seven years; and the Peishcush, or permanent assessment, to be paid to Government, was, therefore, Rupees 6,67,817, which sum the Special Commissioners, charged with carrying out the permanent settlement, considered could be paid with ease; more especially with reference to the annual investments of the Government in the cloth trade, and the flourishing condition of the District in consequence. It was doubtless expected, that ledgers would be kept, and that surplus profits would be expended on the Zemindary, or laid by to meet bad seasons. But, instead of this, as was somewhat more probable, the Zemindar of Peddapoor assumed regal state, and spent his surplus profits in various ways, none of which tended to the improvement of his Zemindary. And, owing chiefly to the arrears on this Zemindary,* in the very first year after the permanent settlement had been made, the revenue of the District fell short of its permanent assessment by five lacs. In 1805, the Zemindar died. He had previously bought two other estates, the Peishcush on which was 1,08,464 Rupees, and, on his death, the nature of the new arrangements came out in strong colours. The Zemindary was treated as strictly private property; the laws of inheritance were consulted; and, as the Zemindar's heir, and adopted son, was a minor, the Collector, on behalf of the Court of Wards, was called on to perform the duties of Zemindar; although, *only* three years before, a deduction of three lacs had been made in the gross collections of this Zemindary alone, to ensure these duties being discharged by others! In 1808 the minor died; and then the Courts and the laws of Menu came into play; and, for the next 20 years, the Zemindary was the subject of litigation. The former Zemindar, having large surplus funds at his disposal, had married often. He left several widows, and, in 1810, the eldest of these widows succeeded in getting possession of nearly the whole Zemindary, in which, of course, as a widow, she had only a life interest. According to the laws of 1802, this Hindoo widow, utterly without education and most probably a mere instrument in the hands of others, was allowed to become responsible for the annual payment of seven lacs and upwards of the public revenues; that is to say, a good third of the revenues of the whole District. In 1814 this woman died; and then the Zemindary, still in litigation, passed in turn to the second and third widows; the second widow being finally put in undisturbed possession of what remained of Peddapoor, in 1828, by a decree of the Sudder. The third widow, who succeeded in due course, died in 1838-39; and when at her death the Zemindary of Peddapoor was handed over to the son of the original claimant, he found it encumbered with debt, and reduced, by sales for arrears, to a third of its original size. Sales had been frequent. The Zemindary had been sold bit by bit; and, as might have been expected, what remained, and what was handed over to the original claimant's heir, was soon thrown back on the hands of Government again; and the Zemindary of Peddapoor no longer exists. The last of it was put up for sale on the 5th July 1847, for arrears to the amount of eight lacs; and no bidder sappearing, it was bought in by Government with a loss of six lacs.† Here, at all events, an ancient and extensive Zemindary was ruined by the legislation of 1802; which was utterly devoid of Indian experience, and based on the false idea that whatever is good for England *must* be good for India. And as the dangers which led to the ruin of Peddapoor, are inherent in the system and common to all Zemindaries, it may be inferred that the rest of the Zemindaries suffered in much the same way; and it would not be matter of surprise, under any circumstances, to find that in 1844 a large portion of the District had seriously deteriorated, and was no longer held under the Zemindary tenure.

* Sir Henry Montgomery, March 1844, para. 22.

Idem, January 31 1844, para. 6.

† From the Collector of Rajahmundry to the Board of Revenue, 7th July 1847.

Deterioration of the Assets of the District.—34. There were other causes, however, that had contributed to bring about this result. If Peddapoor, and the several Zemindaries in the hands of Zemindars, when the permanent settlement was introduced, had been assessed very favorably, besides these Zemindaries, there were 49 "Havelcy" villages and two large Zemindaries in the hands of Government, which were treated very differently. This portion of the District was

divided into a number of small estates; and the deduction made in favor of the Zemindars, where made, was so slight, that in 1844, 74 per cent. of these small Zemindaries had reverted to Government.* Whilst a deduction of 34 per cent. had been made in the one case, the Peishcush had been fixed in the other, it may be said, at the gross collections.

* Sir Henry Montgomery, 18th March 1844, para 8.

	Assets. Rupees	Peishcush. Rupees.
Ancient Zemindaries	18,09,047	11,92,157
"Proprietary Estates" of 1802	7,51,915	7,43,978
Total...	25,60,963	19,36,136.

Here, over-assessment, in the first instance, sapped the agricultural resources of the District, and the rates of assessment were severely tried on all sides by the abolition, in 1828, of the Government factories, for the purchase of cotton cloths, which had been specially taken into consideration at the Permanent Settlement. The District thus lost an annual outlay of some eight lacs. When the Annicut was begun, a portion of the revenue was again put back into the District; but, till then, from the date on which the factories were abolished, the District suffered severely from one continued drain of specie; and here, again, an adverse influence was brought to bear on the resources of the ryots. Further, the District, during the 40 years under review, suffered severely from natural causes. The terrible famine of 1833 was preceded by a hurricane and accompanied by floods that did much damage in the Delta. These storms were followed up, six years later, by an inundation of the sea that again did great damage in the Delta. And, as all these untoward events must have greatly aggravated the injurious tendency of the Permanent Settlement, they must each and all be taken into consideration in endeavouring to form an opinion as to the actual condition of the people, and the revenue the District was capable of paying, when a large outlay of the public money was sanctioned in the Delta of the Godavery.

Difference between paying to Zemindars and direct to Government—Population.—35. From the marginal statement given in the last para, it will be seen that the gross collections of the District of Rajahmundry, under the head of land revenue, were calculated in 1802 at Rupees 25,60,963; and, from the brief sketch that has been given of the history of the District since then, if no official opinions had been placed on record, and there were no revenue barometer, it would still be inferred, that, at the end of 40 years of a well intentioned rule, the agricultural resources of the District had greatly fallen off, and the District was utterly incapable of paying any thing like that sum. Under any circumstances, it is impossible for a District to pay continuously to Government the amount of revenue it can pay to Zemindars. For, in the latter case, a large portion goes back to the ryots at once, in the shape of the personal expenses of the Zemindars and their followers; whilst, in the former case, the revenue is put into the common purse, to be perhaps expended in the improvement of a Punjab or the waging of a Persian war. And, if the District had prospered, it would be vain to expect it to pay 25 lacs of revenue direct to Government, because it had paid that sum to the Zemindars. But the District, it has been seen from the above extracts from Sir Henry Montgomery's report, had not prospered; and how much the District had suffered, is clearly shown by the Census Returns,† which are to be found in the records from 1821, and are duly given in the same report. In 1821, the total population of the District was 7,38,308; in 1830, the population was 6,95,016, and in 1840, the population was only 5,33,836. In less than 20 years therefore, the population had fallen 2,00,000, upwards of 27 per cent; and there is every reason to believe that agricultural stock had diminished in much the same proportion.

† Sir H. Montgomery to Government 18th March 1844, para. 33.

Average Land Revenue of the Rajahmundry District, when the Annicut was begun.—36. In writing to the Board in 1846, which is two years later than Sir Henry Montgomery's report, the Collector of Rajahmundry gave it as his opinion, that the collections were more than half the gross produce, and that there were "no grounds for hoping, as matters stood then, that the resources of the province would improve."‡ It has been stated at para. 31, that the average land revenue collected, from 1833 to 1843, was Rupees 16,02,065. And, taking the average collections under this head

‡ 26th February 1846, paras. 14, 21.

for the five years, on which the comparative statement has been based, it will be seen that the result, as shown in the margin, is much the same. The average collections under the head of land revenue, between 1841-42 and 1845-46, were Rupees 16,06,828; and the last year of this series, reaches the year in which the official opinion, above referred to, was recorded; the total land revenue collected that year being Rupees 16,49,200. Taking the average of the five years as a fairer estimate of the revenue than one, shows a falling off of Rupees 9,54,135 on the assets, and of Rupees 2,77,521 on the Peishcush of the Permanent Settlement. And, although this fall is very great, still the fact of its having taken place is decidedly supported by the experience and teaching of the past. Rack-renting had done its work. There was no longer the agricultural stock that there was when the assets of the District were calculated in 1802. Direct collections, or a steady payment of the Peishcush, depend as much on the stock, as on the land. The land was still there, but without the stock it was useless. And, as the Board in commenting* on the letter, which contained the official opinion thus supported, only take exception to its accuracy, as giving too high an estimate for the gross produce, which had been calculated on the arable, instead of the cultivated area, I trust I do right in taking 16 lacs as all the revenue that the District was capable of yielding in 1816, and indicating, only too clearly, the precise state then of its agricultural resources, in the opinion of those best qualified to form an opinion on such a subject.

A. D.	Land Revenue.	
	Demand.	Collections.
	Rupees.	Rupees.
1841-42	17,63,864	16,22,266
42-43	17,53,802	15,10,765
43-44	17,07,951	12,32,036
44-45	17,69,983	21,19,872
45-46	17,68,138	16,49,200
Total.	87,63,741	80,34,139
Average.	17,52,748	16,06,828

* To Government 9th April 1846, para. 20.

Average Land Revenue of the Delta of the Godavery when the Annicut was begun.—37. The greater portion of the Delta of the Godavery having been included in the District of Rajahmundry from the Permanent Settlement up to this time, for so much of the Delta, the official opinions recorded regarding the state of the District generally, before the Annicut was begun, may be considered to hold equally true; and, in like manner, so much of the average land revenue of 16 lacs, as will be shown by the comparative statement to have been derived from the Delta Talooks of Rajahmundry, may be considered with equal truth as all the revenue those talooks were then capable of yielding. It was, however, most desirable that the revenue of 1802, and the exact results of the 40 years in the Delta, should, if possible, be accurately ascertained. I therefore applied for a statement, that should show the precise mode in which the Delta Talooks were treated at the Permanent Settlement. And, thanks to Mr. Purvis' kind co-operation, I am able to submit the subjoined statement, which shows that, for so much of the Delta of the Godavery as belongs to the Rajahmundry District, and is now held direct of Government, the gross collections, in 1802, were estimated at Rs. 13,75,453 and the permanent assessment or Peishcush was fixed at Rs. 11,69,916. In the rich Talooks that form the Lower Western Delta, *there had been no reduction in favor of the Zemindars;* the assessment had been fixed at nine per cent. above the gross collections; and, cruelly must those Talooks have suffered, before no man, however unscrupulous, would come forward to try his chance of making a profit out of the powers to be legally bought. On the whole of these Delta Talooks, the reduction was only 14 per cent.; and it will be seen subsequently,* that, instead of being able to pay to Government in 1816, the 13 lacs they had paid originally to the Zemindars, the average land revenue was only 10 lacs; which was 1½ lacs below the permanent assessment, and 14 per cent. below the gross collections, or assets, in 1802. The deterioration of stock on the whole District had been 24 per cent.; and, if the official opinions of the day, and fiscal returns, vouch for the accuracy of the general results, they clearly stamp the results shown for the Delta Talooks as trustworthy.

* Para. 67.

Division of the Delta.	Talooks.	Number of Villages.	Assets.			Permanent Assessment.			Difference.			Per Centage.
1	2	3	4			5			6			7
			Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	
Eastern Delta.	Cocanada	1	3,815	0	0	2,598	9	1				
	Bickavole	48	1,33,091	5	3	90,594	10	8				
	Capaveram	93	1,89,100	8	2	1,38,129	9	6				
	C. Ramachundrapoor	55	1,71,099	6	4	1,20,547	12	4				
	Total..	197	4,97,106	3	9	3,51,900	9	7	−1,45,205	10	2	29
Central Delta.	Rally	40	1,00,521	9	4	70,945	8	9				
	Amalapoor	81	1,80,513	13	4	1,43,043	4	1				
	Nuggarum	48	1,46,194	8	0	1,10,347	14	7				
	Total..	169	4,27,229	4	8	3,24,336	11	5	−1,02,892	9	3	24
Western Delta.	Mogultoor	67	1,56,298	1	7	1,71,523	4	11				
	Tanookoo	65	1,56,263	5	5	1,53,269	5	1				
	Oondy	91	1,38,356	1	7	1,63,896	8	8				
	Total..	223	4,51,117	8	7	4,93,709	2	8	+42,591	10	1	9
	Grand Total..	589	13,75,453	1	0	11,69,946	7	8	2,05,506	9	4	14

Between the statement received from Mr. Purvis and the statement given in Sir Henry Montgomery's report, there is a slight difference in the assets, arising apparently from the Land Customs; and the number of villages does not correspond exactly for each Talook, as given above, and subsequently in the comparative statement; but neither difference is such as to require notice; and it only remains to consider what was the state, when the Annicut was begun, of the three Talooks of Ralingy, Pentapad and Kykaloor, which belong to the District of Masulipatam, and are also a portion of the Delta of the Godavery. These three Talooks originally formed part of the great Zemindary of Ellore and Noozeed; but at the Permanent Settlement they appear as the Nidadavole Estate; and, after various changes and divisions, they finally lapsed to Government, the first and second in 1851 and the third in 1852. From 1841 to 1845 those Talooks were therefore still under the Permanent Settlement; and there is every reason to believe that the average shown by the Revenue returns received from the Collector of Masulipatam, which is the average of the gross collections, shows all the Revenue that those Talooks were capable of yielding when the annicut was begun, even paid through a Zemindar; whilst the state of the people in these Talooks at that time may be inferred only too clearly from the poverty-stricken look of the villages *now*, when the country has had the benefit of Annicut irrigation for some years. If not worse off, the ryots of the Masulipatam portion of the Delta of the Godavery were decidedly no better off in their circumstances, than the Rajahmundry ryots in 1816. And, whether as regards the state of the people, or the Revenue that the country was capable of yielding, when the Annicut was begun, I believe that the official opinions, above referred to, and the results shown by the comparative statement, to be submitted hereafter, are equally true for both Districts. And I therefore propose to calculate what has been the effect of the Annicut and its subsidiary works, by comparing the present state of the Delta and the present Revenue derived from the Delta, with its state in 1816, and the average Revenue collected from 1841-42 to 1845-46, as shown by the comparative statement for the whole Delta.

Zemindars.—38. It was not because the Zemindars of the last forty years were more vicious than their forefathers, that the country suffered so much in their hands. It would be contrary to experience to suppose that any race of men had become suddenly vile. But Zemindars and the Zemindary system, under the laws of 1802, under the Permanent Settlement, had been exposed to dangers unknown under a native Government; and the effects of a grievous error of judgment were only met in the Delta of the Godavery, when the English Government stepped beyond its predecessors, and with the help of Colonel A. Cotton, executed such a work, as no power in India had ever before *even attempted.*

Construction of the Annicut.—39. In addition to the various causes already referred to, as severally tending to injure the agricultural resources of the District of Rajahmundry and of the Delta, Sir Henry Montgomery dwelt strongly on the utter neglect of the existing works of irrigation, and the entire absence of any improvement in this all-important branch of the agri-

cultural resources of a tropical country.* Little was likely to be done "while the country was in the hands of numerous proprietors whose soleaim was to realize from their Estates revenue sufficient for their present wants, and whose jealousies prevented any thing like union among them for the common good." "It is impossible," Sir Henry further remarks, "to traverse this District without observing the neglected state of the minor works of irrigation," and, pursuing the subject to its legitimate conclusion, Sir Henry gives it as his opinion that the Government must be prepared for a considerable annual outlay, "if the neglect of former years is to be remedied, or the resources of the District are to revive." This neglect of the existing works of irrigation, which, consisted, when the Permanent Settlement was introduced, of numerous channels, that were fitted by the river in flood, and had been dug in past ages, but not by regulation-born Zemindars, was doubtless the most vital of the vital injuries inflicted by the Permanent Settlement on the agricultural resources of the Delta, and would, itself alone, account satisfactorily for a large portion of the financial deficiency. Brought thus prominently and forcibly to the notice of the rulers of the day, whose hands were no longer tied by a broken down tenure, a change for the better was at hand. Sir Henry Montgomery suggested that advantage should be taken of the presence, in this part of the Presidency, of Captain A. Cotton, whose acquaintance with the management of river irrigation on an extensive scale had been so successfully applied to the Southern Districts. And, on the 12th August 1844, Captain A. Cotton forwarded to the Board of Revenue a rough plan for the construction of an Annicut and the efficient irrigation of the Delta of the Godavery. Revised plans and estimates were submitted subsequently. Sanction for this great work was duly obtained from the Home authorities. And, in February 1847, the Annicut was begun. By the middle of the following year, it had been carried to a greater or less height right across the river. And, then, in consequence of Captain Cotton's health, the charge of the Annicut devolved on Captain C. A. Orr, for two years. In 1850, Colonel A. Cotton resumed charge, and, on the 14th April 1852, reported the completion of the Annicut, which had been built across the sandy bed of a river four miles wide, and one portion of which had then "stood four monsoons, and in one of them an unprecedented flood." These dates, which are requisite to show when the Annicut first affected the irrigation of the Delta, and when its full effect would be exerted in proportion, as the various channels were excavated, have been taken from the printed correspondence in Volume III., of the Professional Papers of the Madras Engineers, which further contains the Minutes of Consultation, under date the 27th May 1852, on the above Report. The Right Honorable the Governor in Council therein records his obligations to Colonel A. Cotton, Captain Orr, and the other Officers of the Department, "through whose unceasing exertion and energy" this great undertaking had been brought thus far to completion, and also to Mr. H. Forbes, the Sub-Collector of Rajahmundry, by whose "vigorous execution of the responsible duties assigned to him," the requirements of the Engineers had been met, and "order and regularity preserved amongst the vast assemblage of artizans and labourers congregated at Dowlaiswarum." A statement showing the cost of building the Annicut, &c., will be given subsequently; and I will now only add, on this subject, that leave to combine navigation, with irrigation, was not obtained by Colonel A. Cotton till 1848.‖ In 1849, the Cocanada canal, or as it was then called the Thoolia Bagah, was made navigable by means of two locks at Covoor and Chintapillay. From that date, therefore, the present system was developed in its entirety; and navigation was being rapidly extended over the whole Delta, when in 1857, a stoppage was put to public works, and the richest Talooks of all ¶ were left to send their produce to market on men's shoulders.

* To Government 7th Mar. 1849, para. 39 &c.

Idem, para. 42.

Para. 42.

Idem, para. 41.

‖ Captain Orr to Board of Revenue 3rd August 1849, para. 13.

¶ Para. 23.

Area irrigated for the first crop of 1857-58, *according to the Revenue Returns.*—40. According to the Revenue Returns the total area irrigated for the first crop of 1857-58, by means of the Annicut, was 2,77,852 acres. Nearly half this acreage was included in the Western Delta; whilst of the remaining half the distribution was as unequal. The irrigated area in the Central Delta was only about half that of the Eastern. Taking the whole Delta in a financial point of view, the irrigated area in the Joint Rent villages, it will be observed, is more than four fifths of the total area irrigated; and of this large proportion, 1,59,567 acres are held at the ordinary rates of assessment and 76,247 acres are Inam. The remaining fifth of the total area includes the irrigation under Zemindary and other enures; and this irrigated area is pretty evenly divided between the Zemindars and Inamdars.

	Acres.
Joint Rent Lands.....	1,59,567
Inams in Joint Rent villages.	76,247
Total..	2,35,814

Statement showing the area irrigated for the First Crop in the Godavery Delta in 1857-58, by means of the Annicut, and its assessment according to the Revenue Returns.

Division of the Delta.	Names of the Talooks.	Joint Rent Villages. Area.	Joint Rent. Consolidated Assessment.	Average per acre	Inam. Area.	Water cess.	Average water cess per acre.	Total Area.	Total consolidated assessment on the lands held at the ordinary rates of assessment and the total water cess on Inams.	Average per acre
	1	2	3	4	5	6	7	8	9	10
		Acres.	Rupees.	A. P. Rs. A. P.	Acres.	Rs.	A. P. Rs. A. P.	Acres.	Rupees	A. P. Rs. A. P.
Western Delta.	1 Pittapoor	..	368	.. ..	..	..	.. ..	..	..	.. ..
	2 Cocanada	..	1,12,714	.. ..	6	6	1 0	..	..	.. ..
	3 Bickavolu	10,243	1,03,823	5 5	7,643	14,135	1 13	21,359	75,178	3 8
	4 Copaveram	9,590	56,446	5 9	5,344	8,138	1 8	3761	1,122	2 15
	5 Cota Ramachun Tajoor	12,592	77,316	6 2	10,163	12,095	1 5	27,030	1,18,204	4 6
	6 Coringa	..	..	.. ..	..	..	.. ..	14,535	61,585	4 5
	Total..	41,794	2,38,770	5 11	23,161	34,372	1 7	88,703	3,19,546	4 0
Central Delta.	1 Rolly	933	5,541	5 15	1,547	1,162	2 0	8,285	23,946	2 14
	2 Amalapoor	10,827	57,228	5 4	7,007	10,884	1 8	19,566	73,897	3 12
	3 Nugsaram	2,490	49,216	6 9	6,669	11,207	1 14	13,356	60,424	4 8
	Total..	19,249	1,12,036	5 13	14,424	23,253	1 9	41,204	1,58,267	3 13
Eastern Delta.	1 Mogultoor	15,067	70,112	5 7	7,284	4,171	0 9	24,356	84,939	3 7
	2 Tankoo	24,181	1,22,371	5 0	2,381	7,126	0 9	37,490	1,30,758	3 7
	3 Undy	33,261	1,20,778	3 14	9,381	3,352	0 5	45,250	1,37,348	3 0
	4 Relungy	4,373	19,931	4 8	2,197	1,872	0 13	6,706	21,967	3 3
	5 Penugad	5,333	16,93.	3 2	2,823	694	0 5	8,643	18,006	2 0
	6 Kykalore	10,311	61,736	5 11	3,558	1,619	0 7	21,200	64,473	2 6
	Total..	98,523	4,27,050	4 5	36,672	18,824	0 13	1,47,944	4,57,512	3 1
	Grand Total.....	1,39,567	7,77,.9	5 11	76,247	76,449	1 0	2,77,852	9,75,326	3 8
Rajahmundry Talooks in the Western, Delta.	Total.	72,419	3,20,081	4 8	30,034	14,647	0 7	1,07,045	3,53,046	3 5
Rajahmundry Grand Total.		1,33,492	6,79,877	5 1	67,619	72,274	1 1	2,36,953	8,70,860	3 11
Malikipatnam Talooks in the Western, Delta.	Total.	26,072	93,019	3 12	8,628	4,175	0 7	43,899	1,04,446	2 6

Division of the Delta.	Names of the Talooks.	Description of Tenure.	Tenure. Area.	Other Tenures. Consolidated Assessment.	Average per acre	Inam. Area.	Water cess.	Average water cess per acre.	Total Area.	Total consolidated assessment on the lands held at the ordinary rates of assessment and the total water cess on Inams.	Average per acre
	1	8	9	10	11	12	13	14	15	16	17
			Acres	Rs.	A. P. Rs. A. P.	Acres.	Rs.	A. P. Rs. A. P.	Acres.	Rupees	A. P. Rs. A. P.
Western Delta.	1 Pittapoor	Zemindary.	16,202	68,449	4 3	5,058	6,621	1 4	21,259	75,178	3 8
	2 Cocanada	"	..	..	.. ..	..	..	.. ..	3761	2151	5 11
	3 Bickavolu	Agraharum.	..	..	.. ..	144	242	1 10	27,030	1,18,204	4 6
	4 Copaveram	"	..	..	.. ..	..	..	.. ..	14,535	61,585	4 5
	5 Cota Ramachun Tajoor	Zemindary.	1,278	4,524	3 11	671	1,667	2 8	..	..	.. ..
	6 Coringa	Mocasa Zemindary.	157	1,126	7 2	12	201	1 1	24,832	99,213	4 0
	Total..		17,637	74,099	4 3	6,111	8,29	1 2	219	1,341	6 2
									88,703	3,19,546	4 0
Central Delta.	1 Rolly	Zemindary.	1,813	11,898	6 9	3,99	5,342	1 5	8,285	23,946	2 14
	2 Amalapoor	Agraharum.	724	4,569	6 3	799	1,223	1 8	19,566	73,897	3 12
	3 Nugsaram	"	..	..	.. ..	101	2	0 0	13,356	60,424	4 8
	Total..		2,538	16,468	6 7	4,99	6,567	1 6	41,204	1,58,267	3 13
Eastern Delta.	1 Mogultoor	Zemindary.	760	3,94.	5 3	222	9	0 6	24,356	84,939	3 7
	2 Tankoo	Agraharum.	..	..	.. ..	1,08.	615	0 6	37,490	1,30,758	3 7
	3 Undy	Zemindary.	366	1,192	3 6	871	1,266	1 2	..	..	.. ..
	4 Relungy	Agraharum.	..	..	.. ..	124	2,225	2 0	45,250	1,37,348	3 0
	5 Penugad	Mocasa & Agraharums.	..	..	.. ..	1,112	194	0 14	6,706	21,967	3 3
	6 Kykalore	Mocasa & Agraharums.	..	..	.. ..	221	104	0 0	8,643	18,006	2 0
	Total..		1,127	5,.37	4 8	9,681	6,471	0 8	21,200	64,473	2 6
									1,47,944	4,57,512	3 1
	Grand Total.....		21,3	99,646	4 10	20,73	21,333	1 4	2,77,852	9,75,326	3 8
Rajahmundry Talooks in the Western, Delta.	Total.		1,127	5,137	4 10	3,410	4,109	1 0	1,07,045	3,53,046	3 5
Rajahmundry Grand Total.			21,303	99,646	4 9	14,510	19,061	1 4	2,36,953	8,70,860	3 11
Malikipatnam Talooks in the Western, Delta.	Total.		..	..	.. ..	6,219	2,272	0 5	43,899	1,04,446	2 6

NOTE.—This Statement is not strictly correct, as to the total area irrigated in each Division of the Delta according to the Revenue Returns, for some of the villages situated in the Central Delta, are entered in the Revenue Returns of the Eastern Delta, &c. But the number of such inaccuracies and the area involved is small. The results given by the Statement are generally correct; and the irregularities referred to, will doubtless be corrected under the new general settlement. It is also inaccurate in so far that the "consolidated assessment" in column 10, I have just learnt, (June 1, 1859), shows only the assessment to be paid to Government in Patrapoor which is under management.

Irrigation of the land held at the ordinary rates of assessment.—41. The assessment on the Joint Rent lands held at the ordinary rates of assessment, has been given consolidated with the water cess; because the water cess entered in the accounts, as levied on these lands, is merely nominal,* and it is impossible now to distinguish the extent to which a water cess has really been levied on these lands, *by raising the Joint Rents*. And, although this necessity does not exist in Zemindaries, still, in this statement, the same course has been followed with regard to Zemindaries also, in order to show, what is the total assessment paid at present on all such lands, according to the Revenue Returns, whether held under the Joint Rent tenure or through Zemindars. To put the exact position of these lands, according to the Revenue Returns, more clearly under consideration, I must further add that all the rates shown in this statement are below the truth in most instances, supposing the Revenue Returns to show the area correctly, in consequence of the rule that no water cess is to be levied till the land has been irrigated for two years. And in Zemindaries the rates are further diminished by some Zemindars, I believe, still refusing to pay, which of course makes the water cess on those who do pay, higher than is shown by an average on the total area irrigated. The rates are all, however, greatly affected by other causes that must be referred to at length hereafter; and I will not, therefore, dwell further on the subject at present.

* Special Report, para. 25.

Increase in the Productive Powers of the Soil.—42. If, indeed, the object of this inquiry were solely to ascertain whether the people of the Delta had been gainers by the Annicut, this report might be closed here. Taking the average yield,† and the recorded area for each Delta, the total yield for the first crop on the Joint Rent lands last year may be estimated at 33,22,593 cwts. or 20 cwts, per acre.‡ At this year's prices this crop would have been worth from Rs. 1-2 to Rs. 1-4-0 per cwt. But in 1816 it would only have been worth, according to the Collector§ Rs. 11 per Mullika Pooty, which, at 1,271 lbs. the Mullika Pooty, may be taken at Rs. 1 per cwt. And, taking paddy last year at the same value for the sake of comparison, the total value of the first crop of 1857-58, would be Rs. 33,22,593. The consolidated assessment on this crop is given at Rs. 7,77,896. And the consolidated assessment, or the Government share of the first crop last year, according to the Revenue Returns, was therefore 23 per cent. of the gross produce. But, in 1816, before the Annicut was begun, according to the Collector, "a calculation of the gross produce being equal to double the collections would probably be too high." The collections on account of Government, before the Annicut was begun, were therefore at least 50 per cent. of the gross produce. And here is at once a saving to the ryots of 27 per cent. of the gross produce, to be put down to the credit of the Annicut. Instead of paying 50 per cent. of the gross produce, the ryots now pay only 23 per cent. In other words, the productive powers of the soil have been so greatly increased by means of the Annicut, that there has been a virtual reduction of assessment in favor of the ryots of 54 per cent.; and this is a reduction on the average yield of ordinary years, whilst the year in which the average yield has been calculated, has been an exceptional year. Though the averages in the Delta have had to be lowered, because the crops, there, were finer than usual, and 20 cwts. by no means shows the average yield per acre last year, elsewhere it has been a very bad season; and the comparison does not therefore show at all the full extent to which the ryots have been gainers. The poor results where the crops had not the benefit of Annicut irrigation, did come to maturity, and where tested, have been shown. From what

† Para. 70.

Division of the Delta.	Area irrigated in the Joint Rent lands.	Average per acre.	Total yield on area irrigated.	Value of total yield at Rs. 1 per cwt.	
	Acres.	Cwts	Cwts.	Rs.	A. P.
Eastern Delta.....	41,794	20	8,35,893	8,35,893	0 0
Central Delta	19,249	22	4,23,494	4,23,494	8 0
Western Delta. Lower portion or Rajahmundry	72,449	22	15,93,894	15,93,894	8 0
Western Delta. Upper portion or Masulipatam...	26,072	18	4,69,309	4,69,309	8 0
Grand Total	1,59,567	0	33,22,593	33,22,593	8 0

‡ 46 Bushels.

§ To the Board, 26th February 1846 para. 14.

I saw myself elsewhere, I have not a shadow of doubt, that, without the Annicut, there would have been a general failure this year in the Delta of the Godavery, instead of plenty. And when it is considered that the effect of the Annicut on four-fifths of the Delta has been to lower the assessment in favor of the ryots, 54 per cent. in ordinary seasons, and to give an early harvest and bumper crops to all, in an exceptionally bad year, it would be surely superfluous to add a simple word to prove, that, as regards the material prosperity of the ryots, the Annicut has been an unmixed blessing. But, as I stated at the outset, I look on the inquiry into the financial results of a comparatively large investment of the public funds in a particular District, as by far the more important branch of this inquiry; and, to submit fully for consideration the results at which I have arrived in this respect, it will be necessary for me, I much regret, to trespass, considerably more, on valuable time. And it will then be seen, that the results now given, though sufficient to prove that the ryots have been great gainers, fall short, *very far short*, of showing the real extent to which they have been gainers by the construction of this Annicut and its subsidiary works.

Water cess on Inams.—43. Out of 2,77,852 acres, the total irrigated area, according to the Revenue Returns, 236,953 acres are similarly shown according to present fiscal arrangements to belong to the District of Rajahmundry, which includes the whole of the Eastern and Central Deltas, and the lower portion of the Western Delta. And from what has been shown of the relative fertility of the different portions of the Delta, it will be readily understood why the consolidated assessment on the Joint Rent lands in the Rajahmundry District averages Rupees 5-1-5 per acre, admitting the Revenue Returns to show the whole area irrigated, whilst in Masulipatam, it is only Rupees 3-12-1. The Masulipatam Talooks form, what I have styled, the upper portion of the Western Delta; and, as the average yield there was 4 cwts. below the lower portion of the Western and the Central Delta, and two cwts. below the Eastern Delta, it is only to be expected that the Joint Rent, would be comparatively lower. But this does not account for the marked difference in the water cess on the Inam lands in the two Districts; for the water cess has nothing to do with the supposed fertility of the land. In the Joint Rent villages in the lower portion of the Western Delta, the water cess is low, because there it has been levied as on the Joint Rent lands, by a per centage on what the lands were supposed to yield, some years back; and according to the arrangements then made, the cess must there remain for the present at the rate then fixed. But elsewhere in the Rajahmundry District, it will be seen that the water cess varies on the Inams from Rupees 1-5-8 to Rupees 1-9-9 per acre. In Masulipatam, on the other hand, in the Joint Rent villages, the water cess on 8,608 acres held as Inam averages only 7 Annas and 9 Pice per acre; and in the Inams in other tenures, on a recorded area of 6,219 acres, the average of the water cess falls to 5 Annas and 10 Pice per acre, which is little more than a nominal rate. On a total Inam area of 14,827 acres, the Masulipatam Inamdars pay only Rupees 6,447 water cess, or 6 Annas and 11 Pice per acre! And when it is remembered that the average yield, even in the Masulipatam Talooks, is upwards of 18 cwts. of paddy per acre, worth, at this year's prices, Rupees 20-0-4 it may perhaps be affirmed, that, with the exception of those Zemindars that have paid no water cess at all as yet, there is no class who have been benefitted more by the Annicut, and contributed less for the benefits received, than the Inamdars of the Masulipatam District. In the Special Report, the special rates on Inam irrigation in the Masulipatam District have been given.* And the subject having attracted the attention of the Board† it is not necessary for me to refer here more particularly to this source of loss in the existing Returns. The total area irrigated as Inam in both Districts for the first crop was 96,979

Masulipatam Inam.	Area irrigated.	Water cess
	Acres.	Rs.
Joint Rent.....	8,608	4,175
Other Tenures.	6,219	2,272
Total....	14,827	6,447

Tenures.	Area irrigated.	Water cess.
	Acres.	Rs
Joint Rent villages.	76,247	76,449
Other Tenures.....	20,732	21,333
Total...	96,979	97,783

* Para. 63.

† Proceedings of the Board of Revenue, 10th Decr. 1858.

acres; and the total water cess was Rupees 97,783 which is little more than a Rupee an acre.

Water cess on Zemindaries.—44. On 21,303 acres held at the ordinary rates of assessment in Zemindaries, and returned as irrigated in 1857-58 for the first crop, the consolidated assessment was Rs. 99,616, and the average per acre was therefore Rs. 4-10-10.*

* Para. 40.

But here, with the help of the Permanent Settlement, the water cess levied on account of Annicut irrigation can be ascertained accurately; and, on 21,303 acres, the total water cess levied in 1857-58 was Rs. 18,920. In the Central and Western Deltas, as shown in the Statement, the average water cess is Rs. 0-6-5 and Rs. 0-13-8 per acre, but the rates, where paid, are higher, for reasons already given.†

Division of the Delta.	Area	Water cess.			Average per acre.		
	Acres.	Rs.	A.	P.	Rs.	A.	P.
Eastern Delta.....	17,638	16,925	0	0	0	15	4
Central Delta.....	2,538	1,027	0	0	0	6	5
Western Delta.....	1,127	967	0	0	0	13	8
Total..	21,303	18,920	0	0	0	0	0

† Para. 41.

Whilst in the Eastern Delta, where more than four-fifths of the Zemindary irrigation is situated, the average of the water cess is Rs. 0-15-4 per acre. On 17,638 acres, the water cess levied for the first crop was 16,925 Rupees. The rate here has been chiefly lowered by the extent of land returned as newly brought under irrigation, and under the two years' exemption, paying no water cess at all. These Zemindaries are irrigated from the Samulcotta and Cocanada canals, which have been the longest at work of any; and a good instance is therefore given by these Zemindaries of the practical effect of that rule.

Tenures.	Water cess.		
	Rs.	A.	P.
Zemindaries..	18,920	0	0
Inams in Joint Rent Villages..	70,441	0	0
Inams in other Tenures	21,305	0	0
Total..	1,16,702	0	0

Total Assessment.—45. The total assessment fixed last year on the area irrigated for the first crop of 1857-58, was Rupees 9,75,326.‡ Of this sum Rs. 7,77,896 was to be collected direct, under the head of Joint Rent; Rupees 1,16,702 were similarly due as water cess; and the balance was the amount to be collected by Zemindars under the Permanent Settlement. The total assessment connected with the Annicut, and payable direct to Government, was, therefore, 8,91,598 Rupees. And it will now be my duty to show as accurately as I can, to what extent the agricultural resources of the Delta have actually been increased by a comparatively large outlay of the public funds, and to what extent this assessment might be raised in consequence. From the brief review that has now been taken of present results and of the water cess levied last year, where the water cess is capable of being distinguished, it will be seen that the Returns on the Annicut are capable of being raised, even granting that the recorded area shows the total area actually irrigated. But it is, I believe, universally admitted now, that the recorded area does not show any thing like the total area actually irrigated. And I therefore propose to estimate, as nearly as I can, what was the area actually irrigated in 1857-58, and then show, first, what would be the value of an average crop on the estimated area, and what might be fixed as a consolidated assessment on the Joint Rent lands; and, secondly, what was the increase in the assessment, actually fixed, over and above the average land revenue of the Delta before the Annicut was begun, and what portion of this increase may be ascribed to the Annicut. But before entering on this all-important portion of the inquiry, I beg leave to refer first to the Zemindary of Pittapoor, in which, according to the preceding statement, there were no less than 16,202 acres irrigated last year.

7,77,896
1,16,702
8,94,598

‡ Para. 40.

Pittapoor, Zemindary of.—46. The Zemindary of Pittapoor was the largest in the District, with the exception of Peddapoor, when the Permanent Settlement was introduced; and, as it is now in a very flourishing state, it would be as well to explain how it escaped the general fate. It might otherwise be thought, perhaps, that the causes which ruined Peddapoor had not been so general in their effects, as has been represented; and the explanation, thus requisite

can be given in a few words. In 1827-28, the then Zemindar of Pittapoor died, leaving an heir five years of age.* From that time to 1844, the Zemindary of Pittapoor was under management; it was nursed by the Collector; and it was *saved from the worst period of the District's history*. And in 1844, just when better days were dawning than the District had ever known before, the minor having grown up to man's estate, was put in possession of his Zemindary; and arrears that had accrued in the meanwhile to the extent of 6,17,531 Rupees, were written off.† No wonder, therefore, that the Zemindary of Pittapoor escaped the general fate; or that the nursing of the Zemindary was a heavy expense to the State. And the cause why so much of this Zemindary has since been brought under irrigation, compared with other Zemindaries in this Delta, and the large Zemindaries in the Kistna Delta,‡ can be given as easily. The Zemindary is again under management, in consequence of the death of the Zemindar and the heir being again a minor. The Zemindary of Pittapoor has thus been saved, in all probability, from destruction; and has been undoubtedly benefitted to a very great extent, solely in consequence of the Permanent Settlement being both times in abeyance; and the Zemindary of Pittapoor is therefore no exception to the general rule.*

* Sir Henry Montgomery to Government, 10th January 1844, para. 3.

† Minutes of Consultation 2nd July 1844.

‡ Special Report on the Kistna, para. 176.

Concealed Irrigation.—47. In the Special Report the extent of the concealed irrigation has been given at 36 per cent. for the Rajahmundry, and 46 for the Masulipatam portion of the Delta.§ But, in that calculation, the per centage was reckoned on the area of irrigation as ascertained by survey, for which the data were there available. And to estimate, for this inquiry, what the area *would be*, if tested by survey, it will be necessary to reverse the process pursued then, and ascertain what was the per centage of concealed irrigation according to the special inquiry, on the Revenue Returns, which are all the data now available. And the per centage of concealed irrigation, thus calculated, is 56 per cent. for the Rajahmundry, and 87 per cent. for the Masulipatam portion of the Delta; whilst for the whole Delta it is 68 per cent. Thus viewed, the extent of concealed irrigation seems still more startling. It may be doubted how far I am justified in applying limited experiments that gave such results to a whole Delta. And feeling fully the force, with which such argument could be urged, I feel deeply obliged to Captain Priestley, the Superintendent of the Revenue Survey, for putting it in my power to test the accuracy of the results indicated by the Special Survey of last year, by comparing them with some of the results obtained by the operations of the officers of his own department in this Delta during the last 12 months.

§ Para. 72.

District.	Extent of the irrigated area according to the Tahsildar's Returns.	Extent of the irrigated area according to the Survey.	Difference or extent of concealed Irrigation.
	Acres.	Acres.	Acres.
Rajahmundry.....	3,341	5,232	1,890
Masulipatam.....	2,066	3,876	1,810
Total.....	5,407	9,108	3,700

3,341 : 1,890 :: 100 : 56
2,066 : 1,810 :: 100 : 87
5,407 : 3,700 :: 100 : 68

* By the kindness of Mr. Purvis, I am able to give the extent to which the Collections have been raised, already, in favor of the minor Zemindar of Pittapoor.

	Average Assessment from 1841-42 to 1845-46.	Increase in 1857-58.	Per Centage.
Irrigated Villages, 42.....	Rs. 81,131	42,465	52
Other Villages, 89.....	2,25,625	44,908	19
		Total Increase	87,373.
Deduct the water cess paid to Government.	By Zemindar Rs.	15,818	
	,, Inamdars	6,629	
			22,447
Balance or net increase in favor of the minor Zemindar,			64,927

Statement of the estimated area of Irrigation. Results of the General Survey communicated by Captain Priestley. Appendix III—48. The two statements, which I received from Captain Priestley, are given in Appendix No. 3, and to one I shall have to refer indetail subsequently. But, for the present purpose, abstracts are sufficient; and these abstracts, it must, I think, be admitted, bear out fully the results already submitted. A circuit of 64 villages in the talook of Mogultoor in the Western Delta gave a total area of 80,491 acres; by the Revenue Returns the area, at eight acres the Pooty, was only 57,348 acres; and the excess ascertained by survey over and above the Revenue Returns was therefore 40 per cent. Taking the actual survey of 21 villages, included in the above circuit, on an acreage according to the Revenue Returns of 14,626 acres, an excess was found of 7,351 acres, which is 50 per cent. on the revenue returns. And when 40 and 50 per cent. are found to be the error in the gross area, where there is comparatively little reason for concealment, the assessment being only calculated on the cultivated area, it is not matter of surprise that the excess should rise to 87 per cent. when from 20 to 26 Rupees per acre, for a single crop, is to be gained by successful fraud. But owing to Captain Priestley's kind co-operation, this supposition is not left to mere inference; and the results of the special survey. For Captain Priestley has kindly favored me with a statement showing, for seven of the 21 villages, the detailed results of the survey compared with the Revenue Returns. And in this clump of seven villages, situated near Nursapoor, the extent of concealed irrigation rises to 128 per cent. on the Revenue Returns. A consideration of the area under irrigation, with reference to the quantity of water supplied, and the channels by which the supply is given, would probably explain why the extent of concealed irrigation in these villages is so much above the average. But in the meanwhile sufficient evidence has, I trust, been produced to prove that I am justified in applying the averages given by the special survey to the whole Delta. And this being the case, I beg to annex a Statement of the area irrigated for the first crop of 1857-58, estimated accordingly.

	Acres.
Revenue Returns	1,121. 43
Survey	2,561 41
Difference	1,440. 01
Per centage on Revenue Returns	128

Statement shewing the probable extent of the total area actually irrigated in the Delta of the Godavery by means of the Annicut, for the first crop of 1857-58, estimated with reference to the results of the special survey made under Minutes of Consultation of the 12th March 1858, Revenue Department, No. 329, and shewing further the probable value of the first crop of 1857-58, at the average prices realized by the ryots when the first crop of 1858-59 was cut.

Division of the Delta.	Joint Rent Villages.									Other Tenures.							
	Joint Rent Lands	Inams.	Total area irrigated according to the Revenue Returns.	56 per cent in Rajahmundry and 87 per cent in Masulipatam of the total area irrigated according to the Revenue Returns.	Probable extent of area actually irrigated or total of columns 4 and 5.	Probable extent of area actually irrigated in the Joint Rent Lands after deducting Inams.	Average available value of produce per acre.			Product of columns 7 and 8 or total available value of produce in the Joint Rent Lands.			Area irrigated in Zemindary and other Tenures.	Area irrigated in the Inams in Zemindary and other Tenures.	Total area irrigated according to the Revenue Returns.	56 per cent in Rajahmundry and 87 in Masulipatam.	Probable extent of area actually irrigated or total of columns 12 and 13.	Probable extent of total area irrigated under all Tenures or total of columns 6 and 14.			Average available value of produce per acre at the current prices of 1858-59.			Product of columns 15 and 16 or available value of produce for the whole Delta.		
1	2	3	4	5	6	7	8			9			10	11	12	13	14	15			16			17		
	Acres.	Acres.	Acres.	Acres.	Acres	Acres.	Rs.	A.	P.	Rs.	A.	P.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.			Rs.	A.	P.	Rs.	A.	P.
Eastern Delta	41,794	23,161	64,955	36,374	1,01,329	78,168	26	14	4	21,02,393	8	0	17,638	6,108	23,746	13,297	37,043	1,38,372	26	14	4	37,21,630	4	0
Central Delta	19,219	14,421	33,673	18,856	52,529	38,105	25	13	2	9,83,982	3	10	2,538	4,992	7,530	4,216	11,746	64,275	25	13	2	16,59,767	15	6
Lower, or Rajahmundry portion of the Western Delta.	72,449	30,051	1,02,503	57,401	1,59,904	1,29,850	26	4	0	34,08,562	8	0	1,126	3,410	4,536	2,540	7,076	1,66,980	26	4	0	43,83,225	0	0
Upper, or Masulipatam portion of the Western Delta.	26,072	8,608	34,680	30,171	64,851	56,213	20	12	0	11,67,012	4	0	.....	6,219	6,219	5,410	11,629	76,480	20	12	0	15,86,960	0	0
Western Delta	98,521	38,662	1,37,183	87,572	2,24,755	1,86,093	.....			45,75,601	12	0	1,126	9,629	10,755	7,950	18,705	2,43,460	.....		...	59,70,185	0	0
Grand Total	1,59,561	76,217	2,35,811	1,42,802	3,78,613	3,02,366	.....			76,61,980	7	10	21,302	20,729	42,031	25,463	67,494	4,46,107	.....		...	1,13,51,583	3	6
Rajahmundry Total	1,33,492	67,639	2,01,131	1,12,631	3,13,762	2,46,123	.....			64,94,938	3	10	21,302	14,510	35,812	20,053	55,865	3,69,627	.....		...	97,64,623	3	6

Probable area, calculated at 68 per cent on the whole Delta.

Area irrigated according to the Revenue Returns.	
In the Joint Rent villages	2,35,811
In other Tenures	42,031
Total	2,77,842
68 per cent of the total area irrigated according to the Revenue Returns	1,88,939
Probable extent of the total area irrigated by means of the Godavery Annicut, taking the concealed irrigation in the whole Delta at an average of 68 per cent., and adding it to the total area irrigated according to the Revenue Returns.	4,66,781

Estimated value of the first crop of 1857-58.—49. The irrigated area has been estimated on the supposition, that the proportion of concealed irrigation in the Joint Rent villages and in Zemindaries, &c., is the same. How far this supposition is correct, is of course doubtful; and the doubt must be kept in mind in considering details. But as regards the total area this doubt has no effect. The estimated total area bears in each instance the stated proportions to the total area shown in the Revenue Returns. And thus the 2,77,812 acres, shown in the Revenue Returns as the total area irrigated for the first crop in 1857-58, gives as the probable area actually irrigated, 4,46,107 acres, if calculated according to Districts, and 4,66,781 acres, if calculated at an average of 68 per cent. on the whole Delta. There is therefore a difference of 20,684 acres, between the two calculations; and, as the calculation according to Districts, is more exact, I propose to adopt the result thus obtained as showing the probable extent of land actually irrigated for the first crop in 1857-58. Taking the estimated area for each division of the Delta, and multiplying the total irrigated acreage in each, by the average available value of a first crop, as now ascertained, gives as the value of the first crop, 37 lacs in the Eastern, 16 in the Central, and 59 lacs in the Western Deltas. And thus, taking prices to be the same last year as this, a total irrigated area of 4,16,107 acres, gives 1,13,51,583 Rupees as the total value of the first crop in 1857-58.

Joint Rent Villages.....	2,35,811
Other Tenures.....	42,031
Total....	2,77,842

PRICE OF PADDY PER GARCE.

Year.	Rupees.
1820-21	83
21-22	94
22-23	100
23-24	167
24-25	170
25-26	147
26-27	71
27-28	76
28-29	71
29-30	84
30-31	78
31-32	64
32-33	111
33-34	168
34-35	94
35-36	63
36-37	81
37-38	89
38-39	139
39-40	110
40-41	102
	21)2,162
	103
1841-42	63
42-43	57
43-44	53
44-45	58
45-46	85
	5)313
	63
1846-47	85
47-48	79
48-49	71
49-50	67
50-51	63
51-52	58
52-53	57
53-54	114
54-55	95
55-56	92
56-57	88
57-58	87
58-59	102
	13)1,058
	81

Year.	Rupees.
1820-21	83
21-22	94
22-23	100
23-24	167
24-25	170
25-26	147
26-27	71
27-28	76
28-29	71
29-30	84
30-31	78
31-32	64
32-33	111
33-34	168
34-35	94
35-36	63
36-37	81
37-38	89
38-39	139
39-40	110
40-41	102
41-42	63
42-43	57
43-44	53
44-45	58
45-46	85
46-47	85
47-48	70
48-49	71
49-50	67
50-51	63
51-52	58
52-53	57
53-54	114
54-55	95
55-56	92
56-57	88
57-58	87
58-59	102
	39)3,336
	90

Prices past and present.—50. But I have already mentioned that there has been a considerable rise in prices this year. In the Revenue Price Current of the Rajahmundry District, which shows the price of paddy per garce of 6 Mullika Pooties, paddy is quoted this year as selling in the bazar in January, at Rs. 102 per garce; whilst last year the price was Rs. 87. There has therefore been a rise of 15 Rupees per garce since last year, or 14 per cent. on this year's prices. And a reference to the marginal Statement will show that this is by no means an extraordinary fluctuation. Taking the prices of paddy since 1820-21, the average for the first 21 years, is Rs. 103 per garce. Then came a great fall; and for the five years from 1841-42 to 1845-46, the average price of paddy was only Rs. 63; whilst since then there has been a general rise in the price of paddy, as of most other commodities, and the average up to the current year is Rs. 81 per garce. Taking the whole period for which I am able to submit the prices, the average is Rs. 90 per garce. Bazar prices last year were therefore below the general average; whilst bazar prices this year are Rs. 12 per garce in excess, which is 11 per cent. on this year's prices. The prices realized by the ryots may be supposed to follow prices in the bazar. And, as the value of the produce has been calculated with reference to the prices realized by the ryots this year, I propose to reduce it accordingly, to show what was the probable value of the first crop last year at the average prices realized by the ryots, which may be called the selling prices, for the last 38 years, in this district. If the marked rise that has taken place of late years in prices generally, is the result of a deterioration in the value of money, in consequence of more gold being thrown into the market, then the comparison I have submitted of the difference in the productive

powers of the Delta is not correct. The difference is partly in the nominal price, and not the actual quantity of produce. Prices may be expected to continue to rise; and the difference will become, apparently, greater still, as the gold fields seem by no means exhausted; and the effect will probably be to make fixed assessments lighter than they are now, unless checked by silver being the standard of this country. But whatever the cause, the marked rise in the price of paddy since 1844-45, must not only have had a considerable effect on, and must be taken into account in considering a concomitant rise in the Land Revenue of the District of Rajahmundry, but also the sudden rise this year in the marketable value of paddy must be specially taken into consideration.

Estimated value of the first crop of 1857-58, *at a* 38 *years' average.*—51. It may be thought that the reduction on account of prices should be made with direct reference to the prices realized in 1857-58, the year in question. But I propose to calculate the value of the first crop this year at the current prices; and it therefore seems more advisable to give last year's crop at an average value. Taking the prices realized by the ryots this year, it has been seen that the total available value of the first crop of 1857-58, was Rupees 1,13,51,583, which includes the quarter of the straw crop available for assessment. How far the value of the straw fluctuates, I have no means of judging. As it is, the straw has been taken at a mere estimate. And, perhaps, at the rates taken, fluctuations in straw might be left out of the calculations. But it is safer to include also the value of the straw in the deduction. And reducing the total available value of the produce by 11 per cent., gives Rupees 1,01,02,909 as the probable value of the first crop of 1857-58, at the average selling price of paddy in this District during the last 38 years.

Total available value,	Rs.	1,13,51,583
11 per cent,	,,	12,48,674
Difference.....		1,01,02,909

Net value of the first crop on the estimated Joint Rent Lands at a 38 *years' average.*—52. It has been shown that more than four-fifths of the total are a under irrigation appears from the Revenue Returns to be in the Joint Rent villages; and, accordingly, of a total estimated area of 4,46,107 acres, 3,78,613 acres come under this head. Deducting the area recorded as held in these villages under an Inam tenure, leaves 3,02,366 acres as the extent of irrigation liable to a full assessment; and multiplying this acreage in due course by the average available value of the first crop* gives Rupees 76,61,980 as the total available of the first crop grown on the Joint Rent lands in 1857-58, at the prices of 1858-59. Reducing this sum by 11 per cent., the total available value of the first crop on the Joint Rent lands in the Delta of the Godavery in 1857-58, at the average prices of the last 38 years, may be estimated at Rupees 68,19,163. The cost of cultivation at Rupees five an acre, would be Rupees 15,11,830; and the net value of the produce, after defraying the total cost of cultivation, was therefore Rupees 53,07,333. Referring to the statement given at para. 40, it will be observed that the total consolidated assessment levied on the crop in question was Rupees 7,77,896. And thus it appears that the Government share of the produce in the Joint Rent lands was one-seventh of the net value calculated at the average selling prices of the last 38 years, or more exactly, 14 per cent.

* See Statement, para. 49, columns 8, 9.

Current value.....	Rs.	76,61,980
11 per cent.....	,,	8,42,817
Average value.....	,,	68,19,163

Gross available value..	Rs.	68,19,163
Cost of cultivation....	,,	15,11,830
Net value	,,	53,07,333

Average consolidated Assessment per acre.—53. Refering again to the statement at para. 40, it will be observed that, according to the Revenue Returns, the average consolidated assessment per acre was Rupees 4-13-11 for the whole Delta, Rupees 5-1-5 for Rajahmundry and Rupees 3-12-1 for Masulipatam. But if the consolidated assessment is tested by the estimated area now given, the results are very different. The average consolidated assessment per acre on the probable area actually irrigated for the first crop in 1857-58 in the Joint Rent lands, was Rupees 2-9-0 for the whole Delta, Rupees 2-12-0 for Rajahmundry, and Rupees 1-11-0 for Masulipatam.

Delta.	Probable extent of land irrigated.	Recorded Assessment.	Average per Acre.		
	Acres.	Rupees.	R.	A.	P
The whole Delta	3,02,366	7,77,896	2	9	0
Rajahmundry portion	2,46,123	6,79,877	2	12	0
Masulipatam portion	56,213	98,019	1	11	0

Inams and Zemindaries. Buntoomillay. Appendix IV.—54. No estimate has been made of the value of the crop grown on Inam lands, or on the lands held under the Permanent Settlement at the ordinary rates of assessment; because, if a water cess were levied with reference to the area and extent to which the land is *really* benefitted by the Annicut, it would be necessary to take into consideration the extent to which irrigation was previously available; whilst, if, on the other hand, my attention were confined to the water cess now levied, it would still be necessary to consider also the varying amount to be deducted for the two years grace; and thus, in either case, any general average, compatible with the scope of this report, would only be deceptive. It will be more to the purpose, as I have it in my power, if I simply state here what was the result this year of Annicut irrigation on the small Zemindary, or proprietary village as it is called, of Buntoomillay, in the Central Delta. Buntoomillay stands on the edge of a large tract of land that is shown in the Trigonometrical Map as salt swamp and it was visited by me, in consequence of hearing from Captain Stoddard that the salt swamp was being rapidly sweetened and brought under cultivation with the help of the Annicut. It was too late, when we got there, to measure the grain that day, and, as I was to leave the next, I requested Captain Stoddard to make some measurements in my absence; and, as it turned out on making inquiries on the spot, that the village was a small Zemindary, I further requested Captain Stoddard to have it surveyed. Thanks to Captain Stoddard's kindness I now have the pleasure to submit the results of both operations.

Vide Appendix, No. II. As regards the yield, three fields were tested, and the yield varied from 10 to 29 cwts. per acre. The average of the three experiments was 19 cwts. and the value of the paddy, at Rupees 1-2-2 per cwt.; the average prices realized by the ryots this year in the Central Delta, was Rupees 21-9-2. The results of the survey are given in an accompanying Map,* from which it will be seen that the area under irrigation this year was 120 acres. And thus taking the average of Captain Stoddard's experiments to show the average yield of the village, the value of the first crop of 1858-59 in Buntoomillay may be estimated at Rupees 2,585. No water cess has yet been levied in this village; and the gross collections are entered at 222 Rupees. Instead therefore of the gross collections being equal to more than half of the value of the produce, the effect of the Annicut in Buntoomillay this year, has been to give a crop worth the gross collections eleven times over. The productive powers of Buntoomillay have been increased, as it were, nearly six-fold. And the propriety of this small Zemindary contributing its share to the returns on the Annicut cannot be denied.* But, on the other hand, I must also state that Buntoomillay was irrigated before the Annicut came into play, by a cut from the river; and when a fair water rate is fixed, due deductions should be made on this account, whilst further arrangements would be requisite for some 17 acres held as Inam.

* Appendix, No. IV.

The second crop of 1857-58, *according to the Revenue Returns.*—55. I now beg to submit a statement of the area irrigated for the second crop of 1857-58, with its water cess according to the Revenue Returns. The greater portion of the land that was irrigated for this crop was in the Eastern Delta; and the irrigated area is pretty evenly divided in this instance between the lands held at the ordinary rates of assessment under the Joint Rent tenure, and those held under the Permanent Settlement and as Inam. The total area irrigated for the second crop of 1857-58, was 23,064 acres according to the Revenue Returns; and the total water cess was Rupees 17,167, which gives an average of Rupees 0-11-10 per acre. In the Eastern

Tenure.	Area.
	Acres.
Inams in Joint Rent villages	4,833
Inams in other Tenures	2,090
Zemindary	3,495
Total	10,418
Joint Rent Lands	12,643

* Note.—I have since heard from the Tahsildars that a water cess of Rupees 101 has been imposed for the current year; but final orders are stayed pending re-measurement.

and Central Deltas the general average was Rupees 0-11-11 and Rupees 0-12-3 respectively. In the Western Delta the area recorded as irrigated for this crop is only 1,566 acres; and of this quantity, 1,227 acres, forming part of the Sub-Collectorate of Rajahmundry, are not shown as paying any cess on the second crop at all; because the water cess there having been fixed at a per centage on former collections and without reference to crops is included in the consolidated assessment on the first. But on the Masulipatam irrigation in the Western Delta, the cess averages Rupees two per acre! The general average is greatly affected in all three Deltas by the land held at the ordinary rates of assessment. The ordinary assessment on the irrigated area was fixed in former days, with reference, especially, to the powers of the land to bear two crops; and, hitherto, I believe, this has been taken into consideration in fixing a water cess on the second crop, specifically. The average water cess for the second crop on the Inams is Rupees 1-2-5 in the Joint Rent villages, and Rupees 1-4-7 elsewhere; whilst on the land held at the ordinary rates of assessment, it is Rupees 0-9-4 in the former case and only Rupees 0-6-10 in Zemindaries; and this is the cause why the general average for the whole Delta is only Rupees 0-11-10 per acre, taking the Revenue Returns to show the total area actually irrigated.

	Acres.
Mogultoor	941
Tunnookoo	286
Total	1,227

Statement showing the area irrigated in the Delta of the Godavery by means of the Anicut for the second crop of 1857-58, and the water-cess, according to the Revenue Returns.

Division of the Delta	Names of the Talooks.	Joint Rent Villages.						Inam.						Other Tenures.						Total					
		Joint Rent.				Average per acre.				Average per acre						Total Water cess.			Average per acre.						
		Area.	Water cess.					Area.	Water cess.					Description of Tenure.	Area										
		Acres	Rs.	A.	P.	R.	A.	P.	Acres	Rs.	A.	P.	R.	A.	P.		Acres	Rs.	A.	P.	R.	A.	P.	Acres	Rs.	A.	P.	R.	A.	P.
Eastern Delta.	1 Pittapoor	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Zemindary	1,978	1,754	6	2	0	11	4	2,462	1,754	6	2	0	11	4
	2 Cocanada	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	3 Bickavole	4,889	4,035	1	9	0	13	3	1,892	2,103	12	7	1	9	Agraharum	..	..	..	..	..	..	..	..	6,824	6,207	4	9	0	14	6
	4 Capaveram	3,817	793	13	7	0	3	3	1,450	1,633	15	0	1	2	0	..	..	..	..	..	..	..	..	5,267	2,429	12	7	0	7	4
	5 Cota Ramachundrapooram	1,230	1,015	3	8	0	12	11	720	775	12	7	1	1	2	Zemindary	385	288	..	..	0	11	11	..	..	..	..	..	..	..
	"	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Mocassa	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	6 Coringa	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Zemindary	321	1,480	7	9	0	8	9	1,014	1,402	12	5	1	5	6
	Total	9,937	5,961	3	0	0	9	3	4,062	4,517	2	1	1	9			2,685	1,480	7	9	0	8	9	1,014	1,402	12	5	1	5	6
Central Delta.	1 Rally	219	245	3	5	1	1	11	150	124	10	7	0	15	6	Zemindary	785	..	..	..	..	..	..	1,014	1,279	1	4	1	3	7
	2 Amalapoor	301	411	2	9	1	5	10	124	131	1	7	1	0	11	Zemindary	21	22	2	1	0	14	9	2	2	0	1	0	1	0
	3 Nuggarum	599	217	13	11	0	5	9	209	193	13	6	0	14	11	Agraharum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	1,120	874	4	1	0	12	5	484	472	9	11	0	15	7		810	22	2	1	0	5	8	1,016	1,281	1	4	1	3	7
Western Delta.	1 Mogultoor	911	..	..	..	..	..	..	..	..	..	..	..	..	..	Zemindary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	"	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Agraharum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	2 Tanookoo	286	..	..	..	..	..	..	..	..	..	..	..	..	..	Agraharum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	3 Oondy	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Zemindary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	"	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Agraharum	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	4 Ralingy	339	677	0	1	0	15	11	237	575	..	..	2	0	..	Mocassas & Agraharums	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	5 Pentapad	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Agraharums & Mocassas	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	6 Kykalore	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Agraharums & Zemindary	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	1,566	677	0	0	0	6	11	287	575	0	0	2	0	1		..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Grand Total	12643	7,415	7	1	0	9	4	4,833	5,565	2	1	1	2	5		3,495	1,502	9	10	0	6	10	2,090	2,683	13	9	1	4	7

The value of the second crop.—56. It is scarce possible to calculate the value of a second crop, satisfactorily, without going into details, on which, under present circumstances, no dependance could be placed. For the *first crop*, it may be considered that there is a standard crop and a standard value. For the second crop, on the other hand, there is no standard crop; and for the different kinds of produce there are varying rates. But, in the present case, this difficulty is to a certain extent avoided. In the Eastern Delta the second crop is almost wholly paddy; and, as the Eastern Delta comprised the greater portion of the second crop of 1857-58, according to the Revenue Returns, if I take the average value of the second crop of paddy, as obtained by the experiments given in the Special Report, which were wholly made in that Delta and were made for the crop in question, the results will be tolerably correct. Referring to the Special Report* it will be seen that the average value of the second crop of paddy was found to be Rupees 10-10-9 per acre; and, adding a quarter of the value of the straw, similarly found, gives the average available value of the second crop at Rupees 11-2-7 per acre. The experiments were made in Gundraidoo and Meddapad; and the average yield of these villages is doubtless below the true average of the central and lower portion of the Western Delta. The average value of the second crop would, in all probability, follow to a certain extent the proportions given by the first crop and be higher there. But as the difference in the yield is more than met, it has been seen by the difference of distance from the port of exportation and the relative facilities of carriage in regard to the first crop, the same causes may be considered to affect equally the second crop. And, for a rough calculation, like the present, I shall probably be sufficiently near the mark if I fix the average available value of the second crop in the Eastern Delta at Rs. 11 and take the same average for the whole Delta. Besides, the lower portion of the Western Delta, a portion of the second crop in that Delta, it will perhaps be observed, was grown in one of the Masulipatam Talooks in the upper portion, and it might be supposed in consequence that the yield here, on the other hand, was inferior. But although this talook has been classed in the upper portion, its soil is far superior to the soil of the other two Masulipatam Talooks, and the yield of the second crop in much of the Talook of Ralingy may, I believe, be taken as equal to the yield in the Rajahmundry portion of the Western Delta. And taking, therefore, the total area irrigated for the second crop according to the Revenue Returns, at 23,064 acres and at a uniform value of Rupees 11 per acre, the total value of the second crop of 1857-58 would be Rs. 2,53,704.

Value of Straw, Rs.	1	15 6
Quarter..... "	0	7 10
Value of Paddy. "	10	10 9
Total available value..... Rs.	11	2 7

* Para. 91.

Estimated area of the second crop of 1857-58, *and value of the crop on the estimated area.*—57. Referring again to the Special Report it will be observed that the extent of concealed irrigation in the area irrigated for the second crop, was even greater than for the first. And when it is considered that for the second crop it is attempted to measure annually, by the square yard, detached patches of cultivation, which, varying every year in position, and only on the ground perhaps for 12 weeks, are scattered over some 2,000 square miles, it is not surprising that the extent of concealed irrigation should be greater. Of 663 acres found by survey to have been actually irrigated last year for the second crop, only 360 acres were entered in the Revenue Returns. There was, therefore, a difference of 303 acres in the two villages that were measured. The concealed irrigation was 84 per cent, within a small fraction, on the Revenue Returns in these villages; and 84 per cent., in all probability, is within the mark for the whole Delta. If those valuable crops were included, for which water is occasionally taken, and is then absolutely requisite, I fully believe that the per centage of concealed irrigation would be far greater. But, taking simply the present system of defining certain crops as the *second crop*, and the area returned as so occupied and irrigated, as *the total extent of this crop*, 84 per cent. may be taken as a tolerably corrected, estimate; and thus correct, the total area irrigated for the second crop rises to 42,437 acres. The average value of this crop has been

	Revenue Returns.	Survey.
	Acres.	Acres.
Gundraidoo....	216·2783	284·1355
Meddapad.....	144·1210	379·7790
Total.....	360·3993	663·9145
		360·3993
Difference.....		303·5152

	Acres.
Total area according to the Revenue Returns	23,064
84 per cent.	19,373
Total	42,437

estimated at Rs. 11 per acre; and the probable gross value of the second crop in 1857-58, so far as the Assessment Officer is concerned, was therefore Rs. 4,66,807. The average water cess on this estimated area would be Rs. 0-6-5 per acre.

Net value of the second crop on the estimated area in the Joint Rent Lands.—58. In the Joint Rent villages the total area returned as irrigated for the second crop was 17,476 acres, and the total area irrigated according to the results obtained by the special survey last year may therefore be estimated at Rs. 32,155 acres. Deducting the irrigation in the Inam lands leaves 27,322 acres, as the extent of land liable to a full assessment. And taking the value of the crop at 11 Rupees per acre, gives Rs. 3,00,512 as the gross value of the second crop on these lands. The cost of cultivating the second crop has been estimated at Rs. 4-0-4 per acre.* The cost of cultivating 27,322 acres would be consequently Rs. 1,16,118; and the net available value of the second crop on the Joint Rent lands, after deducting the total cost of cultivation, was therefore Rs. 1,84,424. The total water cess on the Joint Rent lands was Rs. 7,415; the average water cess on the estimated area would therefore be Rs. 0-4-4 per acre; and the Government share of the net value was one-twenty-fifths, or 4 per cent.; which is about a quarter of what it was on the first crop in the Joint Rent lands for the year under review. This is a great difference; and it must be further remembered, that, in making these calculations, last year's prices have been taken. Like the first crop, the price of last year's second crop would probably be below the average price of second crop paddy for the last 38 years. And, if the calculations had been based on a 38 years' average, the difference would therefore have been still more marked. But I have no means of ascertaining the average price of the second crop for the last 38 years; and, as the price of last year's first crop was not much below the 38 years' average, last year's price for the second crop may, I believe, be considered, as tolerably near the average value that would have been given by a more correct mode of calculation.

	Acres.
Joint Rent Villages	12,643
Inam in Joint Rent Villages	4,833
Total area irrigated in Joint Rent Villages	17,476

	Acres.
Total area irrigated according to the Revenue Returns	17,476
84 per cent.	14,679
Total	32,155
Inam	4,833
Joint Rent Lands	27,322

Second Crop.

Gross value	Rs.	3,00,512
Cost of cultivation	,,	1,16,118
Net Value	,,	1,84,424

* Special Report, para 96.

Total value of produce on the estimated area of irrigation in 1857-58, and direct results to the Ryots of the Joint Rent Villages.—59. Taking the first crop at the 38 years' average, and the second crop at last year's prices, the total value of the crops raised in the Delta of the Godavery in 1857-58, by means of the Annicut, may be estimated at Rs. 1,05,69,716; upward of a million sterling. Of this vast amount, the net value of the produce grown on lands held under the Joint Rent tenure, and liable to the ordinary rates of assessment, was Rupees 54,91,757. And the total assessment fixed on these lands for both crops in the year in question, according to the Revenue Returns, was Rupees 7,85,311. The share of the two crops to be collected on account of Government was, therefore, 14 per cent. of the net produce; and, supposing prices last year to have been as high as the 38 year's average, the ryots on the Joint Rent lands cleared Rupees 47,06,446 during the year under review. As it was, their gains were 3 per cent.† less.

Crops.	Value. Rupees.	A.	P.
First Crop	1,01,02,909	0	0
Second Crop	4,66,807	0	0
Total	1,05,69,716	0	0

Crops.	Net Value. Rupees.	A.	P.
First Crop	53,07,333	0	0
Second Crop	1,84,424	0	0
Total	54,91,757	0	0

Corps.	Assessment. Rupees.	A.	P.
First Crop	7,77,896	0	0
Second Crop	7,415	0	0
Total	7,85,311	0	0

	Rupees.
Net Value	54,91,757
Assessment	7,85,311
Balance	47,06,446

† Para. 50.

Assessment on the estimated area at two-thirds of the net value.—60. In calculating the cost of cultivation, the profits of stock have been included, as the calculations were made on the rates at which the requisite stock can be hired. And, on deducting the cost of cultivation, thus calculated, it has been seen, that the net available value of the crops raised in 1857-58 on the Joint Rent lands was Rupees 54,91,757. It is, I understand, the intention that in the general settlement, which has now been commenced, the Government share of the produce, less the cost of cultivation and the profits of stock, should be two-thirds, or 66 per cent.; and supposing the assessment to be fixed on the 38 year's average, and the second crop to be subjected to the same rule, it follows that the consolidated assessment on the Joint Rent lands in the Godavery Delta might be raised to Rupees 36,24,559. According to the Revenue Returns these lands are only assessed now at Rupees 7,85,311. And, supposing this sum to show the total amount collected on the total area actually irrigated; there would thus be an increase in the Revenue on the Joint Rent lands of Rupees 28,39,248.

Rupees.	
36,24,559	
7,85,311	
28,39,248	

Three facts assumed.—61. With regard to the total value of the two crops raised during 1857-58, on the rest of the irrigated area, no calculations will be submitted; for, I presume, as I have already stated, in levying a water rate on these lands, proportionate to the benefits received, previous advantages in the way of irrigation must be taken into account. Any general average would therefore be as deceptive for the two crops as for the first; and I will now respectfully call attention, instead, to three very important points, that have been taken for granted in stating, that the assessment might be raised to Rupees 36,24,559 on the Joint Rent lands. I have assumed, first, that it would be safe to fix the assessment on a 38 years' average; secondly, that the Joint Rent system no longer hampers the Executive; and, thirdly, that all encroachments by Inamdars will be assessed at the ordinary rates of assessment.

Thirty-eight years' average. One-third of the net value.—62. A sudden rise in the assessment, to any great extent, must have an injurious effect; and the precise extent to which it is advisable to raise the assessment, should be decided, I have respectfully submitted,* under any circumstances, with reference to the extent of irrigable land still lying waste. But, independently of these important points for consideration, a still more important point is involved in the question of prices; and to this it is my duty, I believe, to refer at length. Taking the average yield of paddy for the different divisions of the Delta, the total yield on 4,46,107 acres would be 92,31,690 cwts.; and the total available value of this crop, at the prices realized by the ryots last January, it has been seen was Rupees 1,13,51,583. The average yield was, therefore, 20 cwts.† per acre; and its average available value was Rupees 25-7-1. This value is the gross value; and reducing last year's prices by 11 per cent. to meet the rise above the average of the last 38 years‡ makes the gross available value of 20 cwts. of paddy at a 38 years' average, Rupees 22-10-4. Deducting from this gross value Rupees five, the cost of cultivation and the profits of stock, leaves Rupees 17-10-4 as the net value of the produce; and the Government share, or the assessment, at two-thirds of the net value, would be Rupees 11-12-2. On one acre of land, therefore, giving an average yield of 20 cwts. of paddy, (46 bushels) the assessment, fixed at two-thirds the real value of the crop, would be Rupees 11-12-2, if the gross value were calculated at a 38 years' average. But it has been seen that from 1841-42 to 1845-46, the average bazar price of paddy was Rupees 63 per garce, which is 39 Rupees or 38 per cent. below this year's prices; and, reducing the prices realized by the ryots this year in the same

Division of the Delta.		Estimated area. Acres.	Average per acre. Cwts.	Total estimated yield of paddy. Cwts.
Eastern Delta		1,38,372	20	27,67,440
Central Delta		64,275	22	14,14,050
Western Delta.	Lower	1,66,980	22	36,73,560
	Upper	76,480	18	13,76,640
Total.		4,46,107		92,31,690

* Special Report on the Kistna, para. 190 to the end.

† 46 Bushels.

‡ Para. 50.

Rupees.	25-7-1
38 per cent "	9-10-8
Difference Rupees	15-12-5

proportion, the gross available value of 20 cwts. of paddy would be Rupees 15-12-5 and the net value would be only Rupees 10-12-5. For various reasons it is not probable that the prices of paddy will ever again fall so low; neither can it be said that this year's prices are unprecedentedly high. But, from the enormous increase that has taken place already, and the vast increase that may still be looked for hereafter, in the productive powers of this Delta, it is, I think, highly probable that a glut must come occasionally. A few generally good seasons, or a check on commercial prosperity, and prices in the Delta must fall. And, if prices fall again to the extent they have fallen already, the result would be a dead loss to the ryots of a rupee on every acre irrigated. The fixed assessment would be Rs. 11-12-2, whilst the net value would be only Rs. 10-12-5. Supposing the whole Delta to be assessed at the same rate, shows the ruinous effects of such a measure on a large scale. The total available value of the first crop of 1857-58, at a 38 years' average, has been estimated at Rs. 1,01,02,909. The cost of cultivating 4,46,107 acres would be 22 lacs. Deducting the cost of cultivation from the total available gross value, the net value of the first crop of 1857-58 would be 78 lacs; and the assessment, as two-thirds of the net value, would be 52 lacs. But, reducing the value of the first crop at this year's prices, 38 per cent., to meet the fall in the average price of the five years from 1841-42 to 1845-46, the gross available value of the crop would be 70 lacs. The cost of cultivation would still be 22 lacs; and the net value of the crop, after deducting the cost of cultivation and the profits of stock, would only be 48 lacs. There might perhaps be a fall in wages, &c., along with the fall in the price of grain, which would tell on the cost of cultivation; but this fall would not affect the truth of the above calculations to any great extent; and the result of an assessment on the whole Delta at two-thirds the net value of the crop, calculated at a 38 years' average, would therefore be a yearly loss of Rs. 4,40,782. Supposing the low prices to last as long as the average, the agricultural capital of the Delta, in five years, would be diminished to the amount of Rs. 22,03,900; and comment, on my part, as to the inevitable effects of such a drain on the resources of the ryots, would be superfluous. Neither is there any reason to believe that the result would be different in this Delta, were the average formed on a greater number of years. The prices are taken from the records of the District of Rajahmundry, which includes the greater portion of the Delta; and, whilst Sir Henry Montgomery* in 1844 ascribes the distress of the District in part to the fall in prices, Sir Henry further states that the fall commenced in 1828. Prices were higher therefore before 1828 than after; and as the 38 years' average dates only from 1821, it may consequently be inferred that, if a greater number of years had been taken, the average prices of the District and the Delta would have been higher than the 38 years' average, and the consequences to be anticipated more disastrous still. A reference to the recorded fluctuations in the value of paddy shows, therefore, that, in the Delta of the Godavery, the assessment could not be fixed with safety at two-thirds of the net value of the produce, calculating the value of the produce at the average price. And that, either a smaller share of the net value of the produce must be taken on account of Government, or else, the value of the produce must be calculated at a chosen average, in which case, it is little use discussing proportions either of net or gross value. If in the Delta of the Godavery the assessment were fixed at one-third of the net value of the produce, a sufficient margin would be left to meet any recorded fluctuation in prices. Taking the 38 years' average, the average assessment per acre would be thus, Rupees 5-14-1¼; and, returning to the Joint Rent lands, the consolidated assessment might thus be raised to Rupees 18,30,585, with reference to the

Particulars.	Total available value of produce at a deduction of 11 per cent. on the current price.	Total available value of produce at a deduction of 38 per cent. on the current price.
	Rupees.	Rupees.
Gross produce.....	1,01,02,909	70,37,982
Cost of cultivation....	22,30,535	22,30,535
Net value.....	78,72,374	48,07,447
Two-thirds of the net value.....	52,48,229	

Fixed assessment at a 38 years' average...Rs.	52,48,229
Net value at the average prices from 1841-42 to 1845-46..... "	48,07,447
Difference.....	4,40,782

* Sir H. Montgomery to Government, 18th March 1844, para. 34.

Value of the produce calculated at a 38 years' average.	
Average net value per acre..... Rs.	17-10-4
One-third of do.....	5-14-1¼
Joint Rent Lands.	
Total estimated net value..... Rs.	54,917,57
One-third of do..... "	18,30,585

estimated area as given in para. 60. But, as the public funds have been largely invested in the Delta, the assessment of the land must be based on different principles to those that should regulate such operations, where improvement must be chiefly looked for by the future outlay of private capital; and, as the uniform nature of the cultivation facilitates such a course, the introduction of a sliding scale of assessment may be deemed advisable hereafter; by which means the necessity of guarding against fluctuations in prices, at a heavy sacrifice of revenue, would be avoided.

Individual responsibility.—63. Any attempt to calculate the extent to which the revenue might be raised at present in the Delta of the Godavery is equally open to error on account of the peculiar tenure of the land. Under the Joint Rent system, *either the villagers must agree in the propriety of paying more*, or the village must be rented to a middle man; and, so long as this system continues in force, all rise in the revenue must therefore be dependent, more or less, on the possibility of finding a sufficient number of respectable men of substance willing to undertake the duty of middle-men, and the opinions entertained as to the propriety of thus placing the agricultural resources and the well being of villages in the hands of strangers. And in the Western Delta, the power of raising the assessment is further barred by the pledge given to the ryots of the sub-division of the Rajahmundry District, when the assessment there was raised 10 per cent., that no further change should be made in the assessment till the new settlement took effect.

Inam Encroachments.—64. The third point assumed, has reference to the question of Inams, which are to be found in the Delta of the Godavery, not only in every village, but also, as in other countries, in greater proportions, where the best crops are to be got. In the Special Report, the calculations as to the extent of concealed irrigation in the hands of Inamdars, were made, where necessary, on the supposition that it would be the same as in the lands held under the Joint Rent tenure; but since then an Inam Commission has been appointed. I have now calculated the value of the crops on the Joint Rent lands, on the supposition that all encroachments by Inamdars will be declared liable to a full assessment; and it is my duty to show the amount to which the public revenues are affected under this one head alone. In the detailed statement of seven villages with which Captain Priestley so kindly favored me, full particulars are given as to the extent of concealed irrigation in the Joint Rent and Inam lands respectively; and I beg to annex a table which has been founded on Captain Priestley's statement,* and shows the results for each village and for the seven villages. Taking the total of the seven villages, it will be seen that the area irrigated in the Joint Rent lands and returned as 910 acres, was found on survey to be 2,037 acres; whilst the area irrigated in the Inams and returned as 210, was found, when similarly tried, to be 523 acres. It, therefore, appears, from the seven villages, not only that there was concealed irrigation in the Inam lands, as well as in the Joint Rent lands, but also that the proportion was very much greater. In the Joint Rent lands the proportion of concealed irrigation to the area returned as irrigated, is 123 per cent.; in the Inam lands, it is 148 per cent.

* Appendix No. III.

Table showing the extent of Concealed Irrigation as ascertained by actual Survey in the Joint Rent and Inam lands, respectively, of seven villages in the Western Delta of the Godavery, and its proportion to the area shown, similarly, in detail, by the Revenue Returns.

1	2	3	4		5		6		7		8	
Name of the Village.	Total area irrigated according to the Revenue Returns	Total area irrigated according to the Survey	Difference and percentage of concealed irrigation.		Area irrigated according to the Revenue Returns in detail.		Area irrigated according to the Survey in detail.		Difference or extent of concealed irrigation in detail.		Per centage of concealed irrigation in detail.	
			Difference.	Per centage.	Joint Rent.	Inam.	Joint Rent.	Inam.	Joint Rent.	Inam.	Joint Rent.	Inam.
	Acres.	Acres.	Acres.		Acres.	Acres.	A.	Acres.	Acres.	Acres.		
Buggaiswarum...	103	175	72	70	85	17	152	22	67	4	79	27
Colagumpoody Polaveram... ...	...	280	280	...	...	...	239	40	239	40	...	...
Guggypurroo...	175	209	33	19	143	32	163	45	20	12	14	39
Nurspoor.....	184	228	43	23	170	13	198	29	28	15	16	119
Moddapolem....	306	641	335	109	223	83	521	119	298	36	133	43
Pemmarazoo Polaveram..	46	711	665	1,140	46	...	531	180	484	180	1,019	...
Gorintaulah.	305	315	9	3	212	63	229	85	12	21	5	34
Total... ...	1,121	2,561	1,439	123	910	210	2,037	523	1,126	313	123	148

The per centage of concealed irrigation in these seven villages is, however, generally high; and I would not assert on the strength of this statement that there is more concealed irrigation in the Inams than in the lands held at the ordinary rates of assessment. I simply submit the statement as showing that there are good reasons for believing that the proportion of concealed irrigation is at least equal in both; and of course I submit the following results as only a rough approximation. Taking the Inam lands in the Joint Rent villages at their recorded area of 76,247 acres, the value of this crop, at a 38 years' average of Rupees 22-10-4 per acre, would be Rupees 17,26,676. But, taking the gross increase on the irrigated area, as estimated at para. 48, with reference to the results of the special inquiry last year, and giving the same per centage increase to the Inam lands, raises the Inam irrigation to 1,22,420 acres. The value of the first crop on 1,22,420 acres, at a 38 years' average, would be Rs. 27,72,302; and there is, therefore, a difference for the first crop alone of Rs. 10,45,626 in the amount of produce chargeable with a full assessment, or a mere quit-rent, if any, and water cess.

	Acres.
Gross irrigated area in Joint Rent Villages as recorded	2,55,811
Gross increase as estimated.....	1,42,802
Per centage.....	60
Irrigated area in Inam as recorded....	76,247
60 per cent.....	46,173
Total..	1,22,420

	Rupees.
Acres 1,22,420 at Rupees 22-10-4.....	27,72,302
76,247 " "	17,26,676
Difference.....	10,45,926

Durrimvilla Inams.—65. There is no doubt about the official standard of eight acres for the Pooty of land being below the customary measurement of the Pooty in many parts of the Delta; and, as the recorded area of irrigation is entered in the Revenue Returns in Pooties, and has been commuted at eight acres, it may be considered that the Revenue Returns do not show the full acreage to which the Inamdars, on the strength of these returns, could justly lay claim. And, further, it is quite possible that a portion of the concealed irrigation is no encroachment. But, on the other hand, there is equally little doubt about these returns showing as Inam, very much land, that has no right whatever to be exempted from paying the full assessment; and such Inams would be more than a set off. Inams, in the Rajahmundry portion of the Delta, are divided into those Inams which were recorded, when the Permanent Settlement was formed, and those which have crept into the Revenue Returns subsequently, and are called "durrimvilla", or "subsequent." In the Masulipatam portion of the Delta a revision of the Inams was made

• Special Report, para 63. lately, and this *name* appears there no longer; but in the rest of the Delta, that is to say, in by far the greater portion of the Delta, the Durrimvilla Inams are very extensive; and I regret that it is not in my power to give full particulars on this point. Such alienations of the State assets are, of course, wholly illegal: and, though in some cases Durrimvilla Inams may have been bonâ fide in existence, when the Permanent Settlement was made, in the majority of cases the reverse is more probable; and in all such cases the onus probandi rests clearly on the Durrimvilla Inamdars. In the villages, however, selected last year for the Special Survey, I did take notes as to the titles on which the Inams were held in those villages; and I beg permission to annex the results thus obtained, as affording some grounds for judging how far the total area recorded as Inam in the Joint Rent villages over the whole Delta is held on titles, which may be presumed to be invalid. In the four villages the Inams were entered in 1857-58 at 210 Pooties odd, (1,680 acres); whilst it appears from the village accounts that the Inams in these four villages were only entered at the Permanent Settlement at 136 Pooties odd, (1,092 acres). There has, therefore, been, apparently, since then, an unauthorized and illegal increase of 73 Pooties odd, and the Durrimvilla Inam in the four villages in question may be estimated at 34 per cent of the total area now recorded as Inam by the Revenue Returns. The proportion

Extent of Inam according to the Revenue Returns in Pooties.

Name of Village.	Permanent Settlement.			1857-58.		
	Pooties.	T.	M.	Pooties.	T.	M.
Gundreidoo.....	31	2	0	64	5	..
Meddapad.....	11	12	8	19	4	4
Siddantum.....	71	7	11	94	3	5
Moolapurroo.....	22	8	0	32	8	2
Total.....	133	11	1	210	0	1
Difference.....	..	..	..	73	9	0
Per centage 34.						

thus obtained, had no reference to irrigation, and how far this proportion may hold true of the irrigated Inams generally, I am unable to say; but there is certainly no reason to anticipate that the proportion may prove to be less; and taking, therefore, for the irrigated Inams in the Joint Rent villages, generally, the same per centage, it may be inferred that of 76,247 acres, 34 per cent. or 25,933 acres, are held under invalid titles, in other words, are a fraudulent appropriation of the State assets. The unauthorized alienation of the Joint Rent lands is given by Sir H. Montgomery* as one of the causes of the great fall in the Land Revenue of the District of Rajahmundry. Under the Permanent Settlement it was the custom not only for Zemindars, but also for their sub-renters, and even for the village officers, to give away land free of assessment; and Sir H. Montgomery states that "it has not been the custom in this District to resume such unauthorized alienations," either on the estate coming under attachment or passing for good into the hands of Government. In many cases the terms of the grant were "manifestly only temporary;" but no notice was taken; and, when such laxity prevailed, it is only to be expected that the alienations would be large, and subsequent efforts to check the evil would be to little purpose, without the help of a General Survey and Inam Commission. Taking the results shewn by Sir H. Montgomery for such portions of the District as were then in the hands of Government, either temporarily or otherwise, the per centage of Durrimvilla Inam is considerably smaller than that given by the data which I obtained myself last year. But, considering the great temptation that has since been offered for successful fraud in this respect, and what Sir H. Montgomery himself says regarding the returns then submitted, I think 34 per cent may be taken as affording a fair indication to the actual extent of Durrimvilla Inam at present. And taking the extent of Durrimvilla Inam to be 25,933 acres, the available value of the first crop on this portion of the recorded Inam irrigation, at the 38 years' average, would be Rupees 5,87,274. The value of the crop on the probable extent of concealed irrigation in the hands of Inamdars has been similarly estimated at Rs. 10,45,626. And thus it appears that the public revenues and future returns on the Annicut and its subsidiary works are affected already by the Inam question, to the extent, yearly, of 16 lacs for the first crop alone. And, further, it must be remembered, that, as irrigation extends, this large sum will become larger still.

* To Government, 18th March 1844, para. 55.

Rupees.
5,87,247
10,45,626
16,32,900

Inam Commission.—66. When the public revenues are involved to the extent of 16 lacs already, and there is reason to believe that 16 lacs by no means show the limit to which they may be affected, inquiry seems a necessity. Neither do I believe that such inquiry would be productive of untoward effects, if, made quickly and made on the spot, it gave to the holders of valid Inams, valid titles and made their Inams saleable property, where no "service" is attached. I do not mean to assert that property to the yearly value, even now, of 16 lacs, can be called in question without creating discontent; but I do respectfully assert that the inquiry might so be made, as to remove all just cause for discontent, and effectually prevent the ill effects of misrepresentations. And, having ventured to make this assertion, I trust, that I may be permitted to state briefly the course to which I refer; and which, I would respectfully recommend, should be pursued. No exception would be taken, I presume, under an Inam Commission, to the Inams duly registered at the Permanent Settlement, unless some gross fraud came to light, when it should, of course, be in the power of the revenue authorities to object, and, if possible, prove the invalidity of the titles in question. Otherwise, all such Inams should be at once acknowledged on the strength of the registry, and to the extent of the registry; and in this way 66 per cent. or two-thirds of the recorded Inams, according to the previous calculations, would be made less "service" Inams, *good saleable property* by the inquiry; and the holders of this land being, so far, great gainers, would certainly have no grounds for objection. To secure the co-operation of these Inamdars, as well as avoid, as far as possible, the bribery and corruption that such an inquiry must necessarily engender in this country, I would respectfully recommend that in all such cases the decision of the Commissioner should be final, and that he should be empowered to issue the requisite titles at once; whilst, it is all-important that provision should be made, so as to avoid delay, as much as possible, where the decision of the Commissioner may be adverse to the claims of the Inamdar. Further, it is absolutely necessary that the inquiry should be made on the spot to prevent Durrimvilla Inams being manufactured into more permanent titles. If the inquiry were made at a distance, the weak must go to the wall; and it would be found that the Inams in the hands of the influential, were all acquired before the Permanent Settlement. Local inquiry alone can put a check to such practices and prevent great injustice being done to the weak by the fraudulent transfer of titles in the accounts. But, by exposing the evidence and the accounts to the scrutiny of neighbours, injustice may, I believe, be prevented to a great extent; and, if each case were decided promptly, if no time were left for the creation of discontent by appeals on appeals, the propriety of the course pursued must be admitted by the people generally. Again, adverse decision would not involve ejectment. If the Inam title were found to be a grant to a private debtor, or to a son-in-law, &c., from some unknown sub-renter, under some former defaulting Zemindar, quashing the title would not deprive the holder of the land. Quashing the title would simply render the land liable for an assessment, from which it has illegally been exempt for many years past; and the fraudulent Inamdar, whether guilty of fraud himself, or simply the inheritor of fraud, all of which, it must be kept in mind, has been committed within the last sixty years, would still be left in possession of the land, and of land, it has been seen of which the productive powers have been enormously increased by means of the Annicut. And when it is remembered how hardly some of the Districts are assessed, that have contributed to the construction of this Annicut and its subsidiary works, have contributed to increase enormously the productive powers of this land, I would respectfully submit, that, in justice to those Districts and to those who hold land generally, inquiry should be made whether 16 lacs of produce is to contribute its share to the expenses of the State and the returns on a large expenditure of the public funds, or is to be left in the hands of Inamdars on titles, all of which, according to the Regulations, it may be presumed, are invalid, and, to a large extent, are gross frauds.

60

Comparative Statement, Appendix V.—67. So long as the Inam question remains unsettled and the Joint Rent system is in force, it is impossible to form an accurate estimate of how far the revenue of the Delta might be raised at present, whether that assessment were fixed at one-third or two-thirds of the net value of the produce. The calculations that have been given on this subject, must be left, in the unsatisfactory state in which they now stand. They are wholly conditional. And, leaving of necessity, this branch of the inquiry in its present state, I now beg to show what *has been done* in this respect. The produce of that portion of the Delta of the Godavery, that is at present included in the District of Rajahmundry, was estimated by the Board the year before the Annicut was begun at Rupees 17,05,464* and by the Collector† at Rupees 27,68,472. Taking the average prices realized by the ryots this year, when the crop was cut, it has been seen‡ that the value of the first crop alone may be estimated at Rupees 1,13,51,583 for the whole Delta, and Rupees 97,64,623 for Rajahmundry. The value of the produce in the District of Rajahmundry has, therefore, in the last 13 years, been trebled according to the Collector's estimate, and quintupled according to the Board's; and I wish to show how far this vast change in the agricultural resources of the Delta has been followed by a corresponding increase in its land revenue. The following statement shows the increase, first, in those villages which now have the benefit of Annicut irrigation; secondly, in those villages which have not been irrigated; and thirdly, for the Delta generally. Where the land, during the five years, selected for comparison was still held under the Permanent Settlement, the gross collections have been given, and the comparison tells against the Annicut; as it by no means follows that the ryots could pay to Government what they paid to Zemindars. And on the other hand it must be remembered, that prices this year, when the crop was cut, were high. The Comparative Statements received from the Collectors of Rajahmundry and Masulipatam, on which this comparison of the whole Delta has been based, are given in Appendix V.

* To Government, No. 205 of 1846, para. 20.

† To the Board of Revenue, February 26, 1846.

‡ Statement at para. 48.

Comparitive Statement showing the increase in the Land Revenue of the Delta of the Godavery in 1857-58, compared with the average gross Collections for the five years immediately preceding the commencement of the Annicut.

Division of the Delta.	Name of the Talook	The Villages Irrigated in 1857-58.								The Villages that have not yet been irrigated.				Total.			
		The number and the average Assessment of these Villages for five years, from 1841-42 to 1845-46.		Consolidated Assessment in 1857-58.		Increase.		Per centage of Increase.		Assessment.		Increase.		The average Assessment for five years from 1841-42 to 1845-46.		Consolidated Assessment in 1857-58.	
		Number.	Assessment.														
			Rs.	A.	P.	Rs.	A.	P.	Rs.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.	Rs.	A. P.
Western Delta.	Cocanada	2	2,311	14	0	2,176	3	4	135	372	8 2	68	14 7	2,615	7 7	2,548	11 6
	Bickavole*	44	88,416	12	0	1,59,172	2	6	70,755	3,910	6 5	133	4 5	92,223	14 0	1,63,112	8 11
	Caparam*	27	68,766	4	6	1,03,445	4	6	34,679	80,972	11 2	19,223	8 10	1,30,515	6 10	1,84,417	15 8
	Cota Ramachendrapoor	55	1,46,096	2	9	1,75,903	11	6	29,807	.....	... ...	.....	... ...	1,16,096	2 9	1,75,903	11 6
	Total	128	3,05,591	1	3	4,40,697	5	10	1,35,106	85,285	9 9	19,425	11 10	3,71,450	15 2	5,23,982	15 7
Central Delta.	Rally	18	41,598	10	3	47,118	14	6	2,590	40,106	5 0	6,447	10 8	78,557	4 7	87,525	3 6
	Amalapoor	60	1,01,599	0	7	1,55,838	13	3	51,239	22,434	10 9	3,050	12 5	1,20,982	14 11	1,78,273	8 0
	Nuggarum	45	76,780	11	3	1,22,769	15	9	45,989	8,896	3 5	1,916	13 10	83,760	1 8	1,31,666	3 2
	Total	123	2,22,978	6	1	3,25,797	11	6	1,02,819	71,737	3 2	11,415	4 1	2,83,300	3 2	3,97,534	14 8
Eastern Delta.	Mogultoor	50	1,14,555	2	0	1,48,596	3	6	34,041	23,857	6 8	3,812	5 11	1,31,600	2 9	1,72,153	10 2
	Tanookoo	61	1,39,583	7	6	1,92,276	15	6	52,693	8,293	7 1	638	7 1	1,47,218	7 6	2,00,570	6 7
	Oondy	87	1,02,990	9	8	1,69,803	13	3	66,813	225	0 0	90	0 1	1,03,123	9 7	1,70,028	13 3
	Ralingy*	35	56,312	0	0	86,330	0	0	29,988	37,536	0 0	11,553	0 0	82,323	0 0	1,23,866	0 0
	Pentapad*	17	11,023	0	0	22,136	0	0	11,113	61,436	0 0	22,593	0 0	52,866	0 0	86,572	0 0
	Kykalore	113	75,239	0	0	93,082	0	0	17,823	6,183	0 0	1,330	0 0	80,111	0 0	99,561	0 0
	Total	366	4,99,753	3	2	7,12,225	0	5	2,12,471	1,40,829	13 9	40,038	13 1	6,00,514	3 10	8,53,051	14 2
	Grand Total	617	10,28,322	10	6	14,78,720	1	9	4,50,397	2,97,852	10 8	70,879	13 0	12,55,295	8 2	17,76,572	12 5
Western Delta.	Rajahmundry Villages	452	8,85,033	10	6	12,77,172	1	9	3,91,473	1,89,398	10 8	35,401	13 0	10,39,695	8 2	14,66,570	12 5
	Masulipatam Villages	165	1,42,621	0	0	2,01,518	0	0	58,924	1,08,451	0 0	35,478	0 0	2,15,600	0 0	3,10,002	0 0

Division of the Delta.	Name of the Talook	The Villages Irrigated in 1857-58.								The Villages that have not yet been irrigated.				Total.			
		The number and the average Assessment of these Villages for five years, from 1841-42 to 1845-46.		Consolidated Assessment in 1857-58.		Increase.		Per centage of Increase.		The number and the average Assessment of these Villages for five years from 1841-42 to 1845-46.		Increase.		The average Assessment for five years from 1841-42 to 1845-46.		Consolidated Assessment in 1857-58.	
		Number.	Assessment.							Number.							
			Rs.	A.	P.	Rs.	A.	P.	Rs.		Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Western Delta.	Cocanada	2	2,311	14	0	2,176	3	4	135	0				2,615	7	7	2,548	11	6
	Bickavole*	44	88,416	12	0	1,59,172	2	6	70,755	80				92,223	14	0	1,63,112	8	11
	Caparam*	27	68,766	4	6	1,03,445	4	6	34,679	50				1,30,515	6	10	1,84,417	15	8
	Cota Ramachendrapoor	55	1,46,096	2	9	1,75,903	11	6	29,807	20				1,16,096	2	9	1,75,903	11	6
	Total	128	3,05,591	1	3	4,40,697	5	10	1,35,106	41				3,71,450	15	2	5,23,982	15	7
Central Delta.	Rally	18	41,598	10	3	47,118	14	6	2,590	5				78,557	4	7	87,525	3	6
	Amalapoor	60	1,01,599	0	7	1,55,838	13	3	51,239	53				1,20,982	14	11	1,78,273	8	0
	Nuggarum	45	76,780	11	3	1,22,769	15	9	45,989	59				83,760	1	8	1,31,666	3	2
	Total	123	2,22,978	6	1	3,25,797	11	6	1,02,819	46				2,83,300	3	2	3,97,534	14	8
Eastern Delta.	Mogultoor	50	1,14,555	2	0	1,48,596	3	6	34,041	29				1,31,600	2	9	1,72,153	10	2
	Tanookoo	61	1,39,583	7	6	1,92,276	15	6	52,693	37				1,47,218	7	6	2,00,570	6	2
	Oondy	87	1,02,990	9	8	1,69,803	13	3	66,813	61				1,03,123	9	7	1,70,028	13	3
	Ralingy*	35	56,312	0	0	86,330	0	0	29,988	53				82,323	0	0	1,23,866	0	0
	Pentapad*	17	11,023	0	0	22,136	0	0	11,113	101				52,866	0	0	86,572	0	0
	Kykalore	113	75,239	0	0	93,082	0	0	17,823	21				80,111	0	0	99,561	0	0
	Total	366	4,99,753	3	2	7,12,225	0	5	2,12,471	43				6,00,514	3	10	8,53,051	14	2
	Grand Total	617	10,28,322	10	6	14,78,720	1	9	4,50,397	43	291	2,26,972	13 8	12,55,295	8	2	17,76,572	12	5
Western Delta.	Rajahmundry Villages	452	8,85,033	10	6	12,77,172	1	9	3,91,473	41	136	1,53,906	13 8	10,39,695	8	2	14,66,570	12	5
	Masulipatam Villages	165	1,42,621	0	0	2,01,518	0	0	58,924	41	155	72,976	0 0	2,15,600	0	0	3,10,002	0	0

N. B.—The four Talooks marked with an asterisk, having villages above the high level canals to Samulcotta and Ellore, this Statement shows an assessment, somewhat in excess of the amount actually levied in the Delta and similarly "Kykalore" includes the assessment on the villages to the Westward of the Coptolair, in the Delta of the Kistna.

Increase in the Land Revenue of the Delta of the Godavery.—68. This Comparative Statement does not include the Zemindary irrigation; but as regards the area here exhibited it will be observed that 617 villages have been brought within the direct influence of Annicut irrigation, and there are only 291 villages left for comparison. On the villages now irrigated the average collections, before the Annicut was begun, were Rupees 10,28,322. On these villages in 1857-58 the collections were Rupees 14,78,720. And, on the irrigated villages shown in the Comparative Statement, there has been therefore an increase of 4½ lacs or 43 per cent. On the 291 villages, the average collections, before the Annicut was begun, were Rupees 2,26,972. On these villages in 1857-58 the collections were Rupees 2,97,852. And, on the villages which have not had the benefit of Annicut irrigation, there has been therefore an increase of Rupees 70,879 or 31 per cent. The total increase, according to this Statement has been Rupees 5,21,277, which is an increase of 41 per cent. on the land revenue before the Annicut was begun. And it now only remains to be considered; first, how far the 4½ lacs of this increase, which is shown on the irrigated villages, may be wholly ascribed to the effect of the Annicut; and, secondly, whether any portion of the remaining ¾ of a lac may be justly given to the credit of the Annicut also.

Proportion of the increase due to the Annicut.—69. From what has been shown as the total consolidated assessment on the Joint Rent lands for both crops, and the water cess on Inam, &c., it must be inferred that a large portion of the total revenue collected in 1857-58, from the irrigated villages had nevertheless been paid by produce that had not been irrigated at all; and that a corresponding proportion of the increase had nothing to do with the Annicut. To test the truth of this inference in detail would be impossible, even if I had the means of going through the accounts of every village seriatim; for, under the Joint Rent tenure, no dependance can be placed on the registered rates. The total Joint Rent is raised or lowered with reference to the supposed power of the village, generally, to meet the demand; and, in like manner, though the rise is shown in the accounts on particular fields, the proportion of a rise, to be paid by each ryot, is fixed with reference to his general circumstances. And he may be shown by the accounts to be paying 20 per cent. more per acre for his dry crops, when, in reality, he meets the rise with the help of concealed irrigation. But the "Annicut and its subsidiary works include something more than the irrigation and navigation of the Delta of the Godavery." The "bank canals" have been formed in excavating a sufficient quantity of earth for strong dikes, which, lining the river below the Annicut save the Delta from the floods that left such terrible effects behind them in by-gone years. Not only have both branches of the Godavery been thus protected below the Annicut, but the dikes have been carried for many miles above the Annicut. And, where the increase in the land revenue is not due to either irrigation or navigation, it may, with reference to the past, be safely ascribed to *these embankments.* A small portion of the increase may be collected from the villages above the Samulcottah and Ellore high level canals, but there again these canals give those villages such means of getting their produce to market, as they never possessed before; and thus the increase in the land revenue in the Delta Talooks, may every where be traced to the results of the Annicut and its subsidiary works. To assert, however, that the rise is wholly owing to the Annicut would, strictly speaking, be contrary to the truth; for, besides the general rise in prices since 1845-46, exports have sprung up to a great extent in grains that are independent of irrigation. These grains have doubtless contributed to swell the general prosperity; and thus, strictly speaking, it would be impossible to ascribe to the Annicut the total increase that has taken place in the land revenue of the Delta, either in the villages that have, or those that have not been irrigated. But when it is remembered how enormously the *productive powers* of the Delta have been increased by the Annicut; and that the value of the first crop alone, in 1857-58, at the average prices of the last 38 years may be estimated at Rupees 1,01,02,909, upwards of a million sterling, it seems hypercritical to attempt to distinguish how much of the increase in the land revenue is wholly due to the Annicut. When a man could lift a hundred pounds with ease, it is no good trying to make out whether one pound is lifted by the strength of his wrist, or the strength of his arm. It has been shown that the ryots are able to pay a much higher assessment than is collected at present; and, for all practical purposes, the total increase shown by the Comparative Statement may be wholly ascribed to the

Note to Statement at para. 67.

Annicut. Besides the increase shown in this statement, Rupees 37,512 are entered in the Comparative Statement received from the Collector of Rajahmundry,* as the amount of water cess on the irrigated Zemindaries and the Inams in those Zemindaries. And the total increase in the land revenue of the Delta of the Godavery in 1857-58, when compared with the revenue yielded by the Delta before the Annicut was begun, was therefore Rupees 5,58,790, the whole of which may, in my opinion, be fairly ascribed to the effects of the Annicut and its subsidiary works.

*Appendix V. a.

Exports.—70. There has, however, been an increase in the upper Talooks also of the Rajahmundry District in the last 13 years. And, although this increase may be fully accounted for by the various causes already referred to, as independent of the Annicut, still there was further a very marked rise in the land revenue of the Rajahmundry District in the years immediately succeeding those for which the average was taken; and it might be argued from those two facts that the basis of comparison was incorrect; and that it is evident, from the subsequent history of the District of Rajahmundry, that I am not justified in considering the average revenue of the Delta from 1841-42 to 1845-46, as all the land revenue that the Delta was capable of yielding before the Annicut was begun. It is therefore advisable that I should refer more particularly to those causes which have had so beneficial an effect on the agricultural resources of the country, and are independent of the Annicut; and that I should further give some details regarding the sudden rise in the land revenue of the Rajahmundry District in 1846-47. Not only have the prices of agricultural produce risen greatly of late years, but, as might be expected, with this rise, it is found that the exports also have very greatly increased. And an examination of the exports of the Rajahmundry District, taken in connection with the rise in prices, will amply account for the increase in the land revenue of the upper talooks, which is entered, at somewhat less than half a lact in amount, and at 30 per cent. on the average revenue yielded by those talooks for the five years selected for comparison. The value of the exports last year, under the head of "Gingily seeds" was close on seven lacs; whilst Bengal Gram or Boot Gram, as it is called in the Export Tables, made up 3½ lacs more. Taken together the total value of the exports in those two grains was Rupees 10,47,169. And, as the trade in both these grains has grown up almost wholly since 1816, and both grains are extensively grown in the upper talooks, here is at once an explanation of their improved revenue; without taking into account the fact that the people are now relieved from the rack renting of the Zemindary system, and the realization of the revenue is secured by the Joint Rent tenure. I am not aware that the name of "Gingily," which has become so important an article of commerce, is to be found in any language. It is, probably, a corruption, as Captain Rundall has suggested, of "Nooveu," the Teloogoo word for seed. And what is exported under the name of "Gingily" is in reality Sesamum, and is chiefly exported to France; where it is manufactured, I believe, into a good edible oil, and forms a large portion of what is sold as made at Lucca of Italian olives. Sesamum, is a double crop; and, whilst the first crop is chiefly grown in the upper talooks and is somewhat precarious, the second crop, which fetches a higher price, is chiefly grown in the Delta, and is there made comparatively safe with the help of irrigation. In addition to exports to the value of 10½ lacs in Sesamum and Bengal Gram, which either go to Bourbon or Mauritius, paddy, rice, sugar, tobacco, chillies and turmeric were exported last year to the amount of upwards 12 lacs; and the total exports from the District of Rajahmundry for 1857-58, were valued at Rupees 29,30,007. From 1841 to 1845 the total value of exports averaged 6½ lacs; in the next five years this average was

†Rupees 48,791, Appendix V.

	Rupees.	Rupees.
Gingilly, or Sesamum	6,24,008	
Bengal, or Boot Gram	3,53,161	
		10,47,169
Paddy	1,59,349	
Rice	3,94,636	
		5,53,985
Sugar { Refined	3,95,877	
Sugar { Raw	1,25,655	
		5,21,532
Tobacco	79,016	
Chillies	16,895	
Turmeric	44,865	
		1,40,776
Sundries		6,66,545
	Total....	29,30,007

	Rupees.
Paddy, &c.	5,53,985
Tobacco, &c.	1,40,776
Sugar.	5,21,532
Total.	12,16,293

From 1841-42 to 1845-46.

Year.	Rupees.
1841-42	4,59,362
42-43	5,64,375
43-44	6,33,991
44-45	7,30,498
45-46	9,07,774
Total..	5)32,96,000
Average...	6,59,200

From 1846-47 to 1850-51.

Year.	Rupees.
1846-47	13,56,336
47-48	10,97,238
48-49	10,52,056
49-50	9,68,717
50-51	13,99,067
Total..	5)58,73,414
Average.	11,74,682

From 1851-52 to 1855-56.

Year.	Rupees.
1851-52	13,66,614
52-53	16,32,979
53-54	18,33,533
54-55	16,26,909
55-56	19,14,341
Total..	5)83,14,367
Average.	16,62,873
1856-57	17,45,230
57-58	29,30,007

nearly doubled; from 1851 to 1855 there was again a great increase; and in the year under review it was nearly quintupled. So rapid an increase in the value of the export shows very clearly that the country now is in a very different position to what it was in, during the five years selected for comparison; and that it by no means follows that the revenue paid now could have been paid then. And this improvement has not been confined to Rajahmundry. Being anxious to know how far the rise in the exports might be attributed to public works, I applied to the Collectors of the two adjacent Districts for the returns of their exports; and from the statements with which I was kindly furnished, it appears that there has been also an increase in both those Districts. In Masulipatam it is a comparatively small sum, as might be expected from the nature of the port; but in Vizagapatam the increase is very large. The value of the exports from the District of Vizagapatam was Rupees 9,78,645 in 1848-49, and Rupees 31,29,074 in 1857-58. The exports were, therefore, last year three times the value they were 10 years before; and, on referring to the figures given for Rajahmundry, it will be seen that the proportions there were much the same for the years in question. Taking the total exports for the last 10 years in the two Districts the similarity is still more striking. The total exports for the 10 years is Rupees 1,64,09,450 in Rajahmundry and Rupees 1,70,96,896 in Vizagapatam. There is only a total difference therefore of six lacs between the working of the two Districts int he last 10 years; and the large sums that are thus shown to have been poured into the two Districts during that time, not only show satisfactorily that agricultural resources have been benefitted by other causes than public works during the last 10 years, and that the rise in the upper talooks of Rajahmundry by no means proves that those Talooks or the District generally could have paid a bigger revenue before, but also that neither District is working up to full power. The exports have been regulated solely by the demand during the 10 years in question, and the demand must rise before the relative powers of the two Districts to produce, can be tested satisfactorily.

Year.	Rajahmundry. Rupees.	Vizagapatam. Rupees.
1848-49	10,52,056	9,78,645
49-50	9,68,717	13,88,515
50-51	13,99,067	15,97,566
51-52	13,06,614	13,53,563
52-53	16,32,979	17,64,105
53-54	18,33,533	16,01,718
54-55	16,26,909	10,11,757
55-56	19,14,341	19,30,426
56-57	7,45,236	23,41,494
57-58	29,30,007	31,29,074
Total	1,64,09,450	1,70,96,896
Total Difference...		6,87,446

Rise in the Land Revenue of the Rajahmundry District in 1846-47. *Population in* 1857-58.—71. In 1846-47 the land revenue of the District of Rajahmundry rose suddenly four lacs; and this large increase was fully maintained in the following year; whilst it would appear from the date on which the Annicut was begun, and the Export Returns, that neither the Annicut, nor Annicut irrigation, nor exports could have had much to do with it. In 1846-47, the net increase was Rupees 3,65,777. The particulars of this increase are given with great clearness in the Annual Report.* One-third was on the Zemindary of Pettapoor. It had just been restored to the Zemindar, and, 1845-46 being a bad season, there had been a lac of arrears. In 1846-47, the season was good, and the Zemindar paid, not only his full Peishcush, but also Rupees 30,000 of the arrears, which made up Rupees 1,30,000 or one-third of the increase. The favourable year had also helped what remained of the Zemindary of Peddapoor, which was then under attachment prior to being finally resumed, and Peddapoor had yielded Rs. 42,000 more than it did the year before. Whilst 14,000 odd of arrears from some small Zemindar make up 2½ lacs of a total increase of 3½ lacs. Of the remaining lac, Rs. 63,000 was an adjustment of purchase money on a newly reverted estate; and the balance was an increase on villages that had been some time in the hands of Government. This latter increase is ascribed by the Collector, partly to the introduction of the Joint Rent system, and partly to improvements in old irrigation works in the Western Delta. But the total increase, he thought, was chiefly due to the

Year.	Revenue.	
1845-46	Rupees.	16,49,200
1846-47	"	20,14,977
Net Increase.	Rupees.	3,65,777

* To Board of Revenue, November 20, 1847, para. 24.

Idem, para. 13.

favorable nature of the season; and the soundness of this opinion there seems no reason to doubt. The fiscal history of the District is not only too true an index to the rapid fall in its agricultural resources up to 1840, but also is a barometrical registry in the strict sense of the word. Good seasons brought up collections and the revenue rose. Drought or high floods, bad seasons, were as surely marked by arrears and a heavy fall. And there is no reason to doubt, either that the favorable nature of the season of 1846-47 was the chief cause of the rise in the revenue that year; or, that the maintenance of the rise in the following year may also be ascribed in part to the same cause. But 1848-49 was an indifferent year; 1849-50 brought heavy floods, an inundation, and considerable loss; 1850-51 was also marked by high floods and the failure of the first crop of dry grains. And, if favorable seasons were the cause of the rise, and they were, why were these years not marked by a corresponding fall? These five years are the history of the District up to that time. Two or three good seasons, and large collections; then as many bad seasons, which should be followed by heavy arrears. And the collections did, in fact, fall in the second bad year, two lacs and upwards; but, in the third, although there were high floods and the dry crops failed, the revenue rallied. The revenue rose again to 20 lacs. And, whilst there is every reason to believe that the opinion of the Collector was correct, and the sudden rise in the revenue in the first instance, was solely due to the seasons, and is no proof that the District could have yielded more revenue before, than the average shows that it did, so there is apparently equally good reason to believe, that, if the Annicut had not been begun in 1847, the bad seasons would have been marked by a corresponding fall, and the average of the years in question would have been 16, instead of 19 lacs. In two years, 1847 and 1848, the expenditure on the Annicut was seven lacs,* most of which would be spent in the District; and the expenditure went on during the bad years at much the same rate. Money was thus put in circulation for the first time since the factories were abolished. Again, of two of the main canals, one, it is well worthy of remark, had been dug, and the other improved in the Pittapoor and Peddapoor estates the year before the rise took place, and where that rise was most marked. Not only were these estates specially benefitted, therefore, by the outlay of public money, but their existing tanks and channels, and the area they irrigated would be at once greatly benefitted by an increased supply of water. Evidence has indeed been given, in the Special Report, of the actual rise in the Joint Rents in the Eastern Delta in consequence. And when all these facts are taken into consideration, it will, I think, be admitted that neither the general, nor the sudden rise in the revenue of the District of Rajahmundry can be taken as proof that the Delta of the Godavery, when the Annicut was begun, was capable of yielding more than the average revenue collected between 1841-42 and 1845-46. How much the agricultural resources of the District had then been deteriorated, has been inferred from the Census Returns,† as well as from the falling revenue. And, to show similarly how great has been the subsequent change in the District for the better, I beg to submit the Census Returns given by Mr. Purvis in the Annual Report for 1856-57. The census of the District was taken in 1856 in accordance to the Board's Circular Order of 1850, "as correctly as the means at his disposal would permit," and the result showed a population of upwards of a million (1,081,703). In 1821 the population of the District was 738,308; in 1840 it had fallen to 533,836 or 27 per cent.; and in 1856-57 it had risen, it will be seen, 46 per cent. on the highest returns previously recorded, and cent. per cent. on what it was in 1840. Mr. Purvis mentions one inaccuracy in the census of 1850, and probably the Census Returns of 1840 contained many inaccuracies also. But still the general proportions are, doubtless, tolerably correct. The great increase took place between 1840 and 1850, and, when, by immigration and otherwise, the population of a District has been doubled, it is clear that the fiscal returns, which accompany that increase, are no indication to the revenue, that the District was capable of paying previously.

Year.	Revenue.
1846-47	20,14,977
47-48	20,84,285
48-49	19,39,072
49-50	18,44,269
50-51	20,38,907
Total.....	99,21,510
Average.....	19,84,302

* According to the Treasury accounts.

† Para. 35.

Population of the District of Rajahmundry.	
1821.....	738,308
1830.....	696,016
1840.....	533,836
1850.....	1,012,036
1856.....	1,081,703

Irrigability and Water Cess on Zemindaries.—72. In the Special Report on the Kistnah, whilst dwelling on the necessity for fixing an irrigation assessment on the land* to secure the just rights of Government, I have ventured to assert, that, where the irrigated area is within the limits of a Zemindary, it is more to the advantage of Government than in any agreement with the Zemindar, as regards an addition to his Peishcush, the additional assessment should be in the shape of a cess on the quantity of water supplied. And I have further stated that the local position of the Zemindaries in the Delta of the Kistnah greatly facilitated such a course. I now beg to state that the position of the chief Zemindary in the Delta of the Godavery is, I believe, equally favorable. It has been seen† that out of a total irrigated area of 21,303 acres, 16,202 acres belong to the single Zemindary of Pittapoor. Some of the villages belonging to this Zemindary are detached, and would increase the trouble of levying a rate on the quantity of water supplied; but, as regards the bulk of the Zemindary, there would be no trouble apparently. The Zemindary lies on both sides of the lower portion of the Samulcottah and Cocanada canals. Whilst, if the former canal is extended to Toony, by far the greater part of the area to be thus brought under irrigation belongs, I understand, to the Zemindar of Pittapoor, and a water cess could not well be levied under more favorable circumstances. The remaining 5,101 acres are sub-divided amongst six talooks; and the area entered in each talook is again sub-divided amongst numerous petty Zemindars. In the Rally talook however, in the Central Delta, the land held under the Permanent Settlement lies well together. The irrigated area is returned at 1,813 acres; and here measuring the water supplied might be effected with ease.

* Para. 162.

† Para. 45.

Second Crop.—73. Having secured as far as possible the just rights of Government by fixing the irrigation assessment on the land, for the first crop, when water is comparatively plentiful and the inevitable waste of such a system is not so much consequence, I have urged the propriety of reversing the process for the second crop, and fixing the assessment for the second crop on the quantity of water supplied; for then water is scarce; and it is only by such a course that the ryots can take full advantage of the limited supply. It is therefore desirable to refer here to the amount of revenue involved in the proposal in the Delta of the Godavery; which, for 1857-58, was Rupees 17,167-0-9. The average cess collected was, according to the Revenue Returns, Rupees 0-11-10, and according to the estimated area, Rupee 0-6-5 per acre. And unless there has been a great rise in respect to the second crop in the current year, it is, I should think, highly probable, that selling the water in the mode proposed, would not only develope the agriculture of the country, but would also raise the revenue. It could not well lower it. In para. 58, I have calculated to what the assessment might be raised in the Joint Rent lands, taking two-thirds of the net value of both the first and second crops. But it has never yet been found possible, I believe, to place irrigation for a second crop under the same rules and restrictions as irrigation for a first crop; and present results are, I believe, in consequence, everywhere, unsatisfactory. If the supply of water for the second crop, as I would respectfully recommend were now, however, made wholly independent of the land, then effectual steps might be taken at once to bring to light and to account its true marketable value, and realize the various advantages referred to at length in the Special Report.

Irrigation Police.—74. As water becomes more and more valuable, disputes between the officers entrusted with its distribution and the ryots may be expected to increase. And I would respectfully suggest for consideration, whether it would not be advisable to arrange for the police charge of all the irrigation works in the Delta being vested in one and the same officer, to be stationed at Dowlaiswaram. Last September, when the first crop was on the ground, a dispute of this nature occurred between the ryots of Pedda Caparam in the Western Delta and the Overseer, Mr. Stephenson, whom they assaulted. Under the present system it was necessary to prosecute this case in the Magistrate's office at Masulipatam; and Mr. Stephenson and the Superintendent of the channel had to leave their charge for some time in the height of the irrigation season, just when it was most essential that they should be watching the channels and the distribution of the water, day and night. The prosecution cost Government Rupees 45 in travelling expenses; and it would perhaps have cost as much, had it been disposed of as I would propose.

But in the latter case, there is this difference. The fact of a serious dispute having taken place could have been reported to Dowlaiswaram by that night's lock tappal; for there is a daily communication between the District Engineer's Office and all parts of the Delta. The particulars would have been duly communicated to the officer in police charge of the irrigation works; and, with the aid of his boat, this officer might have settled the dispute on the spot, before the complaint even reached Masulipatam. Prompt local inquiry and summary justice is especially required in those cases where ryots breach a bank, either to relieve themselves from too much water or to get water by illegal means, and in both cases at the risk of entailing most serious loss on others. These cases can only be dealt with effectually by a European Magistrate, who could give his immediate attention to such complaints and could bring more authority to bear on the points at issue than a Tahsildar. And arrangements might, I presume, be made for such police charge being entrusted to the Head Assistant of the Rajahmundry District.

Two years' exemption, Appendix VI.—75. There is still one more point connected with the returns now submitted, to which I would wish to refer. It may perhaps be thought unadvisable to make any change in existing rates when the survey and settlement of the Delta are in hand. But, if there is likely to be still a period of two or three years, before the new settlement is introduced, it is worth while considering whether a water cess should not be levied now, as soon as irrigation commences. When large works are constructed and irrigation is introduced on a large scale, help is needed by the ryots; and, as each village comes forward, it is only right that the villagers should be helped, either by letting them have water free of all charge for one or two years, or in such other way as may be deemed fit. Much has to be done to prepare the land for irrigation; and, when Annicut irgation commenced in the Delta of the Godavery, the ryots assuredly had not the means to pay an additional assessment and bring to work, at one and the same time, the additional stock required for the cultivation of irrigated land. Two years' grace is not only necessary as a help; it is also necessary, then, as an inducement. But it is obvious that this privilege opens a wide door to fraud, where there is much waste, and irrigation may still, for some years to come, be shifted annually, to a certain extent, to get the benefit of the rule. And it becomes necessary now to consider, whether the two years of grace is any longer required. I have already referred to the blighted crops of the Polaveram lunka as a good negative proof of the effects of the Annicut in exceptional years; and I then mentioned that Captain Stoddard was kind enough at my request to examine the crops in this lunka. The total arable area is calculated at 14,000 acres. There are some fourteen villages. And the whole of the land could be irrigated by means of an aqueduct. On Captain Stoddard's inspecting the crops, the people came forward and begged hard that measures might be taken to give their island the benefit of Annicut irrigation. And on hearing to this effect from Captain Stoddard, after my return from the Kistnah Delta, I lost no time in visiting Polaveram myself, as I thought good evidence might thus be obtained on many of the points at issue. Captain Stoddard kindly met me there; and, on my arrival, the head men of the eight Government villages at once came forward, and signed the accompanying bond in the presence of Captain Stoddard and myself. The bond* had been drawn up by the Tahsildar, who was also present; and this bond, it will be observed, pledges the ryots of the eight Government villages, to pay the usual water cess from the first year. The head men of the remaining villages, which are held under the Zemindary tenure, had also expressed their willingness to Captain Stoddard to abide by the same terms; but, when I went, they held back, thinking, probably, that, if they did not commit themselves in writing, they would get Annicut irrigation for nothing. And, should it be ever determined to give the Polaveram lunka the benefit of Annicut irrigation, it would of course be necessary first to call on the Zemindars, if still in existence, to state distinctly whether they were prepared to pay or not. Finding an aqueduct would involve a large expenditure, I did not pursue the subject further; and, as regards Polaveram, will only add that it would be a most valuable extension of the water carriage of the Central Delta. For the lunka is just opposite to Yanam; and a lock into the river would place the whole traffic of the Central Delta

*Appendix VI, (original), dated the 2nd February 1859.

within a few miles of the port of Coringa. But, as regards the point under consideration, I would respectfully submit, that the Polaveram bond shows that the advantages of Annicut irrigation are now fully recognized by the ryots, and that the two years' grace is therefore no longer required as an inducement. Considering the great improvement that has taken place in the agricultural resources of the Delta generally, the retention of this indulgence cannot apparently be justified, either on the score of the ryots requiring help; whilst the inevitable effects of the measure have been seen in Pittapoor, where the means of irrigation have been longest afforded. And, as the two years' grace is no longer either requisite or advisable, I would respectfully recommend that it be discontinued in future.

	First Crop. Acres.
Zemindary	21,303
Inam in Joint Rent villages	76,247
In other Tenures	20,732
Total	1,18,282

	Second Crop.
Zemindary	3,495
Inam in Joint Rent villages	4,833
In other Tenures	2,090
Total	10,418

	Acres.
First Crop	1,18,282
Lower Western Delta	30,054
Difference	88,228
Second Crop	10,418
Lower Western Delta	3,412
Difference	7,006

	Rupees.
88,228, at Re. 2 per acre	1,76,456
7,006 at Re. 1 per acre	7,006
Total	1,83,462

	First Crop. Rs.
Zemindaries	18,920
Inam in Joint Rent villages	76,449
Inam in other Tenures	21,333
Total	1,16,704

	Second Crop.
Zemindaries	1,502
Inam in Joint Rent villages	5,565
Inam in other Tenures	2,683
Total	9,751
Grand Total	1,26,455
Grand Total	1,26,455
Water cess levied in the lower Western Delta	18,846
Balance	1,07,609
Estimate	1,83,462
Difference	75,853

Taking the irrigated area for 1857-58, according to the Revenue Returns, the total area liable to a water cess only, was 1,18,282 acres for the first, and 10,418 acres for the second crop. From this must be deducted 30,054 acres for the first crop and 3,412 acres for the second crop. in consequence of the guarantee in the Western Delta; which leaves 88,228 acres for the first, and 7,006 for the second crop; and if the two years' grace were withdrawn and a water cess levied in each case on the balance, in accordance to the orders of Government, at Rs. 2 for the first and Rupee 1 for the second crop, per acre, the total water cess leviable last year would have been Rs. 1,83,462 without taking into account the additional Rupee per acre due on cane cultivation. The water cess actually levied was Rs. 1,16,704 for the first, and Rs. 9,751 for the second crop, which makes a total water cess of Rs. 1,26,455. Deducting from this sum the amount realized under the guarantee in the Western Delta, viz., Rs. 18,816, the balance would be Rs. 1,07,609, to be compared with the sum that might have been collected. And thus in carrying out a desirable change, the revenue last year might have been raised Rs. 75,853.

The expenditure on the Annicut and its subsidiary works.—76. As considerable changes have taken place in the organization of the D. P. W. since the Annicut was begun, and it was probable that errors might have crept into the recorded abstracts of the expenditure on works, the construction of which has been extended over a period of 12 years, I requested the Collectors of Rajahmundry and Masulipatam, and the Civil Auditor, to inform me what amount of money was shown, by their respective records, to have been disbursed in the Godavery division during these years. A reference to the Banker's book, as it were, would, it seemed, be satisfactory under existing circumstances, and would at all events, put an *unquestionable* limit to the amount of public money that could have been expended on the Annicut and its subsidiary works. From the statements* received from the Collectors of Rajahmundry and Masulipatam, it appears, that the total amount disbursed from their respective treasuries for the D. P. W., in the Godavery division, from 1844, up to February 1859 in Rajahmundry, and the close of April 1858 in Masulipatam, was Rs. 75,96,700. These statements I handed over to the District Engineer for his remarks. And, as I understood that the various canals and

* Appendix VII. A and B.

	Rs.	A.	P.
Rajahmundry	72,31,808	2	7
Masulipatam	3,64,892	5	7
Total	75,96,700	8	2

channels had not been dug to their present width in the first instance, but had been widened, when they were cleaned, year by year, as the area of irrigation became more and more extended. I requested the present District Engineer, Captain Rundall, to give me a rough estimate of what portion of the balance, over and above the cost of original construction as shown by the records of the office, should, in his opinion, be put down for this reason under the same head. In reply, Captain Rundall informs me,* that, by the accounts of his office the expenditure on the Annicut project is shown to be 32 lacs for original construction, and 16 lacs for maintenance up to April 1839. Of this latter charge Captain Rundall "reckons that about six lacs may be chargeable to block; leaving 10,31,499 Rs. for the repairs proper." And the total expenditure on the Annicut project, he adds, may therefore be stated as follows:—

* 2nd June 1859, Appendix VII. C.

	Rs.	A.	P.
Construction charges	32,63,537	4	7
Proportion of maintenance debitable to do.	6,00,000	0	0
Total construction	38,63,537	4	7
Maintenance charges proper from 1846 to 1859, or 14 years	10,31,499	0	0
Salaries and Establishment during the same period	8,79,120	0	0

Construction charges ... Rs. 32,63,537 4 7
Maintenance ... 16,31,499 6 8
Total ... 48,95,036 11 3

The salaries, &c. are not shown in the Engineers' accounts. The salaries given by Captain Rundall† are the portion of the total sum under this head in the Collector's statement, which Captain Rundall would fix with reference to the expenditure shown by the accounts of his office. And deducting accordingly from the total disbursement shown by the Collectors' statements the total amount disbursed under this head, with the expenditure before the Annicut was begun in Rajahmundry, and up to 1853 in Masulipatam, and, further, the amount expended on improving the navigation of the Upper Godavery, leaves a difference of Rupees 7,76,625, between the *total expenditure* shown by the *records* of his office (Rupees 53,67,276)‡ and the Collectors' statements "the reason of which" Captain Rundall "cannot account for." The statement received from the Collector of Rajahmundry§ includes the expenditure on public buildings, roads, and bridges, &c., duly classified; whilst the Masulipatam statement|| only shows the gross amount disbursed each year, on "Irrigation Works;" the expenditure for the years prior to 1856, being the amount paid annually "on account of repairs in the talooks which are now under the Godavery division." And, deducting the expenditure on the Upper Godavery,¶ I beg to give similarly the total amount shown by the two statements to have been expended in the Godavery division from the official year 1844 up to 1858, both years inclusive.

† Appendix VII., C.

‡ Appendix VII., D.

§ Appendix VII., A.

|| Appendix VII., B. Remarks.

¶ Appendix VII., A. "Navigable Canal."

Statement showing the amount disbursed for Public Works in the Godavery Division, from the year 1844 up to the 31st of April 1858.

	Items.	1844.	1845.	1846.	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	Total.
Rajahmundry.	Public Buildings	55 9 0	582 0 0	178 6 0	1,035 2 6	138 13 4	374 14 11	74 13 0	50 3 0	308 2 0	147 13 3	538 13 0	3,990 1 3	4,310 14 8	.. ..	... ...	11,791 9 4
	General Buildings	... ...	... ...	3 14 6	24 14 7	15 8 0	... ...	24 0 0	... ...	... ...	503 6 0	... ...	15 6 0	... ...	... ...	... ...	587 1 1
	Marine Buildings	... ...	... ...	... ...	... ...	188 3 7	... ...	... ...	20 0 0	760 8 0	8 14 7	1,031 10 11	4,110 6 10	2,100 0 0	... ...	... ...	8,219 11 11
	Military Buildings	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	2,000 0 0	... ...	... ...	2,000 0 0
	Ecclesiastical Buildings	... ...	... ...	50 0 0	30 14 0	... ...	... ...	3 4 0	16 12 10	... ...	16 0 0	220 0 0	... ...	4 12 0	... ...	... ...	341 10 10
	Judicial Buildings	376 13 1	341 1 10	339 2 0	62 9 0	1,764 4 1	70 2 0	478 7 3	141 5 4	1,378 5 0	781 3 2	1,172 7 11	116 13 6	3,583 14 5	... ...	... ...	10,606 8 7
	Revenue Buildings	92 10 6	301 6 0	113 12 7	29 5 6	3,787 10 3	1,569 11 4	1,592 4 2	111 15 0	365 15 8	750 12 11	1,720 9 6	7,173 7 8	0 12 0	... ...	... ...	17,610 5 1
	Irrigation Works	33,883 7 11	46,579 14 5	58,983 11 10	4,47,293 2 9	1,92,992 14 8	2,16,651 1 1	2,80,119 6 4	2,95,764 2 9	4,67,799 2 2	6,09,775 1 0	7,30,199 11 5	7,70,568 0 10	7,04,995 3 4	4,95,631 10 9	3,65,202 4 9	57,16,442 6 0
	Ferries	114 7 0	1,870 14 0	1,466 8 4	104 15 0	622 13 8	1,810 8 9	481 5 0	1,044 5 0	541 7 2	22,720 2 8	9,973 8 3	547 9 11	... ...	... ...	1 8 0	41,300 0 9
	Salaries, &c., of Engineer Officers	... ...	... ...	... ...	358 0 0	48,145 0 3	44,785 2 10	48,246 5 11	57,278 1 5	52,246 7 8	54,241 11 3	49,097 2 3	59,165 4 7	94,692 6 3	1,11,060 0 6	65,656 5 3	6,84,742 0 2
	Do. of Establishments	837 2 7	887 0 0	1,800 11 10	4,009 12 6	18,718 14 1	18,996 10 5	20,110 8 10	23,785 9 7	21,311 11 0	23,088 7 1	57,826 2 5	36,879 3 1	61,471 15 8	94,447 8 0	78,754 3 10	4,62,925 8 11
	Roads and Bridges	1,369 12 6	293 8 0	1,534 4 0	7,403 0 3	2,263 3 8	6,247 9 7	415 14 6	191 7 1	437 15 0	3,878 10 7	22,942 7 0	2,958 13 8	390 0 0	... ...	... ...	50,326 9 10
	Total	36,729 14 7	50,855 12 3	64,470 7 1	4,60,351 12 1	2,68,637 5 7	2,90,508 12 4	3,51,546 5 0	3,78,403 14 0	5,45,149 9 8	7,15,912 2 6	8,74,722 8 8	9,85,525 9 4	8,73,325 14 4	7,01,139 3 3	5,09,614 5 10	70,06,893 8 6
Masulipatam.	Public Works	15,208 3 6	2,481 11 5	800 11 11	572 8 6	5,103 0 10	12,118 3 9	19,197 1 0	15,272 3 11	7,533 14 11	20,265 9 4	23,960 9 5	27,935 8 3	32,419 14 0	95,501 0 0	85,304 0 10	3,63,671 13 7
	Charges for Establishment	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	... ...	52 8 0	1,168 0 0	... ...	1,220 8 0
	Total	15,208 3 6	2,481 11 5	800 11 11	572 8 6	5,103 0 10	12,118 3 9	19,197 1 0	15,272 3 11	7,533 14 11	20,265 9 4	23,960 9 5	27,935 8 3	32,469 14 0	96,669 0 0	85,304 0 10	3,64,892 5 7
	Grand Total	51,938 2 1	53,337 7 8	65,271 3 0	4,60,924 4 7	2,73,740 6 5	3,02,627 0 1	3,70,743 6 0	3,93,676 1 11	5,52,683 8 7	7,36,177 11 10	8,98,683 2 1	10,13,461 1 7	9,05,795 12 4	7,97,808 3 3	5,94,918 6 8	73,71,785 14 1

From this statement it would appear that Rs. 73,71,785-14-1 have been disbursed in the 15 years. And deducting from this sum the expenditure of the three first years, in order to show the precise amount disbursed since the Annicut was begun, leaves Rs. 72,01,239-1-0 as the total sum disbursed for the talooks now included in the Godavery Division, from 1847 to 1858, both years inclusive. As the Treasury accounts show the salaries, and these are not shown in the Engineers' accounts of expenditure, to compare the two sets of accounts the salaries, &c., must be deducted from the former accounts; and deducting the salaries leaves a balance of Rupees 60,52,351. The expenditure in the three Masulipatam talooks, before 1853, has also been excluded, by the District Engineer. And deducting this amount, accordingly, leaves Rupees 59,92,553 as the amount of disbursements to be compared with the District Engineers' accounts of expenditure. The total expenditure shown by the accounts of the District Engineer's office is Rupees 53,67,276. But this includes the expenditure of Rupees 22,086 under the three heads of "construction," "maintenance" and "emergent" in 1846, of Rupees 1,01,282 under the head of "construction," and Rupees 2,91,828 under the head of "maintenance" in 1859; and deducting these charges, because, those for 1859 are only shown in part in the Treasury accounts of disbursements, and have consequently been excluded from that statement altogether, and those for 1846, because they are for the year before the Annicut was begun, and have been therefore similarly excluded, leaves Rupees 49,52,081-2-7 as the total amount expended according to the accounts of the District Engineer's office from 1847 to 1858, both years inclusive. The expenditure, according to the Treasury accounts of disbursement for these 12 years, it has been seen, was Rs. 59,92,553-15-4, when modified for the sake of comparison; and a comparison of the two sets of accounts, of disbursement, and of expenditure, leaves a balance of 10 lacs unaccounted for. Captain Rundall, by a rough estimate, drawn up in a hurry to prevent further delay in closing this Report, made the balance Rupees 7,76,625; and the excess of 2¼ lacs arises chiefly from Captain Rundall having included the expenditure for the official year of 1859, just closed, which is only shown in part in the Collectors' statements, and was therefore excluded altogether from this comparison. Although the disbursements for the three years before the Annicut was begun have been also wholly excluded, a large portion of the money disbursed in those years was laid out on the Samulcotta and Cocanada canals (Thoolia Bagha). And this expenditure, already referred to, should be included, to show accurately the cost of the Annicut and its subsidiary works. And to show the full cost of the Annicut and its subsidiary works, whether for original construction or maintenance, it is of course necessary that the large item of 11 lacs for salaries, &c., during the last 12 years should be duly taken into account. A portion of the difference between the two sets of accounts may arise from the repairs in the upper talooks having been executed by the Revenue Department up to 1854. But the whole amount "would account for only a small portion of the difference in Captain Rundall's opinion;" and, looking at all the circumstances of the case, it seems to me, that the whole difference must be debited to the Annicut, unless further researches can give a more appropriate head, or else prove that the money had never been received by the D. P. W. at all. Till this question has been decided, it is impossible to calculate accurately, what are the returns with reference to the expenditure.

	Total Rs.	73,71,785 14 1
Year.		
1844. Rs.	51,938 2 8	
1845..	53,837 7 8	
1846..	65,271 3 0	1,70,546 13 0
	Balance	72,01,239 1 0

Total Disbursement from 1847 to 1858.....	Rs.	72,01,239 1 0
Salaries of Engineer Officers and their Establishment from 1847 to 1858.....		11,48,888 1 0
	Balance.....	60,52,351 0 0

year.		
1847....	Rs. 572 8 6	
1848....	5,103 0 10	
1849....	12,118 3 9	
1850....	19,197 1 0	
1851....	15,272 3 11	
1852....	7,533 14 11	59,797 0 11
	Disbursements.....	59,92,553 15 1

Year.	Total Rs...		53,67,276 2 7
1846..	Rs. 22,086		
1859..	101.282		
„	291,828	4,15,196 0 0	
	Balance....	49,52,081 2 7	

Expenditure.		
By Treasury Accounts.....	Rs.	59,92,553 15 4
By the Engineers' accounts.....		49,52,081 2 7
Balance..		10,40,427 12 9

10,40,472	
7,76,625	
2,63,847	

Extent to which the Land Revenue might be raised.—77. It has been seen that compared with the average land revenue yielded by the Delta for five years before the Annicut

was begun, there has been a rise in the land revenue of 1857-58, of Rupees 5,58,790; and it has been further shown that the consolidated assessment and water cess on the Joint Rent lands is entered in the year in question at Rupees 7,85,311; whilst, taking the results of the experiments made to ascertain the average yield of paddy per acre, the net value of the crops last year on the Joint Rent lands may be estimated, at the average prices of the last 38 years, at 55 lacs, and the consolidated assessment on the Joint Rent lands might, therefore, have been fixed at 36 lacs, if two-thirds of the net profits were taken, and 18 lacs, if only one-third were taken, in order to guard against the recorded fluctuations in prices. But both these calculations were conditional to the extent of 16 lacs of yearly produce. And, as it is desirable, with reference to the expenditure, that I should submit some clear and distinct data for forming an opinion as to possible returns on the outlay, whatever it may be proved to have been, I beg to submit a calculation as to the extent to which the assessment might be raised, without taking into account the irrigated area involved in the Inam question. Taking the average prices for the last 38 years, it has been seen that the net value of the first crop may be estimated at Rupees 17-10-4 per acre; and, taking the greatest recorded fluctuation in prices on an average of five years, it has been seen that this value falls to Rupees 10-12-5. To fix the average consolidated assessment at Rupees 6, would therefore leave a good margin to meet contingencies, with the worst markets to be reasonably anticipated, and would leave the ryots, with ordinary prices, cent. per cent. profits. I may, therefore, state that a consolidated Joint Rent could be safely fixed for the first crop at Rs. 6 per acre, and, at that rate, calculate, as proposed, the extent to which the assessment might be raised. The irrigated area has been estimated at para. 48 on the supposition that all concealed irrigation must, *ipso facto*, come, when brought to account, under the ordinary rates of assessment; but with the object now in view, it is necessary to estimate the area actually irrigated, and so liable, strictly with reference to the lands so held and irrigated, according to the Revenue Returns; and thus calculated the total area irrigated last year and liable to the ordinary rates of assessment, may be put down at 2,57,001 acres. At Rs. 6 per acre the total consolidated assessment would be Rs. 15,42,006; and taking the consolidated assessment levied at present at eight lacs, the balance to be added to the present revenue under this head would be 7½ lacs. The total consolidated assessment shown in the Revenue Returns is Rs. 7,77,896; and it is only right that the difference between that sum and eight lacs should be put down to assessment levied in reality, at present, on the irrigated area, but shown in the Revenue Returns, as levied on dry crops. In the Statement at para. 48, the total irrigated area in the Joint Rent villages has been estimated at 3,78,613 acres (column 6). And, if the land to be assessed at the ordinary rates is taken at 2,57,001 acres, the remainder, which amounts to 1,21,612 acres, must be treated as Inam in this calculation. To this must be added 67,494 acres, the estimated area of irrigation for the first crop in other tenures (column 14); and the result is 1,89,106 acres to be assessed for the first crop, according to the present orders at Rs. 2 per acre.* Supposing that the present exemption of assessment for two years will be in future discontinued, with reference to the reasons set forth in para. 75, then the water cess leviable

Total available value per acre..		22 10 4
Cost of cultivation, &c.....	Rs. 5	
Assessment.....	„ 6	11 0 0
	Profits.....	11-10-4

	Acres.	
Rajahmundry.....	1,33,492	
56 per cent.....	74,755	2,08,947
	26,072	
Masulipatam.....	22,682	48,754
87 per cent.....		
	Total...	2,57,001

Consolidated assessment as estimated..	Rupees	15,42,006
Do. as levied.....	„	8,00,000
	Balance..	7,42,006

Joint Rent Villages.	Acres.
Estimated area.....	3,78,613
Joint Rent lands.....	2,57,001
Inams..	1,21,612

Inam in Joint Rent Villages...	Acres. 1,21,612
Other Tenures.....	67,494
Total..	1,89,106

* Para. 33, Minutes of Consultation, Revenue Department, 12th March 1858.

Water Cess.		
1,89,106 acres at Rs. 2 per acre. Rupees	3,78,212	
Total water cess leviable.....		3,27,212

Total Water Cess levied.		
Inam in Joint Rent Villages.....	76,419	
Zemindaries.....	18,920	
Inam in Zemindary and other Tenures,	21,333	1,16,703
Balance of water cess..		2,61,509
Balance of consolidated assessment		7,12,306
Total Balance..		10,03,515

for the first crop would be Rs. 3,78,212. The total water cess levied as shown in the Statement at para. 40 and 44, was Rs. 1,16,703 and the balance to be added under this head would be therefore Rs. 2,61,509. And thus the total increase to be made to the present land revenue of the Delta Talooks by assessing for the first crop, the Joint Rent lands at Rs. 6, and levying a water cess on all other lands at 2 Rupees per acre, would be 10 lacs. Under the same orders* 1 Rupee per acre should be levied on the whole area cultivated with a second crop; and thus the balance on the second crop would be Rs. 5,897, without taking into consideration the double cess leviable on Sugar-cane. And adding 10 lacs, the total balance leviable for the first crop, and similarly Rs. 5,897, the balance for the second crop to 17 lacs, the land revenue shown by the Comparative Statement to have been levied in the Delta Talooks in 1857-58, would raise the demand on the 908 villages entered in that Statement to 27 lacs. The average revenue realized on these villages, when the Annicut was begun, is similarly shown to have been 12 lacs. And the difference or increase in the land revenue including the five lacs already obtained, would be 15 lacs. To this sum must be added 37,512, the water cess levied on the irrigated Zemindaries in the Rajahmundry District† and the Inams in those Zemindaries, which sum is not shown in the Comparative Statement, but has been duly taken into account in calculating the possible increase in the water cess for the first crop. And, adding the increase, which has been already obtained under this head, it appears that the land revenue in the Delta Talooks might be raised Rs. 15,68,201 over and above what the Delta yielded before the Annicut was begun.

* Minutes of Consultation Revenue Department, 12th March 1858, para. 33.

Second Crop.		
23,064 acres at Rs. 1 per acre.....	Rs.	23,064
Water cess levied.....		17,167
Balance..		5,897

	Rupees.
Total Land Revenue of the Delta Talooks in 1857-58, as shown in the Comparative Statement.	17,76,572
Balance leviable for the First Crop over and above the sum levied.....	10,03,515
Do. for the Second Crop.....	5,897
Total..	27,86,074
Average Land Revenue from 1841-42 to 1845-46 according to the Comparative Statement....	12,55,205
Difference, or increase in the Land Revenue in 1857-58.....	15,30,779
Water cess on Zemindary, &c. not included in the Comparative Statement..... ..	37,512
Total increase in the Land Revenue in 1857-58.	15,68,291

† Para. 68.

Net rise in the Land Revenue, compared with the Expenditure.—78. It is, of course, impossible to give an accurate idea of the proportion of the net rise in the revenue, to the expenditure, when it is not known what is the exact amount that has been actually expended. And all the information that I can give, as to what are the financial returns to Government at present on the public money that has been expended on the Annicut, &c., must be, simply, a very rough and conjectural estimate. The cost of maintenance for the year just closed has been given by Captain Rundall at Rs. 2,91,828 for the whole Division, and Rs. 2,38,823 for the "Annicut project;" and I will take this sum in preference to that of the preceding year, the Revenue Returns of which have been hitherto my guide, because the Annicut was breached in 1857, and the maintenance of 1857-58 was therefore marked by an unusual expenditure. The salaries, however, of that year may be taken all the same, and, including the salaries of establishment as shown in the Treasury accounts, they amounted, it will be seen, to nigh on a lac and a half.‡ The total annual cost may thus be put down, roughly, at 3½ lacs (Rupees 3,83,233); which includes, it must be remembered, the cost, under the head of salaries, of superintending the expenditure on the public

	Rs.	
Gross increase realized.....		5,58,790
Maintenance.....	2,38 823	
Salaries..	1,44.410	3,83,233
Balance, or Net Increase.....		1,75,557
Gross Increase that might be realized at once on change of Tenure.....		15,68,201
Maintenance	2,38,823	
Salaries..	1,44,410	3,83,233
Balance, or Net Increase..		11,84,968

Appendix VII, D.

‡ Appendix VII, A.

buildings of all kinds, roads, harbours, &c., of the Rajahmundry District. Deducting the cost of maintenance and of salaries, in the aggregate, from the gross increase in the land revenue in 1857-58,* and from the increase which might unquestionably have been obtained in that year by a change of tenure,† leaves a net increase in the land revenue of Rupees 1,75,557 in the former, and Rupees 11,84,968, in the latter case; and this, it will be seen, would be 3 per cent. and 22 per cent. respectively, on the total outlay for construction, as shown in the margin, supposing further researches do not throw any more light on the difference of 10 lacs between the accounts of Disbursement and Expenditure, and similarly, of 4 and 28 per cent. should further researches account for the 10 lacs satisfactorily. In calculating the cost of construction, I have not taken, it will be observed, the total cost as given by Captain Rundall,‡ because that includes the outlay under this head for the year just closed. But I have taken, to save further reference, Captain Rundall's estimate of maintenance charges debitable to cost of construction up to 1859; and I have further added to this the salaries of the Engineers and their establishment § for the six years that elapsed between the commencement of the Annicut, and Colonel Cotton's Report of its completion in 1852.

* Para. 71.

† Para. 77.

	Rs.	Rs.
Construction charges.....	32,17,771	
Proportion of maintenance debitable to do.....	6,00,000	38,17 771
Salaries of Officers and of Establishment from 1847 to 1852.....		3,67,992
Total outlay for construction		41,75,763
Difference between the accounts of Disbursement and Expenditure....		10,40,472
Total outlay for construction including the 10 lacs unaccounted for...		52,16,235

‡ Appendix VII, C.

§ Appendix VII, A.

The result is a rough estimate of Rupees 52,16,235, if the 10 lacs are included, and of Rupees 41,75,763, if the 10 lacs are otherwise accounted for, as the probable outlay on the construction of the Annicut and its subsidiary works for the irrigation and navigation of the Delta of the Godavery. These sums are in excess, and tell against the Annicut, insomuch that I have made no change in Captain Rundall's estimate of maintenance debitable to block, which was calculated up to the end of the official year just closed; and, on the other hand, the estimate would have to be increased, if I attempted to show the salaries on so much of the six lacs debitable to block, as should be properly included from 1852 up to 1858, and, if I attempted to distinguish, which ought, I think, to be done in drawing up an accurate estimate, certain heads of expenditure not included in the Annicut project. Such attempts at accuracy would, however, be a waste of time under existing circumstances; and I must, therefore, leave the calculation as it stands—a very rough estimate of the financial returns to Government *in* 1857-58. In the current year there has been a considerable rise in the land revenue, I believe; and, for the current year, the financial returns, if I could give them, would be a good deal more favorable to the Annicut, than those which I have now given for the past.

A sudden rise in the Land Revenue deprecated.—79. In the Special Report on the Kistna, I have recommended that the assessment should be fixed at exceptionally low rates to hasten the occupation of the irrigable waste. But if the assessment were fixed at Rupees 6 per acre, the object I had in view is amply provided for. A large margin would be left for saving capital; and so long as prices remain within 20 or 25 per cent. of the present rates, ample funds would be saved, annually, for extending cultivation. But it is further necessary to consider what would be the effect of raising the assessment 10 lacs, *suddenly*.

	Rs.
Proposed increase	15,68,201
Increase realized.....	5,58,790
	10,09,411

The increase in the water cess on the second crop, it has been seen, would be very trifling; it needs no consideration; and, as the water cess on the first crop is only 2 Rupees per acre, there is no need to consider, either, any possible rise under this head, on account of concealed irrigation, &c. But, taking eight lacs as the amount at present levied on the Joint Rent lands, the present calculations involve a rise of the assessment on those lands to the extent of 7½ lacs; and so great a rise as this, calls for the most careful consideration. The area has been estimated at 2,57,001 acres. The average assessment at present may, therefore, be estimated at Rs. 3-1-9 per acre. And, proposing to raise that average to Rs. 6, is a rise of Rs. 2-14-3 on Rs. 3-1-9, which is a rise of 92 per cent. in direct taxation. If the

	Rs.
Proposed Assessment.....	15 42,006
Supposed present Assessment.....	8 00 000
	7,42,006

concealed irrigation handed over to the Inamdars, according to these calculations, were included the rise would of course be greater. And, when it is remembered how severely a rise of six pence in the pound, in the Income Tax, would be felt by those who are better off even than the ryots of the Godavery Delta, I would respectfully and earnestly urge for consideration, whether it is fair to put the agricultural operations of the Delta to so severe a test, as a sudden rise of 92 per cent., seeing that the rise *itself* is three shillings and three pence in the pound. I would again respectfully repeat that the land under an Annicut is held under very different terms to land elsewhere, and not only may, but, for that very reason, ought to be treated very differently. Elsewhere, improvement must be looked for by the future outlay of private capital; and the longer the period for which a fixed agreement, or title, can be given, the more surely will private capital be sunk in the land. But here, under the Annicut, the land has been improved *already by a large outlay of public capital.* And, under the Annicut, the main point for consideration, is not, how a further outlay of private capital may be best secured, but what is the safest and best manner of raising the assessment with reference to the public capital that has been already expended, and with reference to the enormous increase, in consequence, in the productive powers of the land. About the propriety of raising the assessment there can, I suppose, be no doubt. But it would surely be contrary to the principles of political economy, when the sum involved is so large, to raise direct taxation 92 per cent. at once. And I would, therefore, again recommend that the rise should be gradual. The relative value of the land should every where be accurately ascertained, once and for all; and, this having been done, the present assessment should be raised gradually at the expiration of such limited periods as might the deemed advisable. All necessary security to the outlay of private capital would be given by a guarantee that the assessment should be raised in future, solely, by a per centage rate. If the private capitalist were thus secured against any attempts to ascertain hereafter what changes had taken place in the relative value of the land, sufficient security would be given for the outlay of all the private capital required. Those ryots who invested their capital, freely, would always be so much better off than their neighbours. And, whilst thus securing the ryots from so severe a trial as a sudden rise of 92 per cent. in the assessment, the returns on the public capital, which has been invested, might be raised, and raised justly, from time to time, with reference to the general condition of the country.

	Rs.
Average value of produce per acre....	22 10 4
Cost of Cultivation.....	5 0 0
Net profit or Gross Income.....	17 10 4
Proposed rise.....	2 14 3

Area irrigated for the first crop of 1858-59, *estimated with reference to the quantity of water supplied.*—80. Having now shown, as far as it is within my power, what has been the expenditure on the Annicut and its subsidiary works up to the 30th April, and what like the results of that expenditure up to the end of June 1858, I beg to submit, next, a Statement showing the irrigated area for the first crop of 1858-59, as estimated by the several Executive Engineers, with reference to the quantity of water supplied and their personal knowledge of the localities.* In the Statements hitherto submitted, all calculations have necessarily been based on the Revenue Returns; and the several Divisions of the Delta have consequently been sub-divided into Talooks according to those Returns. I now have the pleasure of showing the irrigated area sub-divided, more appropriately, according to the channels by which it is irrigated; whilst, in column 8, is given the proportions of this area to the total area shown by the Revenue Returns to have been irrigated for the first crop, the year before. From the total absence at present, in the various branch channels, of even simple standards of measurement, the quantity of water supplied can only be roughly estimated. But the regulation of the supply is entirely in the hands of the D. P. W.; from constantly moving up and down the canals in their respective ranges, the several Executive Engineers are able to form with the eye a very fair idea of the total area irrigated by each particular channel; and, as hydraulic results are thus tested by local experience, the area now given, may, I believe, in most cases, be fully relied on, as a rough approximation to the truth. When no survey has ever been made of the country, it is only right that every assistance should be given to the Revenue authorities for coming to right conclusions as to the extent of the irrigated area. And, when a regular survey has been made, it seems to me that the Statements, I am

* Letter to the Secretary to Government, Revenue Department, 27th November 1858, para. 5.

about to submit, are equally requisite, for the extent of the irrigated area varies annually. The real extent of these changes, which involve loss of revenue, it is always difficult to test; and for this purpose there could be no greater help than accurate knowledge as to the total quantity of water *actually supplied and taken.* And this information, these Statements would give. Again, the standard pillars, and all measuring apparatus that may be put up, however cheap and rude, will serve to preserve levels. They will be of incalculable value as a common registry, by which all surreptitious attempts to deepen one channel and increase its supply at the expense of neighbours, may at once be detected; and, as they would all be graduated, I presume, with reference to high water, they will further furnish most valuable information for counteracting the changes that are sure to take place, naturally, in the course of time. Whilst, as regards the main point now under consideration, I believe that the interest of Government can never be effectually guarded against fraud, unless the department charged with fixing the rate, and collecting the water cess, is duly informed of all changes, by the Department charged with the distribution of the annual supply. For good work, the two departments must be thrown into geer.

Statement showing the area irrigated for the First Crop of 1858-59, *in the Delta of the Godavery, as estimated by the several Executive Engineers with reference to the quantity of water supplied, &c.*

1	2	3	4	5	6	7	8	9
Division of the Delta.	Name of Canals.	Name of Executive Engineer.	Average supply up to the 1st December for the First Crop of 1858-59.	Area irrigated for the First Crop of 1858-59, as estimated by the D. P. W.	Area irrigated for the First Crop of 1857-58, according to the Revenue Returns.	Excess of the First Crop of 1858-59 over the First Crop of 1857-58, as shown by the Revenue Returns.	Proportion of the excess to the area shown by the Revenue Returns.	Average minimum of supply of water per hour, for 15 consecutive days, during the season of irrigation, with all the tilled Sluices up.
			C. Yds.	Acres.	Acres.	Acres.	Per cent.	C. Yds.
Eastern Delta.	Samulcotta.....	Mr. R. Smith.	19,820	17,960	10,041	7,919	78	19,820
	Cocanada.....		56,513	56,453	39,706	16,747	41	53,368
	Coringa.....	Mr. Tuke.	1,14,740	1,07,375	...	...	...	...
	Yanam.....							
	Total...	...	1,91,073	1,81,788	88,703	93,085	104	...
Central Delta.	Tarnalunka.....	Capt. Stoddard.	18,816	17,130	10,173	6,957	68	17,130
	Amalapooram.....		46,475	32,770	15,785	16,958	107	32,770
	Gunnaram.....	Mr. J. W. Rundall	44,158	37,047	...	...	...	37,066
	Total...	...	1,09,449	86,947	41,201	45,743	111	86,966
Western Delta.	Ellore and Godavery.	...	50,000	34,000	...	...	...	...
	Akeed.....	Captain Greenaway.....	1,23,397	89,386	...	...	...	...
	Nursapoor.....		1,43,800	1,27,344	...	...	...	...
	Siddantum.....		34,500	31,008	...	...	...	...
	Total...	...	3,51,697	2,84,738	1,47,944	1,36,794	92	....
	Grand Total...	...	6,52,219	5,53,473	2,77,851	2,75,622	99	...

Comparison of the area of the first crop of 1858-59, *thus estimated, with the area of the first crop of* 1857-58.—81. The Eastern Delta is irrigated, it will be seen, by four main Canals; and the total area is estimated at 1,81,788 acres. In addition to the Talooks shown in the Statement at para. 40, this area includes a small portion of the Rajahmundry Talook, and, I presume, the French territories at Yanam. On my learning from the Irrigation Returns, that there was irrigation in the Talook of Rajahmundry, I asked the Tahsildar why it had not been reported to the Collector; and to this question he could give no satisfactory answer. With regard to the

French territories, I may mention now that when I measured a portion of the paddy at Yanam the greater part of the crop had been cut; and the yield was therefore, I believe, below what would have been a true average. The area irrigated is not very large. In the Central Delta, or Δ proper, the supply for irrigation may be said, for simplicity's sake, to be given by three main Canals; and the total area irrigated is estimated at 86,917 acres. And, in the Western Delta, the area is irrigated from four main Canals, and is estimated at 2,84,738 acres. Here, again, a new Talook is brought to account; for, in the Revenue Returns for the Masulipatam District, for last year, the Ellore Talook was not shown as irrigated from the Godavery Annicut. And I would here respectfully suggest, as this Talook will in future be irrigated partly from the Godavery and partly from the Kistna, that a division should be made accordingly in the accounts, and the present revenue of the Godavery villages, where held direct of Government, duly recorded; so that the future rise in the revenue may be ascertained with the same precision as elsewhere. And I would further recommend that this should always be done where fresh Talooks are added to the Delta, either wholly, or in part, as in this instance, and in the case of Rajahmundry. And thus, as irrigation extends, there would always be a recorded level, if I may use the term, from which to calculate financial improvements. As yet, the irrigation in the Ellore Talook is chiefly improving old irrigation, by rendering the tanks independent of the rains. Taking all three divisions of the Delta, it will be seen that the total area irrigated for the first crop of 1858-59, is estimated at 5¼ lacs of acres. And it will be further observed, where the minimum of supply is given, that this area is apparently all that could have been irrigated with safety. It is calculated that rice, or paddy, requires a supply of water at the rate of one cubic yard per hour; the supply being given not by the hour, but in a gross quantity at intervals; and it is further known that the supply, thus given, must be given at least once, in 15 days. If, therefore, the river falls so low that these conditions cannot be complied with, "with all the head Sluices up," the limit of safe irrigation has been passed, and this, it very nearly was, in the current year, owing, probably, to the failure of the South West Monsoon. I must add, however, that Captain Rundall's opinion is, that the minimum has been incorrectly given; and, as Returns of this nature have never been drawn up before, the Statement now submitted, and founded on these Returns, must not be relied on as strictly accurate in a matter so liable to error. On the Returns as to area, from Mr. R. Smith, Captain Stoddard, and Captain Greenaway, I place the greatest confidence. Their Returns only profess to be a rough approximation, and, as such, I believe they are entitled to full credit. Mr. J. W. Rundall, not having been so long in charge of this range as these officers, may perhaps not be quite so correct. I cannot therefore submit his Returns with the same confidence as to the area. And, as regards the remaining two ranges, I am sorry to state the Returns cannot be taken as correct to the extent I had expected. Mr. Tuke estimates his area at 1,07,275 acres; but this large estimate is not supported by sufficient details, as to channels, still less as to villages; and, owing to the officer now in charge of the Ellore and Godavery Canal, having only joined recently, the estimated area under this canal, in which is included the irrigation between the head Sluices and the Nundamoor Acqueduct, is a mere estimate, kindly furnished by the District Engineer. But the error which I believe to be an excess cannot well be more, under both heads, than 30 or 40 thousand acres; and, as this is only a calculation in round numbers, if I take the irrigated area for the whole Delta at five lacs, I shall feel myself perfectly justified in submitting 5,00,000 acres as a safe estimate of the area actually irrigated in the Delta of the Godavery for the first crop of 1858-59. Compared with the area shown to have been similarly irrigated last year, according to the Revenue Returns, it will be seen that the area this year, as estimated in the Statement, gives an increase for the whole Delta of 99 per cent.; reduced, however, as I have now proposed, the excess would be 79 per cent. on the Revenue Returns; and thus reduced, it will be further observed that the difference between the irrigated area for this year, and the irrigated area for the same crop last year, as estimated with reference to the Special Survey, would be half a lac, or

First Crop for 1858-59.	Irrigated Area.
Modified estimate with reference to the supply of water and local knowledge of the Executive Engineers.....	5,00,000
For 1857-58.	
Estimated with reference to the results of the Special Survey.....	4,46,107
Difference.....	53,893

more exactly 53,893 acres; which might be put down, in part, to an increase in the extent of land irrigated this year. The two estimates support each other. It has been shown,* that they are more than borne out by the general Survey now in progress. And, thus assured, I submit with confidence the two estimates of the probable area actually irrigated for the first crops of 1857-58 and 1858-59.

* Para. 48.

Second crop of 1858-59.—82. For the second crop, it is as difficult for the Executive Engineers to check the results indicated by the quantity of water supplied, by local knowledge of the area irrigated, as for the superior revenue authorities, under the present system, to test the truth of the acreage shown by the Talook accounts. As Captain Greenaway aptly describes it, the second crop, at present, is "scrap cultivation;" and any ideas as to its actual area must be very vague. The quantity of water supplied may be accurately ascertained and relied on. For the acreage, precision is, I believe, an impossibility, except at an expense that would swallow up the profits. I regret I cannot give, now, the quantity of water supplied for the second crop of 1858-59, which has just been cut, as I have not yet (June 7) received the particulars for the whole Delta for this crop; and, I may add, only received yesterday a portion of the details for the first crop, which, however, I had previously examined, closely, in the rough. And, under these circumstances, I propose to submit, subsequently, as an Appendix to this Report, the area irrigated for the second crop of 1858-59 as estimated with reference to the quantity of water supplied. At the same time I will submit the channel-war details, on which this estimate for the first crop has been founded; and a good idea of which may be found from the accompanying Map. These details give most valuable information as to the net work of branch, and subsidiary branch channels of supply shown in this Map. They give the present capacity of these channels; the supply they are now delivering; to a certain extent, the proportion in which it is delivered to the several villages; and, by breaking up the Revenue accounts into a channel-war shape, the area these channels are irrigating, according to the Revenue Returns. These data, thrown back into a Talook-war shape, will enable the Collector to ascertain at once in which Talook there is the greatest amount of concealed irrigation, and thus take the requisite steps for bringing it to account. And the details as to the present supply of water will form a most valuable record, which I propose to have arranged and printed, whilst carrying on my other duties at Guntoor, with a care commensurate, as far as it is in my power, to the labour and trouble with which they have been drawn out by the several Executive Engineers. And in submitting this Appendix, I shall do myself the honor of forwarding a short memorandum explanatory of the mode in which it seems to me that the department, charged with the collection of the Irrigation Assessment, should be kept acquainted with all changes that may take place in the supply, &c.

Nomenclature of Canals and necessity for a change.—83. From the channels in the Central and Western Deltas having been named as they were dug, bit by bit, either from the adjacent town or from some old drainage, the bed of which had been taken possession of, I found that a general Statement drawn up from these Irrigation Returns would be very complicated to those at a distance, unless a change were made in the nomenclature. And I therefore requested Captain Rundall to let me have the required information, under the single names now given. In this way the Amalapooram, Akeed, and Nursapoor Canals, which it will be seen from the Map are in reality straight continuous lines of irrigation and navigation, represent three times as many names and canals according to the present nomenclature, all of which, of course, increase the intricacy of returns that must be intricate enough under any circumstances to those that have no local experience. The single names now given to these canals have been taken from large towns at their terminations. The Tarnalunka, Gunnarum, and Siddantum canals, which are now entered in the Engineers' accounts as the East and West Bank canals of their respective Deltas, have been named according to the names by which they are commonly known among the boatmen, to prevent confusion in a general Statement. And, as by arranging the canals under single names, and exhibiting total results in a general Statement, the water supplied, area irrigated, revenue realized, and cost of maintenance might, in future, be readily calculated and annually compared, I would respectfully recommend that the requisite permission should be given for the proposed change in nomenclature, unless objections exist that I am not aware of.

Total available value of the first crop of 1858-59, *estimated, and compared with the estimated value of the first crop of* 1857-58.—84. It is not in my power, I regret, to state that the estimates now submitted have the concurrence of the District Engineer. Captain Rundall considers that the area, in most instances, has been under-estimated; and Captain Rundall would further include in the irrigated area the irrigation in the islands of the Colair. As all estimates of area formed on the quantity of water supplied must at present be closely checked by personal knowledge of the localities, I have considered it more prudent, with regard to the first objection, to trust, with one small exception,* to the results shown by the Executive Engineers, who are constantly moving over the irrigated area in question, than to the estimates given by the District Engineer, whose local knowledge is necessarily of a more general nature. And, with regard to the specific area of irrigation referred to in the islands of the Colair, which Captain Rundall estimates at 16,000 acres, there are several objections to including it in these Returns. In the first place, as regards the statement now submitted, the Colair irrigation is second crop. And, if I had been able to submit a return for the second crop of 1858-59, still I should have objected to include the Colair islands; because it is a peculiar style of irrigation, and shown along with the area directly irrigated from the canals, would give a wrong impression. The Colair islands are cultivated with a second crop partly by lifting the water from the lake, and partly by taking advantage of the fall of the lake to plant the wide margins of rich alluvial soil, left thoroughly saturated by the receding water, and of considerable width, owing to the extremely small fall of the land. This irrigation is all, doubtless, much improved by the levels of the lake being now well under control; and any improvement should be credited to the Annicut; but such improvement, I think, had better be credited simply with reference to the rise in the revenue; and such rise must be divided between the Kistna and Godavery Annicuts in due proportion, as the Colair receives water from both. In the present statement, therefore, the Colair islands are not shown. I regret that Captain Rundall also disagrees with me in the estimate I have formed of the yield in the Central and in the Upper Western Delta. He would make it more than I do. And, from Captain Rundall's local experience, very possibly the objection is good. But, as the error, if I am wrong, is on the safe side, I have adhered to my own conclusions in this respect; as well as with regard to the straw, which, I must further state, Captain Rundall would treat differently to myself. Whether the straw is sold, or put back as manure, Captain Rundall considers it is alike a source of gain; in the one case, in the shape of so much ready money, in the other of an increase in the total out-turn; and that, therefore, the total value of straw should be included in the "value of produce available for assessment." In this I cannot agree. In the first place, Captain Rundall assumes that the straw is not put back at present, and is consequently not shown at present in the average yield; which seems to me opposed to what is probable. For all must admit that the quantity of straw now sold off the land is trifling in the extreme, compared to the total area cultivated. And, if the straw is not carried off the land, the inference is, that it gets back to the land, either directly, or indirectly, and that, therefore, the average yields, now given, do include the value of the straw, more or less. And, secondly, I object to including the total value of the straw in the "value of produce available for assessment," because a statement, so drawn out, implies that such and such values might be *realized*, which is not the case. If the assessment is not to be fixed with reference to the total value of the produce, it is comparatively little matter how the total value of the produce is estimated. But if the total value of the produce is to be taken into account, that value should be confined strictly to what *might actually be realized in the market*; and I feel very doubtful how far, thus viewed, the value of a quarter of the straw may safely be taken into consideration for the whole Delta. It has been taken, in obedience to orders; but, in my humble opinion, with regard to straw, it would be wise to follow the custom of the country, and example of Zemindars. Zemindars leave the straw to the ryots.† In submitting, therefore, an estimate of the value of the first crop of 1858-59, it will be seen that the value assigned is considerably below the amount at which it would be estimated by the District Engineer. It is simply the amount, at

* A channel had been omitted in the Western Delta. J. W. B. D.

† Kistna Report, para. 8.

which I would estimate it, with reference to the results of the experiments made this year, as viewed by myself, and the average, as estimated by the several Executive Engineers, and also reduced by myself to guard against excess. And, thus estimated, the available value of the first crop this year may be put down with safety at Rs. 1,27,21,351. Last year this crop at the average prices of the last 38 years was worth upwards of a million sterling. And this year it will be seen that the value rises to a million and a quarter. Owing to a rapid rise in prices, and probably more land being irrigated, the first crop, this year, in the Godavery Delta, is worth a quarter of a million more than it was last year.

	Acres.
Probable area irrigated	5,00,000
Average value per acre.....	Rs. 25 7 1
Gross value of the crop on 5,00,000 acres..	1,27,21,354
Value of the first crop of 1857-58	1,01,02,909

Estimate of a Water cess.—85. Having only measured such crops as have been more or less irrigated, I of course have no personal knowledge of what is the average value of the "dry" crops, in the Deltas of the Kistna and Godavery. But I should probably not be very wide of the mark, if I assumed that Rs. two per acre is as high an assessment as can be fixed with safety, on the average, where the land has not the benefit of irrigation. A discharge of a cubic yard per hour is considered sufficient for the irrigation of an acre of land for the first crop. And it would therefore follow if a consolidated assessment for irrigation can be fixed on the land at Rupees six per acre, that a water cess of Rupees four might safely be imposed on a supply of water for the first crop, of one cubic yard per hour. But, as I have stated in the Special Report, it would be necessary, in the present state of our knowledge on this subject, to draw up agreements founded on the measurement of water for irrigation with some latitude. And, in my opinion, where land is held at the ordinary rates of assessment, it would not be fair to impose a uniform water rate on small holdings, as an addition to the present assessment, whether the rate were fixed with reference to the water supplied, or the area now irrigated for the first time. For water reverses existing values. The *water* is most productive, where the land, naturally, is least productive. From the statement at para. 21, it will be seen that "Gurrapa" land yields nigh on a ton of paddy, when irrigated. Whilst, without irrigation, "Gurrapa" land is, perhaps, not worth six-pence an acre. And, thus, all those ryots who have sunk their capital in the better class of lands, that pay a corresponding "dry" assessment, would be under-sold by all who hold the poorer lands, that without irrigation can scarce pay any assessment at all; and, without irrigation, are assessed accordingly. "Equality of taxation" may be made comparatively easy of accomplishment with the aid of irrigation, and a consolidated assessment. But a uniform water rate, though seeming equality, increases, and directly increases to a very great extent "inequality of taxation."

Exports and Imports of 1858-59.—86. I had hoped to have included in this Report some statistics of the traffic on the canals. But I regret it is not in my power to do so. And perhaps the information contained in the Returns of Exports for the official year closing on the 1st of May last, is worth all the statistical details I could have given on this subject. In commencing this Report, it was my duty to state the local effects under the Annicut of what has been a bad season elsewhere. In estimating the average yield, it was necessary to take into consideration, that the crops had been unusually fine, that it had been an *early harvest and bumper crops* below the Annicut, when elsewhere the crops had almost entirely failed. And this Report on the Annicut and its subsidiary works for the irrigation and navigation of the Delta of the Godavery may be fitly closed, by showing what has been the effect under similar circumstances of this comparatively large outlay of the public money, as regards the Presidency generally.

Understanding that paddy was being largely exported to Tanjore, and the markets usually supplied by Tanjore, I applied to the Collector for information on the subject. Mr. Cadell informs me in reply,* that 1857-58, was a bad season in Tanjore, and, in consequence, the harvest fell considerably short of the average out-turn, whilst there had been an unusual demand for grain from the Western Districts.† Prices in Tanjore had therefore risen to such an extent, that, for some time, they stood three and four times the amount of what has been taken as a fair average, and at which the commutation rate was fixed. And "the pressure upon

* 20th April 1859.

† Salem, Coimbatore, Trichinopoly and Madura.

the poorer classes of the population about the close of the last year, (1858) was consequently very great." Mr. Cadell further states, that 1,143, garces of paddy had been imported from the Godavery ports since October, chiefly for local consumption. If prices rose three and four-fold, at the very door of the granary, as it were, it must have been nigh to famine in those Districts that sent down from a distance to buy grain. And the pressure of high prices, and the consequent distress among the lower orders, has been painfully marked, all the way up the Coast, I believe, to Madras, and to the northward of Madras, as well as in Ceylon, Mauritius, &c. Between the 1st of May 1858, and the 30th of April 1859, the Delta of the Godavery exported 10,14,119, cwts. of paddy and rice. And the effect of a comparatively large outlay of the public money in the Delta of the Godavery, as regards the Presidency generally, and the markets usually supplied from this Presidency, may be fully described by a single question. What would have been the state of the people if those 50,000 tons of paddy and rice had not been available? In the margin I give the total Exports from 1858-59, compared with 1857-58 and including two lacs' worth of sesamum exported from the French Settlement of Yanam, and entered in our Land Customs. The net increase this year is within a few Rupees of 11 lacs; and the total Exports this year are six-fold what they were before the Annicut was built! (In Vizagapatam, the Exports are stationary; in 1857-58, they were Rupees 31,29,074; for the year, that has just closed, they are Rupees 31,08,031;* which, strictly speaking, is a slight falling off.) In the Imports into the Delta, there has also been a considerable rise; and this rise is almost wholly in two articles. The Delta markets have bought up Rupees 1,46,106 worth more "twist," and there has been an increase of a lac in the Imports of "gunny." The rice is packed in gunny-bags and the increase in the Exports of rice has had a corresponding effect on the import of gunny. The total increase on the Imports of 1858-59, compared with 1857-58, is 50 per cent. And a fair idea of the extent to which wealth has been pouring into the Delta in bullion and hard cash may be formed from the annexed statement, with the data for which I have been kindly favored by Mr. Purvis, "for the District of Rajahmundry."

	1857-58. Rupees.	1858-59. Rupees.
Exports	29,30,007	37,99,359
By land, via Yanam		2,57,000
	29,30,007	40,29,359
Increase		10,99,352
Average Exports from 1841-42 to 1845-46	6,59,200	

* From the Collector of Vizagapatam, 21st May 1859.

	1857-58. Rupees.	1858-59. Rupees.
Imports		7,71,420
Increase	5,10,899	
Twist		2,60,521
Increase	1,23,577	2,69,983
Gunny		1,46,406
Increase	46,072	1,47,337
		1,00,665

Statement showing the Gold, Silver and Copper imported into the District of Rajahmundry, during the official years 1856-57, 1857-58 and 1858-59.

Description.	1856-57. Private Account.	1856-57. Public Account.	1856-57. Total.	1857-58. Private Account.	1857-58. Public Account.	1857-58. Total.	1858-59. Private Account.	1858-59. Public Account.	1858-59. Total.	Total Public Account.	Total Private Account.	Total.
Gold	45,200	..	45,200	5,100	..	5,100	1,33,130	..	1,33,130	..	1,83,430	1,83,430
Silver	3,40,170	40,000	3,80,170	1,41,600	10,000	1,51,600	8,12,725	10,000	8,22,725	60,000	12,94,495	13,54,495
Copper	..	9,300	9,300	..	10,000	10,000	..	26,000	20,000	45,300	..	45,300
Total	3,85,370	49,300	4,34,670	1,46,700	20,000	1,66,700	9,45,855	36,000	9,81,855	1,05,300	14,77,925	15,83,225
Amount of Accountant General's Bills drawn on this Treasury	6,46,513	..	6,46,513	13,26,227	..	13,26,227	12,20,897	..	12,20,897	..	31,93,637	31,93,637
Grand Total	10,31,883	49,300	10,81,183	14,72,927	20,000	14,92,927	21,66,752	36,000	22,02,752	1,05,300	46,71,562	47,76,862

The most remarkable feature in this Statement is the comparatively large import of silver. The Delta of the Godavery is getting a fair share of the stream of silver, that is said to be now flowing from Europe eastward. And, in the three years, there has been 13½ lacs' worth of silver imported; whilst the imports in gold, were under two lacs, all of which was on private account. The total imports for the three years in gold, silver and copper, are shown to have been close on 16 lacs. The total imports in gold, silver and copper in 1858-59 on private account were Rupees 9,45,855; and, if to this sum is added the bills cashed to private parties at the Government Treasury, the result is 21 lacs, in part payment, it may be supposed, of 29 lacs of Exports in 1857-58. Taking merely the imports in bullion on *private account*, the imports for the whole three years with the value of the bills that have been cashed at the Treasury to private parties in the same time, gives a total of 46 lacs. And this, moreover, does not by any means represent all that has been paid into the district by these channels. The payment from the Treasury from 1857-58, are here shown at 13 lacs, and the year before at six lacs. But, this is to private parties, and the total amount disbursed from the Treasury in those two years was 25 and 23 lacs respectively;* and, for the year just closed, the private bills form probably not much more than half

* Printed Statistics of the Rajahmundry District.

the amount actually disbursed. It may be said that no money is going out of the District of Rajahmundry, and that the bullion imported represents so much savings; to be invested, partly in the Native fashion in gold and silver ornaments, and partly, it is to be hoped, in the extension of cultivation. The accounts necessarily give the Exports and Imports, &c., as the Exports and Imports of the District of Rajahmundry. The history of that District gives them to the Annicut.

	1857-58.	1858-59.
	cwts.	cwts.
Paddy....	1,19,290	6,70,186
Rice.....	1,68,363	3,43,933

Rates of water carriage in 1858-59.—87. As might be expected from the suddenness and urgency of the demand, very much of the rice was shipped during the last 12 months in the husk. It could not be cleaned in time. In 1857-58, freights were saved by the greater portion of the exports being in rice; but in 1858-59, for every cwt. of rice there were 2 cwts. of paddy sent away. And it is to be hoped that, before long, the large motive power available at every lock on the main canals, from the necessary transmission of water for irrigation, will be turned to good account by private enterprize. With the aid of water-mills the greater portion of the paddy might have been cleaned. And, whether mills are introduced or not, it is probable that the exports in paddy will not be so large again, as the ryots round Cocanada are now cleaning their paddy after the southern fashion by first parboiling it. In this way cleaning takes much less labour; the rice, it is said, keeps just as well for a long voyage, as if cleaned in the ordinary manner; and, what is of more importance in an urgent demand for food, thus cleaned, rice can be eat at once with safety; whilst new rice cleaned without parboiling is very unwholesome. In carrying out such operations on a large scale the river and the canals will be of great help as regards the carriage of fire-wood from the jungles up the river; whilst how the canals met the demand for carriage, and at what rates, 40 lacs' worth of produce were moved for shipment during the last 12 months, may be gathered from the prices given in the statement at para. 21. The first village in that statement is Gundraidoo, the last, Pedda Caparum. Both villages are about two miles from the canal bank and the prices of both villages are therefore lowered, much about the same, for land carriage. The distance by water between the two villages is about 60 miles; and, as Gundraidoo is on the direct water line from Pedda Caparum to Cocanada, the chief port for shipment, the difference in prices, roughly indicates the cost of carriage for those 60 miles. The difference it will be seen was 2 Annas and 5 Pice per cwt., which may be taken, at 30 Pice for 60 miles, and half a Pice per cwt., or 10 Pice per ton, per mile. This was the cost of carriage for paddy. For other grains, &c., the rates would be much the same. And, when it is remembered that this was the cost of carriage, when the principal crop was being cut, and the carrying trade at its height, a fair idea may be formed of the importance to the Delta of these even water-ways. A check, also, is thus obtained on the accuracy of the relative prices which I have given for the three divisions of the Delta. Though freight falls on the long distance to 4 and 5 Pice per ton per mile, when there is no stress on the carrying trade, it must be expected to rise at the harvest time. From the custom of charging by the trip, on short distances carriage may then cost more than an Anna per ton, per mile. And, as the difference in prices on which my averages have been formed, shows 10 Pice for the cost of carriage per ton per mile, it may I think be concluded that the sudden rise in prices in the Western Delta, to which I have referred, indicates only, that prices had there been raised, in due proportion to the market rates in the Eastern Delta, where I was when the news arrived, and of course, the rise was first felt. From the level nature of the country the winds in the Delta, for the greater part of the year, are as steady as the trade winds; and there are few prettier sights to be seen in the Delta than the fleets of boats, with their top-sails, and top-gallant-sails set, moving steadily on, before a westerly wind, later on in the year, and not unfrequently carrying the grain straight from the field, where it was grown, cut, and thrashed, to the side of the sea-going-vessel by which it is to be forwarded to the distant markets of India, or to Europe. And, in my opinion, it is very doubtful how far irrigation on a large scale will ever pay as a speculation, unless the produce can be readily forwarded to a suitable port. Whilst there has been all this activity and prosperity in the

	Rs.	A	P.	
Gundraidoo.....	1	5	2	per cwt.
Pedda Caparum.....	1	2	9	"
Difference..	0	2	5	

Delta of the Godavery, in the neighbouring Delta of the Kistna trade has been at a stand still.

Conclusion.—88. With the help so kindly and readily afforded to me by the various Officers to whom I have applied for information, and to whom I have in consequence so frequently referred in the course of this Report, I have, I trust, succeeded in now submitting for consideration, sufficient data for forming an opinion on the results of the Annicut and its subsidiary works, for the irrigation and navigation of the Delta of the Godavery, viewed, first, as regards their local effects; and secondly, as a comparatively large outlay of the public money in a particular District. And, in conclusion, I have only to apologise for the length of this Report, and to express my hearty thanks for having been entrusted with an inquiry, that has been as interesting as instructive.

APPENDIX I.

Statement showing in detail the several experiments made in accordance to Minutes of Consultation in the Revenue Department, No. 1653 of 1858, to ascertain the average yield of a First Crop of transplanted Paddy in the Delta of the Godavery and its value according to current prices in 1858-59.

1	2	3	4	5	6	7	8	9		10	11		12			13
Division of the Delta.	Name of the Village and Talook, where the experiment was made.	Number of Field.	Description of Soil.	Description of Paddy.	Channel by which irrigated.	By whom selected.	Area measured.	Out-turn on area measured of paddy in Coontsums, the local measure of capacity used in measuring the grain, and of straw in bundles of 75 lbs. each		Weight of a Coontsum of paddy in lbs. Avoirdupois.	Out-turn per acre of paddy in lbs Avoirdupois and of straw in bundles of 75 lbs. each.		Value of paddy per Mullika Pooly at the current price of the village where the experiment was made.			Weight of the Mullika Pooly in lbs. Avoirdupois.
								Paddy.	Straw.		Paddy.	Straw.				
							Sq. Yards.	Coontsums.	Bundles.	lbs.	lbs.	Bundles.	Rs.	A.	P.	lbs.
Eastern Delta.	Gundraidoo	7	Pala Souty	Atragudda	Kykavole	D. P. W.	308	34·125	4	6·415	3,440	62	15	...	...	1,283
	Talook of Bickavole	208	Nulla Revady	Bullagoopty	...	do.	2,857	253·750	32	6·402	2,751	54	...	...	...	1,280
	...	115	Revady with clay	Atragudda	...	Villagers.	1,210	59·000	5	6·094	1,438	20	...	...	...	1,218
	...	202	Gurrapa	...	...	D. P. W.	715	80·750	9	6·479	3,541	60	...	...	...	1,293
	Peddada	345	Nulla Revady	Bullagoopty	Peddapoody	Tahsildar.	242	28·875	3	6·415	3,704	60	...	...	...	1,283
	Talook of Bickavole	345	...	Ackoolloo	...	Villagers.	316	24·875	2	6·171	2,349	30	...	...	...	1,231
	Meddapad	200	Gurrapa	Bungar Tigaloo / Bombay Very	Samulcotta	D. P. W.	2,420	210·750	30	6·312	2,660	60	14	10	8	1,262
	Talook of Bickavole	15	...	Bombay Very	...	do.	198	14·750	2	6·377	2,291	48	...	...	...	1,275
	Bickavole	20	Yerra checka	Bullagoopty	...	Villagers.	1,210	73·250	9	6·300	1,905	36	15	...	...	1,301
	Talook of Bickavole	17	...	...	...	Tahsildar.	1,210	69·500	7	6·351	1,765	28	...	...	...	1,270
	...	22	...	...	...	D. P. W.	272	33·625	5	6·325	3,771	20	...	...	...	1,265
	Pussalapoody	90	Revady with clay	...	Mundapet	do.	1,318	125·000	15	6·531	2,996	55	14	10	8	1,306
	Talook of Cota Ramachundrapooram	88	...	...	Sholaveram	Villagers.	1,332	62·250	6	6·274	1,418	21	...	...	...	1,254
		76	Gurrapa and sandy	...	...	Tahsildar.	1,156	84·750	9	6·274	2,225	37	...	...	...	1,254
	Moochamillay	296	Revady	...	Coringa	D. P. W.	1,210	107·125	7	6·531	2,798	28	15	...	...	1,306
	...	264	Gurrapa Revady	Atragudda	...	Tahsildar.	1,210	64·062	6	6·531	1,673	24	...	...	...	1,306
	...	266	...	...	...	Villagers.	1,210	45·000	5	6·518	1,189	20	...	...	...	1,321
	Ootramillay	...	...	...	Ootramillay	do.	1,210	89·062	7	6·351	2,262	28	...	...	...	1,270
	...	...	...	...	...	D. P. W.	1,210	57·006	5	6·428	1,465	20	...	...	...	1,285
	...	...	...	Rama Banum	...	Tahsildar.	1,210	77·125	6	6·402	1,975	24	...	...	...	1,280
	Vella	...	Revady	Ackoolloo	Coringa	D. P. W.	1,210	112·000	8	6·400	2,867	32	...	...	...	1,280
	Talook of Cota Ramachundrapooram	...	...	Atragudda	...	Tahsildar.	1,210	100·000	7	6·300	2,520	28	...	...	...	1,260
		...	...	...	...	Villagers.	1,210	62·000	7	6·300	1,562	28	...	...	...	1,260
	Yanam	...	Pala Souty	Bullagoopty	Yanam	D. P. W.	1,210	78·000	14	6·100	1,903	56	16	...	...	1,220
	...	...	Revady with sand	...	...	do.	1,210	44·250	8	6·300	1,115	32	...	...	...	1,260
	Average	...	...	...	...	...	1,123	...	...	6·363	2,303	36	15	...	10	1,273
Central Delta.	Anantarum	...	Nulla Munnoo	Beet Surry	Anantarum	D. P. W.	121	13·375	2	6·500	3,477	101	13	4	...	1,300
	Talook of Amalapooram	...	...	...	...	...	121	17·375	3	6·312	4,386	140	...	...	...	1,262
	...	...	...	...	...	...	121	10·000	1	6·281	2,512	73	...	...	...	1,256
	...	...	Revady	...	...	Villagers.	121	9·375	1	6·500	2,437	73	...	...	...	1,300
	Cheyair	109	...	...	Cheyair	D. P. W.	121	12·000	4	6·625	3,180	162	...	...	...	1,325
	Talook of Amalapooram	108	...	...	...	Tahsildar.	121	13·000	3	6·593	3,428	133	...	...	...	1,318
	...	378	Nulla Munnoo	...	...	Villagers.	121	5·500	1	6·500	1,430	48	...	...	...	1,300
	Beemanapillay	52	Sand	...	...	D. P. W.	121	13·750	2	6·500	3,575	106	...	...	...	1,300
	Talook of Amalapooram	56	...	...	...	Tahsildar.	121	12·666	2	6·500	3,293	99	...	...	...	1,300
	...	61	...	...	...	Villagers.	460	14·275	2	6·525	1,012	24	...	...	...	1,350
	Beetamullay poody Sivarum Inam	247	Pala Souty	Atragudda	Somapillay	D. P. W.	1,659	74·000	8	6·186	1,335	26	13	5	4	1,237
	Talook of Nuggarum	254	Revady with clay	Goomasary	...	Tahsildar.	1,225	112·000	10	6·186	2,737	41	...	...	...	1,237
	...	252	Revady	...	...	Villagers.	1,225	120·000	10	6·186	2,932	43	...	...	...	1,237
	Average	...	...	...	...	...	...	427	...	...	6·415	2,749	82	13	4	8	1,286
Western Delta.	Siddantum	370	Mussaka	Purratragudda	Siddantum	D. P. W.	1,210	91	10	6·125	2,229	40	13	...	...	1,225
	Talook of Tunnakoo	141	Mussaka Revady	...	...	Villagers.	1,210	58	6	6·125	1,421	24	...	...	...	1,225
	...	56	...	...	...	D. P. W.	1,210	85	10	6·000	2,040	40	...	...	...	1,200
	Ogidy	...	Tella Revady or Pala Souty	...	Nursapoor.	Villagers.	7,455	316	35	6·500	1,333	7	15	...	...	1,300
	Talook of Ralungy	...														
	Casapad	227	Poolla Revady or Revady reclaimed from brackishness	...	Akeed	D. P. W.	1,211	112	8	7·625	3,413	32	15	12	...	1,525
	Talook of Pentapad	186		...	...	Villagers.	1,211	49	5	7·625	1,493	19	...	...	...	1,525
	Vippurroo	519	...	Coosumba	Chinna Caparum	D. P. W.	1,211	83·5	5	7·444	2,484	21	14	8	...	1,488
	...	519	...	...	...	do.	1,211	87·	6	7·437	2,585	23	...	...	...	1,487
	...	654	...	Goomasary	...	Villagers.	1,211	35·5	4	7·437	1,055	16	...	...	...	1,487
	Comara	280	Revady	...	Comara	D. P. W.	1,211	78·	6	7·812	2,435	24	16	...	...	1,562
	...	Inam	...	...	...	Villagers.	1,211	49·25	5	7·875	1,550	20	...	...	...	1,575
	Gunnaparam	246	...	...	...	do.	1,211	25·5	2	7·562	770	8	...		...	1,512
	Pedda Caparam	55	Cristna Revady	...	Chinna Caparam Chl.	D. P. W.	1,211	77	6	7·627	2,346	24	...	...	...	1,525
	...	50	...	Perratragudda	...	Tahsildar.	1,211	73	6	7·627	2,224	24	...	...	...	1,525
	Average	...	...	...	...	...	1,656	...	...	7·751	,955	24	14	13	7	1,440

(Signed) J. W. B. DYKES,
On Special Duty.

N. B.—The average weight of the Mullika Pooly, as shown in this Statement for each Delta, is not quite correct, as will be seen from the accompanying Abstract.—J. W. B. D.

Abstract showing the average weight of the Mullika Pooty for each division of the Delta, calculated on the corrected weight of the Coontsum in each village visited.

1	2	3	4	5	6
Division of the Delta.	Name of the village where the experiments were made.	Number of experiments made.	Total Weight.	Average weight of Coontsum.	Average weight of Mullika Pooty.
Eastern Delta.	Gundraidoo.....	4	25·390	6·375	1,269·5
	Meddapad.....	2	12·689	6·3445	1,268·9
	Peddada.....	2	12·586	6·2930	1,258·6
	Bickavole.....	3	19·176	6·3920	1,278·4
	Pussalapoody.....	3	19·079	6·3590	1,271·8
	Moochoomillay.....	3	19·680	6·5600	1,312·0
	Ootramillay.....	3	19·181	6·3930	1,278·6
	Vella.....	3	19·000	6·3310	1,266·8
	Yanam.....	2	12·400	6·2000	1,210·0
	Total.....	25	159·181	57·2230	11,444·6
	Average.....	...	...	6·3580	1,271·622
Central Delta.	Anantarum.....	4	25·593	6·398	1,279·6
	Cheyair.....	3	19·718	6·572	1,314·4
	Beemanapillay.....	3	19·525	6·508	1,301·6
	Betamillay.....	3	18·558	6·186	1,237·2
	Total.....	13	83·394	25·664	5,132·8
	Average.....	...	...	6·416	1,283·2
Western Delta.	Siddantum.....	3	18·250	6·083	1,216·6
	Ogidy.....	1	6·500	6·500	1,300·0
	Casapad.....	2	15·350	6·675	1,525·0
	Vippurroo.....	3	22·318	7·139	1,487·8
	Comara.....	2	15·687	7·813	1,563·6
	Gunnaparam.....	1	7·562	7·562	1,512·4
	Pedda Caparam.....	2	15·954	7·627	1,525·4
	Total.....	14	100·921	50·729	10,135·8
	Average.....	...	...	7·217	1,447·921

(Signed) J. W. B. DYKES,
On Special Duty.

APPENDIX II.

Statement showing the result of various Experiments made by Officers of the D. P. W. to ascertain the value of the First Crop of transplanted Paddy in the Delta of the Godavery in 1858-59.

1	2	3	4	5	6	7
Division of the Delta.	Names of Villages.	Number of Field.	Description of Soil.	By whom selected.	Out-turn per acre in Coontsums and lbs. Avoirdupois.	Average out-turn per acre in cwts.	Remarks.
Eastern Delta.	Government's Gardens	...	...	Mr. Smith.	Coontsums. 367·819	Cwts. 20·89	The description of the soil, and the out-turn have been entered in Columns 4 and 6, in the terms used by the Officer who made the experiment. The equivalent for Column 6 is given in cwts. in Column 7.
	Yendamoor..... ...	3	Rivady.....	Mr. Tuke.	425·000	21·3	
	Ingeram..... ..... ,,	...	Black clay or Cotton soil.....	,,	332·000		
	,, ...	...	Black clay mixed with sand.....	,,	135		
	Average..... ...	...	...	...	315·000	17·895	
Central Delta.	Komargereeputnum..	153	Black soil.....	Captain Stoddard.	lbs. 3252·857		The first experiment is the Government Garden. The extent of land was 9 acres; and the soil partly "cotton," partly "gurrapa." The yield is the average taken for the Delta. The cost of cultivation was Rupees 9 per acre. This is 4 Rupees more than I have allowed; but a portion of the 9 acres was waste, newly brought under irrigation, which increased the expense greatly; and a further increase was caused by all the crop being carried and stacked at Mr. Smith's bungalow, to prevent theft. Taken with two of Mr. Tukes' experiments the average for the Eastern Delta would be 21 cwts.; but, with the third it would fall to 17 cwts. The third experiment, however, is manifestly an exceptional case, such as I have shown in my own experiments, and here tells too strongly on account of the limited number of experiments given.
	,, ..	2	Yerra checka.....	...	332·333		
	,, ..	2	...	...	2211·916		
	Godee.....	11	Mussaka (loomy)	...	4564·500		
	Godee Lunka..... ...	6	...	...	3012·250		
	Davagooptum..... ...	165	Black Cotton.....	...	3519·000		
	,, ...	131	Yerra checka.....	...	3040·000		
	,, ...	270	...	...	2655·250		
	Buntoomillay.....	...	...	...	1222·500		
	,, ...	...	...	...	2188·750	19·923	
	,, ...	...	...	...	3283·125		
	Chintalapillay..... ...	K. Nurisggadoo.	Guroo.....	Mr. J. W. Rundall.	1512·000		
	Razole.....	C. Rundall.....	Black.....	...	2571·000		
	,, ...	...	....	...	2541·000		
	Goolymalunka...	549	Lunka.....	...	3920·000		

Statement showing the result of various Experiments made by Officers of the D. P. W., &c.,—(Continued.)

1	2	3	4	5	6	7	
Division of the Delta.	Names of Villages.	Number of Field.	Description of Soil.	By whom selected.	Out-turn per acre in Coontsums and lbs. Avoirdupois.	Average out-turn per acre in cwts.	Remarks.
Central Delta.	Goodymalunka	275	...	...	1960·000		
	Somapillay	...	Black	...	4212·000		
	„	...	...	...	2900·000		
	Average	...	...	...	2716·582	24·255	This average corresponds with my own results.
Western Delta.	Vakapillay	...	Poolla Revady	Mr. Stephenson	2378		The experiments in the Western Delta have been made in both the Upper and Lower portions. The three experiments made by Captain Greenaway, and averaging nearly two tons per acre, were made on the banks of the river, in the Rajahmundry District below Siddantum. The average for this Delta, as might be expected when such fine crops were taken, is therefore high.
	Vullore	...	Nulla do.	...	2987		
	Perimilla	...	Poolla do.	...	2449		
	Ripparah	...	Nulla do.	...	2655	23·855	
	Gollalacodar	...	Poolla do.	...	2964·5		
	Yendagundy	...	...	...	2992·6		
	Voondy	...	...	...	2531·5		
	Pentapad	...	...	...	2416·6		
					Coontsums.		
	Dodeeputla	...	Mussaka	Captain Greenaway	756·250		
	„	...	...	...	642·000	37·584	
	„	...	...	...	680·500		
	Martair Lock Lunka	...	Pauty Boomy	Mr. Durand	371·365		
	Average	...	...	...	...	27	

(Signed) J. W. B. DYKES,
On Special Duty.

APPENDIX III.

RAJAHMUNDRY DISTRICT.

Area of 1st Grand Circuit containing 64 Villages in the Mogultoor Talook.

By actual Survey.		By Revenue Accounts.	
Acres. Decimals.		Acres. Decimals.	
In Square Miles...	80.491·25 125·76	In Square Miles...	57,348·96 89·60

Area in 21 Villages included in the above.

Names.	By actual Survey.	By Revenue Accounts.
	Acres.	Acres.
Nursapoor	657·07	768·52
Madapallam	857·85	485·64
Sirapilly	1404·35	872·60
Chinna Mamedepully	1548·03	434·
Gorintada	631·75	402·
Chittaveram	1158·39	900·90
Calagumpoody	450·35	281·60
C. Polaveram	400·03	189·
Degoomurroo	1369·66	918·60
Kontaroo	1415·63	876·75
Buggraswaram	241·87	134·
Poolapilly	723·16	494·75
Guggypurroo	241·41	206·80
Seragalapilly	795·66	533·51
Pemmarajoo Polaveram	771·12	582·82
Lundapurroo	813·53	462·18
Valagalairoo	312·06	215·75
Davah	941·92	696·25
Pundetavellore	1850·74	1250·42
Pedavah	209·07	160·52
Ausuntah	5183·43	3760·
	21,978·58	14,626·61

Excess of actual area over that shown by Revenue accounts ..... 7,351·97

Per centage of excess on Revenue accounts ..... 50·26

(Signed) F. J. B. PRIESTLEY, Captain,
Superintendent Revenue Surveys.

(True copy.)

(Signed) J. W. B. DYKES,
On Special Duty.

(DUPLICATE.)

Statement of Circar and Inam lands in 7 of the villages included in the list submitted with Deputy Superintendent's letter, No. 120 of 1st February 1859.

Names.	By Survey Accounts.					By Revenue Accounts.					Remarks.
	Inam.		Circar.			Inam.		Circar.			
			Arable land.					Arable land.			
	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	All other lands.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.	All other lands.	
Baggaswaram	22·72		152·64	11·47	55·04	17·80	1·0	85·20	2·00	28·00	The necessary information for the calculation of the tenure, and description of the land by Survey Accounts, has been taken from the Land Register, furnished by the Deputy Director of Revenue Settlement. The proportions of the lands shown under the head of Revenue Accounts have been obtained from the Talook Records.
Colagampoody Polaveram	40·39		239·75	24·25	95·64	0·0	19·42	0·0	139·48	30·10	
Guggypurroo	45·28		163·87	0·0	32·26	32·40	0·0	143·20	0·0	31·20	
Nursapoor	29.21		198·87	116·37	312·62	13·32	0·0	170·78	0·0	584·12	
Moodapalliem	119·82		521·98	13·04	203·01	83·33	0·0	223·40	0·0	178·02	
Pemmarazoo Polaveram	180·73		531·07	0·0	59·32	0·0	125·42	46·20	368·55	42·65	
Gorintadah	85·75	1·04	229·33	58·81	256·82	63·80	0·0	242·00	0·0	96·20	
Total	523·90	1·04	2,037·51	223·94	1,014·71	210·65	145·84	910·78	510·03	991·49	

DOONGAVACHUM,
14th March 1859.

(Signed) R. P. M. CREW, Captain,
Deputy Superintendent Revenue Survey.

(True Copy.)

(Signed) J. W. B. DYKES,
On Special Duty.

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APPENDIX V.—A

Comparative Statement showing between the average Beriz of Fuslies previous to the Annicut irrigation, from 1251 to 1255, and the Beriz of Fusly 1267 in the District of Rajahmundry.

Items.	Names of Talooks.	Whether irrigated by the Annicut water or not.	Number of the Villages	Average Beriz of Fuslies previous to the irrigation of the Annicut water i. e. from Fusly 1251 to 1255.			Zamabundy Beriz for Fusly 1267.			Increase.			Decrease.		
Delta Talooks.	1 Amalapoor	Irrigated	60	1,01,599	0	7	1,55,838	13	3	54,239	12	8	0	0	0
		Not irrigated	18	19,383	14	4	22,434	10	9	3,050	12	5	0	0	0
			78	1,20,982	14	11	1,78,273	8	0	57,290	9	1	0	0	0
	2 Nugaram	Irrigated	45	76,780	11	3	1,22,769	15	9	45,989	4	6	0	0	0
		Not irrigated	3	6,979	6	5	8,896	3	5	1,916	13	0	0	0	0
			48	83,760	1	8	1,31,666	3	2	47,906	1	6	0	0	0
	3 Raly	Irrigated	18	44,598	10	3	47,188	14	6	2,590	4	3	0	0	0
		Not irrigated	20	33,958	10	4	40,406	5	0	6,447	10	8	0	0	0
			38	78,557	4	7	87,595	3	6	9,037	14	11	0	0	0
	4 Cota Ramachundrapoor	Irrigated	55	1,46,096	2	9	1,75,903	11	6	29,807	8	9	0	0	0
		Not irrigated	0	0	0	0	0	0	0	0	0	0	0	0	0
			55	1,46,096	2	9	1,75,903	11	6	29,807	8	9	0	0	0
	5 Bickavole	Irrigated	44	88,416	12	0	1,59,172	2	6	70,755	6	6	0	0	0
		Not irrigated	3	3,807	2	0	3,940	6	5	133	4	5	0	0	0
			47	92,223	14	0	1,63,112	8	11	70,888	10	11	0	0	0
	6 Caupaveram	Irrigated	27	68,766	4	6	1,03,445	4	6	34,679	0	0	0	0	0
		Not irrigated	66	61,749	2	4	80,972	11	2	19,223	8	10	0	0	0
			93	1,30,515	6	10	1,84,417	15	8	53,902	8	10	0	0	0

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Comparative statement showing between the average Beriz of Fuslies previous to the Annicut Irrigation, &c., (Continued.)

Items.	Names of Talooks.	Whether irrigated by the Anicut water not.	Number of the Villages.	Average Beriz of Fusless previous to the irrigation of the anicut water ie from fusly 1251 to 1255.	Zamabundy Beriz for Fusly 1267.	Increase.	Decrease.
	7 Cocanada	Irrigated	2	2,311 14 0	2,176 3 4	0 0 0	135 10 8
		Not irrigated	2	303 9 7	372 8 2	68 14 7	0 0 0
			4	2,615 7 7	2,548 11 6	68 14 7	135 10 8
	8 Mogultoor	Irrigated	50	1,14,555 2 0	1,48,596 3 6	34,041 1 6	0 0 0
		Not irrigated	19	20,045 0 9	23,857 6 8	3,812 5 11	0 0 0
			69	1,34,600 2 9	1,72,453 10 2	37,853 7 5	0 0 0
	9 Woondy	Irrigated	87	1,02,990 9 8	1,69,803 13 3	66,813 3 7	0 0 0
		Not irrigated	1	134 15 11	225 0 0	90 0 1	0 0 0
			88	1,03,125 9 7	1,70,028 13 3	66,903 3 8	0 0 0
	10 Tanookoo	Irrigated	64	1,39,583 7 6	1,92,276 15 8	52,693 8 2	0 0 0
		Not irrigated	4	7,635 0 0	8,293 7 1	658 7 1	0 0 0
			68	1,47,218 7 6	2,00,570 6 9	53,351 15 3	0 0 0
		Grand Total...	588	10,39,695 8 2	14,66,570 12 5	4,27,010 14 11	135 10 8
		Viz. Irrigated	452	8,85,698 10 6	12,77,172 1 9	3,91,609 1 11	135 10 8
		Not irrigated	136	1,53,996 13 8	1,89,398 10 8	35,401 13 0	0 0 0
Other Talooks	1 Cottapully	Not irrigated	57	37,461 1 7	55,372 1 8	17,911 0 1	0 0 0
	2 Rajahmundry	...	18	36,299 10 1	41,706 3 5	5,406 9 4	0 0 0
	3 Lingumpurty	...	110	21,102 10 7	29,764 8 0	8,661 13 5	0 0 0
	4 Peddapoor	...	14	37,408 10 8	44,386 8 2	6,977 13 6	0 0 0
	5 Pittapoor	...	2	730 2 9	1,885 0 0	1,124 13 3	0 0 0
	6 Taudemella	...	46	26,291 13 1	35,001 8 11	8,709 11 10	0 0 0
		Total...	247	1,59,294 0 9	2,08,085 14 2	48,791 13 5	0 0 0
		Total irrigated	452	8,85,698 10 6	12,77,172 1 9	3,91,609 1 11	135 10 8
		Total not irrigated...	383	3,13,290 14 5	3,97,484 8 10	84,193 10 5	0 0 0
		Grand Total...	835	11,98,989 8 11	16,74,656 10 7	4,75,802 12 4	135 10 8

The water tax, assessed on Zemindary and Proprietary Estates and on Inams in those Estates, is not included in the above. The amount was as follows :—

	Fusly 1266.	Fusly 1267.
Zemindary and Proprietary Estates.....	9,708 7 5	20,376 4 11
Inams in do	15,917 2 10	17,136 10 3
Total..	25,625 10 3	37,512 15 2

(Signed) A. PURVIS,
Collector.

(True Copy.)

(Signed) J. W. B. DYKES,
On Special Duty.

APPENDIX V.—B.

Statement showing the average collections of the Sary Mocassah and Agraharum Villages, comprised in the Government Estates of the Masulipatam District, from Fusly 1251 to 1255, compared with those of Fusly 1267.

		Talooks.	Villages under the influence of the Channel Irrigation.					Other Villages.					Total.				
			Number of Villages.	Average collections of 5 years from Fusly 1251 to 1255.	Collection of Fusly 1267.	Comparison.		Number of Villages.	Average collections of 5 years from Fusly 1251 to 1255.	Collection of Fusly 1267.	Comparison.		Number of Villages.	Average collections of 5 years from Fusly 1251 to 1255.	Collection of Fusly 1267.	Comparison.	
						Increase.	Centage.				Increase.	Centage.				Increase.	Decrease.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Re.		Rs.	Rs.	Rs.	Rs.
Collector's Division.	1	Bunder	29	11,968	22,725	10,757	90	28	6,548	11,665	5,117	78	57	18,516	34,390	15,874	0
	2	Pednah	16	6,871	9,663	2,792	41	24	5,972	7,073	1,101	18	40	12,843	16,736	3,893	0
	3	Deevi	0	0	0	0	0	23	53,153	68,237	15,084	28	23	53,153	68,237	15,084	0
	4	Ellore	3	0	0	0	0	21	20,937	15,921	5,016	24	21	20,937	15,921	0	5,016
	5	Pentapaud	17	11,023	22,136	11,113	101	85	41,843	14,436	22,593	54	102	52,866	86,572	33,706	0
	6	Relungy	35	56,312	86,330	29,988	53	30	25,981	37,536	11,555	44	65	82,323	1,23,866	41,543	0
	7	Kykaloor	113	75,259	93,082	17,823	24	40	5,152	6,482	1,330	26	153	80,411	99,564	19,153	0
	8	Goodewadah	99	55,681	95,403	39,722	71	34	11,341	16,127	4,786	42	133	67,022	1,11,530	44,508	0
		Total...	309	2,17,141	3,29,339	1,12,195	52	285	1,70,927	2,27,477	61,566 5,016	33	594	3,88,071	5,56,816	1,73,761	5,016
Sub Collector's Division.	9	Bezwadah	9	9,571	15,120	5,516	58	73	33,383	57,561	24,178	72	82	42,957	72,681	29,724	0
	10	Nundeegamah	0	0	0	0	0	98	46,693	85,519	38,856	83	98	46,693	85,519	38,856	0
	11	Juggiapettah	0	0	0	0	0	52	19,580	39,168	19,588	100	52	19,580	39,168	19,588	0
	12	Tirwoor	0	0	0	0	0	62	12,275	22,776	10,501	85	62	12,275	22,776	10,501	0
		Total...	9	9,571	15,120	5,516	58	285	1,11,931	2,05,051	93,123	83	294	1,21,505	2,20,174	98,669	0
		Grand Total...	318	2,26,718	3,44,459	1,17,741	52	570	2,82,858	4,32,531	1,54,689 5,016	53	888	5,09,576	7,76,990	2,72,430	5,016
									Net amount, 1,49,673					Net amount, 2,67,414			

VYJASWARAM,
10*th February* 1859.

(Signed) W. KNOX, *Collector.*

(True Copy.)

(Signed) J. W. B. DYKES, *On Special Duty.*

APPENDIX VII.—A.

Statement showing the amount disbursed to the Department of Public Works in the District of Rajahmundry from the year 1844 up to 28th February 1859.

Items.	1844.			1845.			1846.			1847.			1848.			1849.			1850.			1851.			1852.			1853.			1854.			1855.			1856.			1857.			1858.			Up to 28th February 1859.			Total.		
	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.	Rs.	A.	P.
Public Buildings	53	9	0	582	0	0	178	6	0	1,035	2	6	138	13	4	374	14	4	74	13	0	50	3	0	308	2	0	147	13	3	538	13	0	3,990	1	3	4,316	14	8	0	0	0	0	0	0	0	0	0	11,791	9	4
General do.	0	0	0	0	0	0	3	14	6	21	14	7	15	8	0	0	0	0	21	0	0	0	0	0	0	0	0	503	6	0	0	0	0	15	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	587	1	1
Marine do.	0	0	0	0	0	0	0	0	0	0	0	0	188	3	7	0	0	0	0	0	0	20	0	0	760	8	0	8	14	7	1,031	10	11	4,110	6	10	2,100	0	0	0	0	0	0	0	0	0	0	0	8,219	11	11
Military do.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,000	0	0	0	0	0	0	0	0	0	0	0	0	2,000	0	0
Ecclesiastical Buildings	0	0	0	0	0	0	50	0	0	30	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	220	0	0	0	0	0	4	12	0	0	0	0	0	0	0	0	0	0	0	341	10	10
Judicial do.	376	13	1	311	1	10	339	2	0	62	9	0	1,764	4	1	70	2	0	478	7	3	141	5	4	1,378	5	0	781	3	2	1,172	7	11	116	13	6	3,583	14	5	0	0	0	0	0	0	0	0	0	10,606	8	7
Revenue do.	92	10	6	301	6	0	113	12	7	29	5	6	3,787	10	3	1,569	11	4	1,592	4	2	111	15	0	365	15	8	750	12	11	1,720	9	6	7,183	7	8	0	12	0	0	0	0	0	0	0	0	0	0	0	17,610	5	1
Irrigation Works	33,853	7	11	46,579	14	5	58,983	11	10	4,47,293	2	9	1,92,992	14	8	2,16,654	1	1	2,80,119	6	4	2,95,764	2	9	4,67,799	2	2	6,09,775	1	0	7,30,199	11	5	7,70,568	6	10	7,04,995	3	4	4,95,631	10	9	3,65,202	4	9	57,590	0	0	57,74,032	6	0
Ferries	114	7	0	1,870	14	0	1,466	8	4	104	15	0	622	13	8	1,810	8	9	481	5	0	1,044	5	0	541	7	2	22,720	2	8	9,973	8	3	547	9	11	0	0	0	6,000	0	0	0	0	0	1	8	0	0	0	0	41,300	0	9
Navigable Canals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10,000	0	0	1,26,833	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	1,42,833	5	4
Salaries, &c. of Engineer Officers	0	0	0	0	0	0	0	0	0	358	0	0	48,145	0	3	44,785	2	10	48,246	5	11	57,278	1	5	52,246	7	8	54,241	11	3	49,097	2	3	59,165	4	7	94,462	6	3	1,11,060	0	6	65,656	5	3	12,098	13	2	6,96,840	13	4
Do. of Establishment	537	2	7	887	0	0	1,800	11	10	4,009	12	6	18,718	14	1	18,996	10	5	20,110	8	10	23,785	9	7	21,311	11	0	23,088	7	1	57,826	2	5	36,879	3	1	61,471	15	8	94,447	8	0	78,754	3	10	12,392	7	7	4,75,318	0	6
Roads and Bridges	1,369	12	6	293	8	0	1,531	4	0	7,403	0	3	2,263	3	8	6,247	9	7	415	4	6	191	7	1	437	15	0	3,878	10	7	22,942	7	0	2,958	13	8	390	0	0	0	0	0	0	0	0	0	0	0	50,326	9	10
Total...	36,729	14	7	50,855	12	3	64,470	7	1	4,60,351	12	1	2,68,637	5	7	2,90,508	12	4	3,51,546	5	0	3,78,403	14	0	5,45,149	9	8	7,15,912	2	6	8,84,722	8	8	10,12,358	14	8	8,73,325	14	4	7,07,139	3	3	5,09,614	5	10	82,081	4	9	72,31,808	2	7

RAJAHMUNDRY,
6*th April* 1859.

(Signed) A. PURVIS,
Collector.

(True Copy.)

(Signed) J. W. B. DYKES,
On Special Duty.

APPENDIX VI.

మహారాజశ్రీ జే. దన్లియ. వీరైకర్ యిన్క్వ్యిర్, ఆఫ్ స్టేడూటీకారి శుభముకు.

అముులాపురంచాలాచాయిలాకా పాలవరంనమస్తు గవరన్మెంటుగ్రామములయిన పోలవరం, పాతయించరం, యకులఁంక, కొత్తపల్లె, కామరగిరి, పశ్వులలంక, చించలపల్లిలంక, వేమవరం, యీ యెనిమిదిగ్రామములగ్రామస్తులున్ను వ్రాయించి చాకుబుచేశిన కయిఫియ్యతు విన్నపములు.

యీగ్రామములు పుభయ గోదావరిమధ్య ప్రదేశమయినందునను మన్ను చెరువులు మొదలయిన నీటి ఆధారములు బొత్తిగాలేకనున్న కాలానుగుణ్యమయినవర్షములు వర్షించకనున్న నాలుగు ఆయిదు సంవత్సరములనుంది భూములు పంటలేక సర్కారుసొమ్ముయిచ్చుకోవడముకు వీలవాదులోవుండడమేకాకుండా బలుసాలున సర్కారుకు చెల్లించవలసిన శిస్తులో వకపావులమట్టుకుఅయిన ఆయివజలేక మిక్కిలీ నిర్వస్థితిలోవుంది మేమువ్రాసుకునేదునివి యేమంటే.

యీమధ్య మేస్తరు ప్రదాదుఛారవారు మాగ్రామములకు విజయంచేశ మాగ్రామములయొక్క పట్టభూములన్నిటిని భూములన్నిటిని చిత్తగించి మావల్ల సరుజాయిసిలెక్కలు చాకుచేసుకునిపున్నారు అప్పట్లో మాగ్రామములకు పడ పరిధిగమందువున్న గలరమిగోదావరికి అవ్వితిట్టుపంపింది కద్వారా అనకట్టనీరు ప్రవహించేయించిన పమ్ముకు యిదివరకు సర్కారువారు జారీచేయించిన శాంక్షనుతో నిమత్తంలేకుండా నీరుప్రవహించిన ప్రథమ సంవత్సరం మొదలుకునిన్ని వీర్వ జాస్తియిచ్చుకుంటున్నాకుని ముల్చిలిచా చాకుబుచేసుకునిపున్నాముగనుక అలెక్కలహవెలు

జ—

౬౬౫౫౭౭౭౭ యిదివరకు అమరకంలోచేరిపున్న జీరాయతీ కడియడముకుకరిపున్న కావరు.

౩౩౬౫౭౫- యినాములు.

౨౫౩౧౫-౫౭ దుంకాలాయినాములు.

౫౩౧౫౫౬౭ కట్టుబడియినాములు.

౩౩౬౫౭౫-

౧౦౦౬౫౭౫౭ అయిన

౨౫౭౫౫ ప్రస్తుతం శేవ్యానకు నాలాయఖుకాలుండిఅమరకంలోచేరని చాబుదకాయతి.

౨౫౭౧౫౭ దవటచర్ల

౫౬౭౩౫౭ అనాదిగయకు

౨౫౭౫౫

౧౦౨౬౫౭౩౫౭

సదరుప్రకారం యిదివరకు అమరకంలోచేరిపున్న జీరాయతీభూమికిన్ని దుంకాలాకట్టుబడియినాములకున్ను యకరాగి కి రూపాయలు ఎ భూమ్మున పీర్వాజాస్తి ప్రథమసంవత్సరంమొదలుకుని యిచ్చుకోవడముకున్నయిదివరకు శేవ్యముకు లాయఖుకాని Koయకభూమి యీనీరు ప్రవహించినమీదట శేవ్యముకు అనుపలంలోవచ్చినయెడల థరివంపులతోపాటు శిస్తున్న సదరుప్రకారం పీర్వాజాస్తిన్నిహతాయిచ్చుకోవడముకున్న మామనఃపూర్వకముగా తమన్నిధిలో అముల్ దారువారియెడట వచ్చుకోవడమయినదిగనుక త్వరగా నీరువారవడముకు తగినసుపాయం ఆలోచించవలెనని ప్రార్థిస్తున్నాము దివ్యచిత్తానకు లేవలెను.

ది ఎ ఫిబ్రవరి ౧౮౫౯ సం॥

పోలవరం.

నిళ్ళంకుల వెంకన్న పుల్కర్ణి వ్రాలు
దంగురుబియ్యం పెదపాపయ్య గ్రామ
మునసభ నిశాని
నందులకనకయ్య పెత్తనదారు నిశాని

పాతయించరం.

నిళ్ళంకుల లక్ష్మన్న పుల్కర్ణి వ్రాలు
ముదునూరి వెంకటపతిరాజా మునసభ
వ్రాలు
ముదునూరి రామకృష్ణంరాజు వ్రాలు
గాదిరాజుకృష్ణంరాజా పెత్తనదారు వ్రా॥

యకుర్లంక.

చనిపోయిన గాదెవీర్రాజు పుల్కర్ణి కా
మూరుదు వెంకన్నసంబంధిన అయ్య
గారి శరభరాజావ్రాలు

ముదునూరి వెంకటపతిరాజా పెత్తనదా
రు వ్రాలు
యిరామకృష్ణంరాజు వ్రాలు

కొత్తపల్లి.

పుజారుూతి శేషయ్య పుల్కర్ణి వ్రాలు
నడింపల్లి లిబ్బిరాజు పెత్తనదారువ్రాలు
నట్టు పుత్రయ్య వ్రాలు
పుట్టిన పర్వతాభుదు గ్రామమునసభ
నిశాని

కామరగిరి.

గాదెలక్ష్మీనారాయణ పుల్కర్ణి అల్లు
డైన యర్రమల్లి వెంకట కృష్ణమ్మ
వ్రాలు
గాదిరాజుకృష్ణరాజు పెత్తనదారువ్రా॥
కార్ల రామస్వామి పెత్తనదారు వ్రాలు

పశ్వులలంక.

చెలువలి శరభరాజు పుల్కర్ణినీ
కలను చివరప్ప వ్రాలు
మూరెల్లసుబ్బాయకు గ్రామమున
సభనసభ్యునికార్ల రామస్వామివ్రా॥
నడింపల్లి బుచ్చిరాజు వ్రాలు

చించపల్లిలంక.

యెలువలి శరభరాజా పుల్కర్ణినీ కా॥
చుందవప్ప వ్రాలు

వేమవరం.

గా॥ లక్ష్మీచెల్లగ్రామమునసభవ్రా॥
కుంగి సూరాలు పెత్తనదారు నిశాని

APPENDIX VII.—B.

Statement showing the amount paid for Public Works in the Talooks under Godavery Division, in the Zillah of Masulipatam, from the year 1814 to 1858.

Year.	On account of Public Works.			On account of charges for Establishment.			Remarks.
1	2			3			4
	Rs.	A.	P.	Rs.	A.	P.	
1814	15,208	3	6	0	0	0	For repairs, &c. of Irrigation Works.
1815	2,481	11	5	0	0	0	
1816	800	11	11	0	0	0	
1817	572	8	6	0	0	0	
1818	5,103	0	10	0	0	0	
1819	12,118	3	9	0	0	0	
1850	19,197	1	0	0	0	0	
1851	15,272	3	11	0	0	0	
1852	7,533	14	11	0	0	0	
1853	20,265	9	4	0	0	0	
1854	23,960	9	5	0	0	0	
1855	27,935	8	3	0	0	0	As the sums noted in Col. 2, were paid to the District Engineer on his Abstracts, (which do not specify particulars,) it cannot be ascertained in this Office upon what works they were expended.
1856	32,417	6	0	52	8	0	
1857	95,501	0	0	1,168	0	0	
1858	85,304	0	10	0	0	0	

Although the accounts of this District do not distinctly show the amount paid on account of repairs of Godavery Division, prior to 1856, yet the amount then paid on account of repairs to the Talooks, which are now under Godavery Division, are entered in this Statement.

The wages of the Establishment of this Division were never paid in this District, except in the two years above shown.

(Signed) T. J. KNOX,
Acting Collector.

MASULIPATAM,
16th April 1859.

(True Copy.)

(Signed) J. W. B. DYKES,
On Special Duty.

APPENDIX VII.—C.

From Captain F. H. RUNDALL, District Engineer of Godavery Division.

To J. W. B. DYKES, Esq., On Special Duty, dated Pullavella, 2nd June 1859.

I have the honor to return the Expenditure Statements furnished by the Collectors of Rajahmundry and Masulipatam, together with one prepared from my own Records, exhibiting the total expenditure on the Annicut and other projects in both Districts.

The item of Navigable Canals, in the Rajahmundry statement, is the amount expended exclusively on the Upper Godavery, and has nothing to do with the Godavery Division.

The expenditure entered in the Rajahmundry Statement amount to.....	72,31,808	2	7
That in Masulipatam to.....	3,66,891	8	0
Making a total of.....	75,98,699	10	7
Deduct the items for salaries and Establishment...	11,73,379	5	10
Balance.....	64,25,320	4	9

The accounts in my office show the expenditure on the Annicut Project up to April 1859 to be.

For construction charges.....	32,63,537	4	7
For maintenance.....	16,31,199	6	8
Total.	48,95,036	11	3

Deducting this from the balance of the Collector's statement, leaves Rupees 15,29,283-5-6 as the expenditure on works other than the Annicut Project. The proportion of Salaries and Establishment, debitable in each case, will therefore be to the Annicut, 8,80,339 5 10

and to other works 2,93,010 0 0

Of the maintenance charges I reckon that about six lacs may be chargeable to block, leaving 10,31,199 for the repairs proper.

The total expenditure on the Annicut Project may therefore be stated as follows :—

Construction charges.....	32,63,537	4	7
Proportion of maintenance debitable to do.....	6,00,000	0	0
Total Construction.	38,63,537	4	7
Maintenance charges proper from 1846 to 1859, or 14 years.....	10,31,199	0	0
Salaries and Establishment during the same period.....	8,79,120	0	0

You will observe, however, that there is a considerable difference in the total amount of expenditure as entered in my statement and in those of the two Collectors. The reason of this I cannot account for. The cost of repairs in the upper Talooks from 1844 to 1854, however, do not appear in my accounts, as up to that date the repairs were executed by the Revenue Department. The whole amount was but trifling and would account for only a small portion of this difference.

By Collector's Accounts.				By D. E. Accounts.			
Total.....				75,98,699-10-7			
Deduct.							
Navigable Canals.....	1,42,833	5	4				
Expenditure in 1844.....	36,729	14	7				
Do. 1845.....	50,855	12	3				
Do. to 1853 in M..	50,000	0	0				
	2,80,419	0	2	2,80,419	0	2	
Deduct from this...				73,17,280	10	5	
Salaries.....				11,73,379	5	10	
				61,43,901	4	7	53,67,276
Difference.....				7,76,625			

The quantity of water available in all the three main Canals during the first crop, in the height of the season of 1857, was 8,40,000 cubic yards per hour and about 8,20,000 during the present year.

(True Copy.)

(Signed) J. W. B. DYKES,
On Special Duty.

APPENDIX VII.—D.

Statement showing the Total Expenditure on the various works in the Godavery Division.

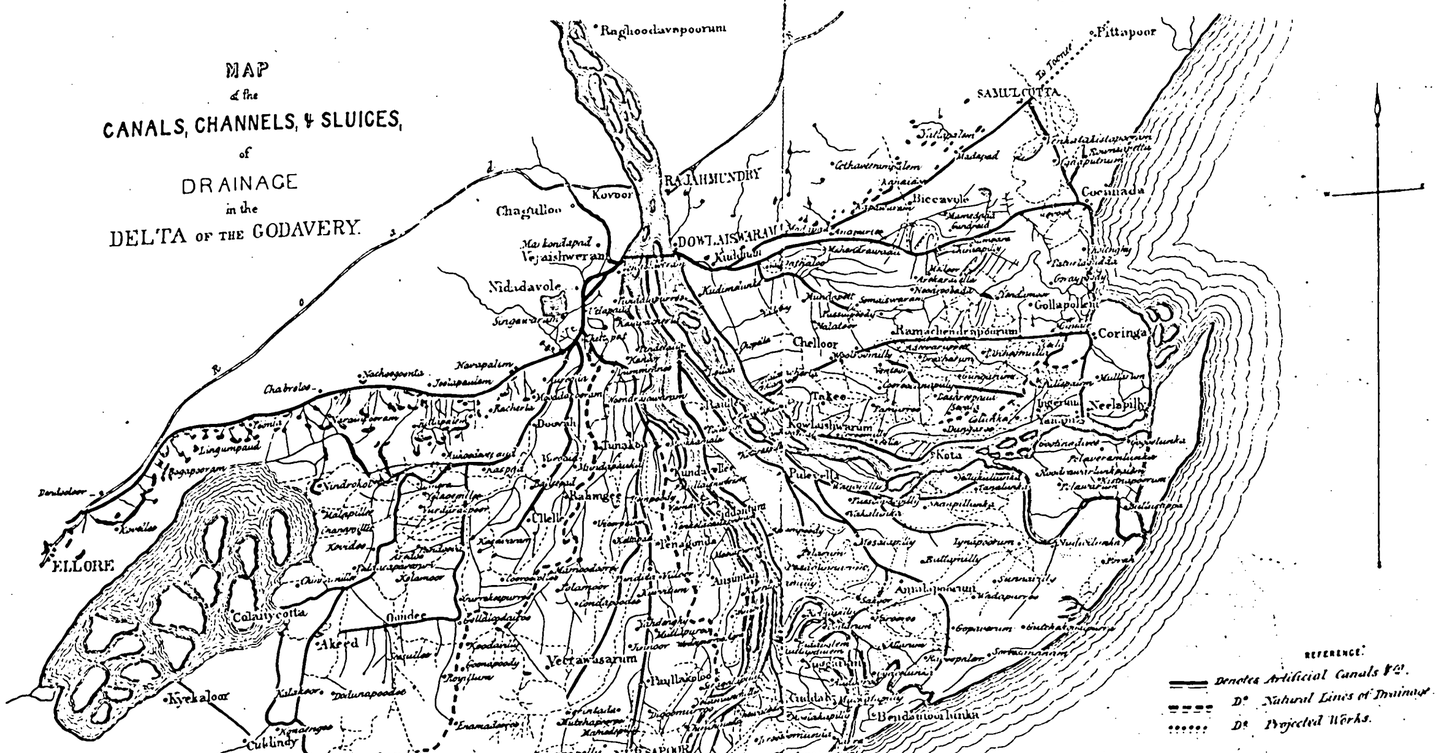
Construction Charges.	Annicut Project.			Detached Works of Irrigation.			Buildings.			Roads and Bridges.			Harbour Works.			Ferries and other Sundries.			Total.		
1846	13,472	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13,472	0	0
1847	1,86,854	5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,86,854	5	9
1848	2,75,077	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,75,077	0	9
1849	1,81,661	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,81,661	6	5
1850	2,40,721	6	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2,40,721	6	9
1851	1,65,878	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,65,878	11	2
1852	3,36,966	13	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,36,966	13	7
1853	3,63,350	12	0	5,232	2	8	0	0	0	0	0	0	0	0	0	0	0	0	3,68,582	14	8
1854	4,04,661	0	6	6,258	7	8	474	13	6	11,887	2	6	19,531	6	7	10,126	7	9	4,52,939	6	3
1855	4,15,047	6	8	2,564	8	4	8,000	11	0	2,785	6	0	33,482	14	1	12,515	4	10	4,74,426	2	11
1856-57	4,77,359	5	0	1,260	2	0	17,688	14	0	23,690	12	0	92,653	0	0	1,611	4	4	6,14,276	5	0
1857-58	1,56,741	0	0	158	0	0	13,590	0	0	8,015	0	0	19,296	0	0	63	0	0	1,97,863	0	0
1858-59	45,766	0	0	0	0	0	50,918	0	0	0	0	0	191	0	0	4,401	0	0	1,01,282	0	0
Total....	32,63,537	4	7	15,473	4	8	90,692	6	6	46,378	4	3	1,65,157	4	8	28,783	0	7	36,10,001	9	3

Maintenance Charges.	Annicut Project.	Detached Works of Irrigation.	Buildings.	Roads and Bridges.	Harbour Works.	Ferries and other Sundries.	Total.
1816	8,201 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	8,201 0 0
1817	8,600 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	8,600 0 0
1818	9,808 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	9,808 0 0
1819	9,672 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	9,672 0 0
1850	20,486 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	20,486 0 0
1851	20,237 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	20,237 0 0
1852	67,066 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	67,066 0 0
1853	1,10,894 14 7	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1,10,894 14 7
1854	2,35,984 7 2	31 9 10	0 0 0	0 0 0	0 0 0	0 0 0	2,36,016 0 0
1855	1,82,162 1 4	13,093 1 5	374 11 6	93 14 5	137 0 0	1,361 3 1	1,97,222 8 4
1856-57	3,26,139 0 6	17,672 11 0	1,117 9 5	1,980 8 8	0 0 0	1,811 6 11	3,48,721 8 4
1857-58	2,30,007 0 0	27,436 0 0	3,664 0 0	1,612 0 0	426 0 0	(65) 0 0	2,63,502 0 0
1858-59	2,38,823 0 0	29,704 0 0	8,029 0 0	11,963 0 0	2,142 0 0	1,567 0 0	2,91,828 0 0
Total...	14,08,173 12 8	86,912 6 3	13,785 4 11	15,631 7 1	2,705 0 0	5,100 10 0	15,52,670 8 11
				Emergent.			
1846	410 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	410 0 0
1847	2,027 2 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	2,027 2 0
1848	709 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	709 0 0
1849	2,219 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	2,219 0 0
1850	1,372 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1,372 0 0
1851	1,350 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	1,350 0 0
1852	21,029 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	21,029 0 0
1853	20,938 14 8	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	20,938 14 8
1854	16,517 13 11	38 11 3	62 7 5	862 2 4	0 0 0	0 0 0	17,480 15 3
1855	41,370 11 5	316 11 5	0 0 0	0 0 0	0 0 0	0 0 0	41,687 6 10
1856-57	224 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	224 0 0
1857-58	52,223 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	52,223 0 0
1858-59	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0
Total...	1,63,325 10 0	351 12 8	62 7 5	862 2 4	0 0 0	0 0 0	1,64,601 0 5
	16,31,199 6 8	87,297 2 11	13,847 12 4	16,516 9 5	2,705 0 0	5,169 10 0	17,57,575 9 4
	18,95,036 11 3	1,02,770 7 7	1,01,320 2 10	62,894 13 8	1,67,862 4 8	31,192 10 0	7,53,67,577 2 7

(True Copy.) (Signed) J. W. B. DYKES, *On Special Duty.*

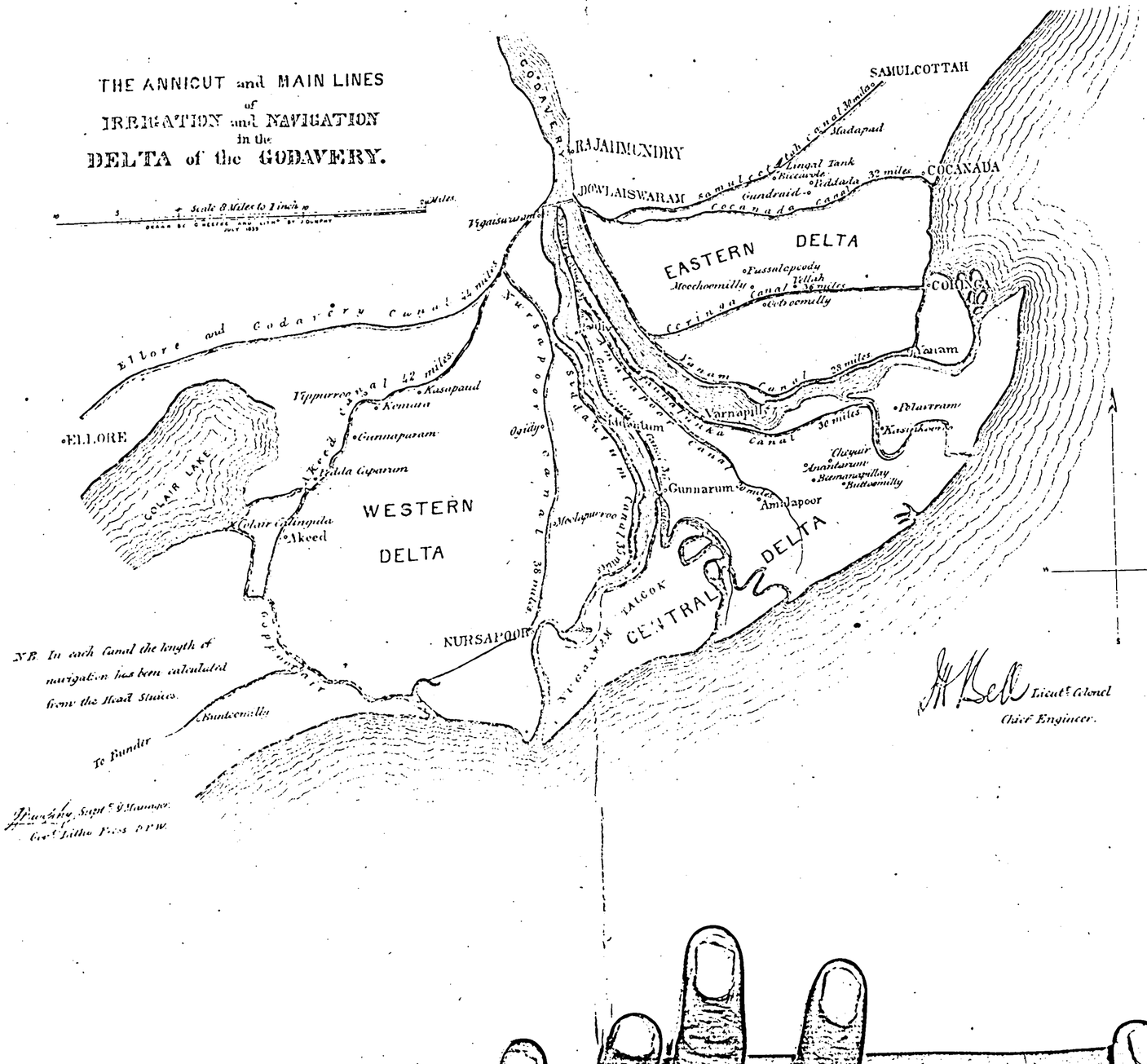
(Signed) F. H. RUNDALL, *District Engineer, G. D.*

MAP
of the
CANALS, CHANNELS, & SLUICES,
of
DRAINAGE
in the
DELTA OF THE GODAVERY.



88

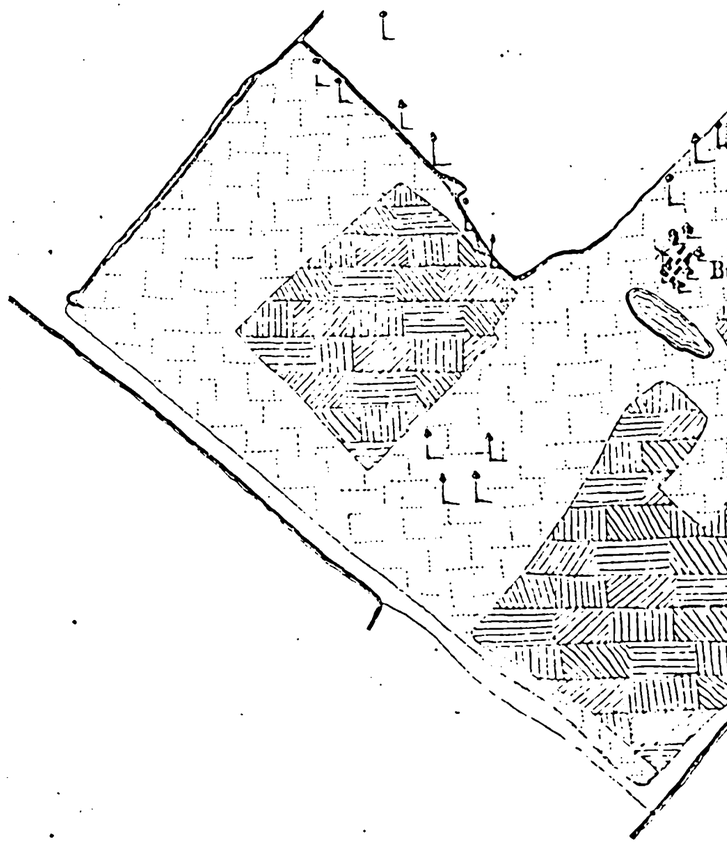
THE ANNICUT and MAIN LINES of IRRIGATION and NAVIGATION in the DELTA of the GODAVERY.



Survey of the VILLAGE of BUNTOOMILLY in the TALOOK of AMALAPOOR

Showing the Land Irrigated by Annicut Wate in 1858.

Note:- Extent of land irrigated, measures 120 Acres. 11th January 1859.



Signed/ E. Stoddard, Captain,
3rd Class Executive Engineer, Godavery Dist.

J. K. Bell Lieut.t Colonel,
Chief Engineer.

Sup.t & Manager

Govt. Litho: Press. D. P. W.

Revenue 1859 Depart.
Proc. of Govt. 21st October

No. 865

Extract from the Proceed-
-ings of the Board of Rev.

Dated 31st May 1859.
Recd. 14th } No. 1534.

1 Encls.
No. 1421 - 20th October 1859.

Board's review of the
Second Report.

Reviewing the Report
of Mr. Dykes on the results
obtained by the measurements
of four Villages in the Kistna
Delta irrigated from the new
annicut.—

No. 132.

R Cons: 13th March /58 at 99-100
" — " — 18th Jany /59 — " 3-4
" — " — 21st Sept.r /58 — " 39-40
" — " — 12th April /59 — " 81-82
" — " — 14th Dec.r /58 — " 26-27
" — " — 28th Sept.r — " 1-2
" — " — 19th March /60 — " 45

Taken Rep.t Cons.t
& original of
Dis.d 20 October 1859
No. 1421 Rd

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cl7 Cat. R19

Extract from the Proceedings of the Board of Revenue

Dated 6th May 1859
Rect 13th
No 1554

Reviewing the Report of the Collector on the results obtained by the measurement of some villages in the Districts of Salem irrigated from the new Anicuts

Memorandum.

Ep. in. C. 1229 P. 32.

On the 12th March 1858,
the Government with the view of actually
testing the extent of land watered by
means of the Anicuts on the Godavery
and Kistnah rivers, resolved to depute
a Revenue Officer to measure the
watered areas in certain number of villages,
for comparison with the areas given
in the Revenue accounts; and also
to reap and measure a portion of
the crop in each of the selected villages, and there-
from to calculate the value of the
returns per acre. Four villages
were to be so treated under the
Godavery in Rajahmundry; and
in Masulipatam, four under the
Godavery and four under the
Kistnah, being twelve in all. The
work was to be done in concert with
the

the District Engineers of the two Divisions respectively. It was hoped by the means to arrive at some distinct idea as to the actual area watered, about which the Revenue Officers and the Engineers differed so widely.

2. The Officer ultimately selected for this duty was Mr. Dykes. He entered upon it on the 1st May 1858, and has made four Reports to the Board of Revenue dated respectively as noted in the margin. The first of these papers, reports the result of the examination of the eight villages under the Godavery irrigation; viz^t four in Rajahmundry and four in Masulipatam, as respects both extent irrigated and the value of the produce; the second reports the result of a similar examination of four villages in Masulipatam watered by the Kistnah. The third details the result of experiments on the first crop in the Kistnah Delta.

Mining Comm^y Proceed^s 1/58 & 359.

First Report Sept^r 11th 1858, Sub^o Sov^t Dep^t 10/48

Second do. Nov^r 5/58 — Dep^t 5/59.

Third do. June 16/59 Aug^t 17/59.

Fourth do. June 16/59 Aug^t 30/59.

second report

The fourth ~~is a report~~ of the general effects of the Godavery irrigation on the people and the results as regards the Ryot. The Board's Proceedings of December 10th 1858 and May 1859 give such summary of the results of the first three Reports, and I will therefore not repeat them in detail, but only refer to the Board's Proceedings &c. In the eight villages treated of in the first Report the difference in the extent of land irrigated as returned by the Sirkistolars and as ascertained by Mr. Dykes measurements varied from 8 to 77 per cent, and averaged 40 per cent. But the Board ~~in their order~~ in giving good reason for disregarding the whole of this difference as fraudulent, viz^t that the real contents

gives the result of a similar examination of the first crop in the Kistnah Delta.

* Para^s 849.

contents of the measures used in the District accounts is not known, and that it varies greatly in different Talugs & Villages: It may be observed also that Mr. Neville gives the same explanation of the great excess of land found by the Survey in comparison with the Areas according to the Burmah Accounts.

5. The total extent irrigated in those eight Villages was found to be 9108 Acres, partly Government land and partly inam; the respective quantities of each being known only in two out of the eight Villages. The total water cess improved amounts to 1,563-5-2 yearly. But this does not by any means represent the whole increase of Revenue which ample irrigation has produced in these Villages; since the Godavery works were commenced the amount of the joint rents has increased from Rupees 14,672 to Rupees 23,532

* From Mr Neville 15th Feby 1849

See in Para 17 of 13th Proc.

and the Board justly ascribe the larger part of this increase to the irrigation; I propose in preparing the estimates for next year to raise the rates of produce and land according to the prices of produce now received and thereby produce this effect. In Para 19 the Board also give a statement shewing the amount of the joint rents in the eight Villages in 1851/52 and the total land revenue in 1851/52 viz the amounts of the joint rents and of the water cess on both Government land and inam. The general result is an increase of 98 per cent, or very nearly double.

6. For the second part of the task, Mr Dykes measured some land in the five villages of Gunnadoo and Nidadavole in the Western Delta of the Godavery but it does not appear what extent. The first crop had been reaped before he came to the District and

and this examination therefore was of the second crop only which is the least valuable. The process followed, and the means taken to secure exactness are not stated, though evidently satisfactory, but no confidence can be felt in the results given ~~by the latter~~. In ordinary seasons would have a strong interest in making an under estimate of the crop.

As Mr Dykes afterwards measured the first crop, it is needless to remark on the results given in this first report, being based on estimate only.

Mr Dyke's second report dated 5th November 1858, but despatched to the Board only on the 3rd January 1859, was reviewed by the Board in their Proceedings of May 5th 1859. It details the result of the examination of four villages in the Kistna Delta, in the Masulipatam District. At the time of the examination, the first crop of 1857/8 had been planted

Bd. Proc. Para 8.

planted, and Mr Dyke was unable therefore to ascertain the extent irrigated in the preceding year with precision. The Government and inam Land were mixed up together in the measurements. The difference between the irrigated area as determined by Mr Dyke and as returned by the Talukdar was only 11 per cent on the former. Of the four villages measured one (Kistnapalem) belongs to the Nizam's Zamindari, in which no water cess had yet been levied. The revenue demand in the other three is very low, averaging in one of them from Rupees 2-1-4 to 2-11-6 and excluding inam, it averages no more than Rs 2-14-4 in Kanchipadu, Rs 4-2-10 in Kantavaram, and Rupees 4-11-2 in Doggiparru. I cannot find out from either Mr Dyke's Report or the Board's Proceedings whether these rates include the water cess or not. — A memo from the Collr in answer to our enquiry, states that the rates do not include a water cess

9. The Revenue derived from these Villages in consequence of the irrigation is very small. The Kistakeviveram is a Zamindary Village, and nothing has ever yet been demanded for the water. In Kaliteerum and Doggipaum, the whole increase of demand, both joint rent and water cess being included, is only 11 3/4 per cent. In Kankipaud alone a considerable adelation has been made in the form of water cess. On the average of the three years 1850/51 to 1852/53 the joint rent of the Village was only Rupees 2,296 ; while the combined joint rent and water cess in 1858/9 was 4930 Rupees, being an increase of 115 per cent. Yet even here the adelitional demand appears to be very light, judging by the water cess in the main land, which averages only 1 : 10 : 6 an acre. In the other two Villages this cess on main is much lighter still, being only 6 annas and 14 annas an acre. It is to

Pag. 1 Para 16

Dis. Ro. Para 11.

be supposed, though it is not plainly stated, that — the Statement includes only that inland land which receives irrigation from the channels. If it includes the whole inland of the village, it may be fallacious to a great extent.

10. The important subject of ~~the~~ ascertaining the value of the produce of irrigated land, by actual measurement of the crop of a certain extent of land, is disposed of as regards the Kistnah Delta in three paragraphs out of the eighty-one contained in this second Report. A table is given of the results, but there is so little information as to the means adopted for ascertaining the yields correctly, that it is not of much value. The produce as given in the Statement is declared by Mr. Dykes to be far less than that of other similar cultivation, but he says that the soil is poor.

Para 142 & 144

11 The third report gives the result of the examination of the first crop of

of transplanted paddy in Masulipatam, under Rishtah irrigation.

~~Results of the examination of~~ Twenty six fields or parts of fields were examined by Mr Dykes, & there were also two examined by the Collector. The general result is the opinion that 20 hundred weights or ~~nine~~ 16 bushels of seed ~~only~~ per acre is about the average yield in the Masulipatam part of the Kistnah Delta. The Board express the opinion that his estimate is too high, as he took only the best fields but his remarks seem scarcely applicable as he gives the average at 20 cwt, while his experiments give 29 & 33 cwt. The Board also say that the communication price taken by him viz 8 Rupees per putty of 1533 pounds is too high to be fair to the Ryot.

Mr

12 The early part of the fourth report relates to experiments made as to the produce of the first crop of paddy in the Rajahmundry Delta. Trial was made in a number of villages some selected by the Department Public works some by the Tahsildars and some by the villagers. Those are ranged in three classes accordingly. The villagers always selected the worst crops, and the Department Public Works officers the best. The results are shown in a table in hand

14. Mr Dykes considers that the average yield per acre may be taken at 20 Cwt for the eastern delta, 22 Cwt for central delta, and the average on Delta 22 Cwt, for the lower portion of 18 Cwt for the upper.

Para 15

Para 16

Para 18

13 Mr Dykes then proceeds to calculate the value of the produce which according

according to him varies from
A a Rs 20-12 to 26-14 per acre for a single crop.

14 To show the effects of the anicut irrigation Mr Dykes measured the first crop he could find under a tank, & found it to be 11 Cwt. to the acre; while a good crop close by, watered from the anicut, was 33 Cwt. Other similar experiments were made, with like results. Para 29

15 With regard to the extent of irrigation Mr Dyke estimates it at 4,46,107 acres; and applying to this extent his previous valuation of the crop he concludes that the entire first crop throughout the whole Delta at the time of the current year, July 1268, supposing paddy only to be grown amounted to 11,35,15,883 Rupees, at a price of 10 Rupees per Para 49 average price of 30 years.

16 In para 65 Mr Dykes treats of the subject of unauthorized inams granted during the currency of the permanent settlement, which he thinks to be very extensive.

17 The latter part of this report contains suggestions on various subjects connected with Mr Dykes enquiries. I must say, however, that it seems to me that throughout the whole of the reports there is little in the way of practical and useful reply to the questions which Mr Dykes commission was designed to solve. I do not say that he is to blame for this; it may result from the nature of the case.

18 There were two enquiries 1st The quantity and value of the crop per acre on the irrigated land. 2. The extent irrigated.

As to the first all that Mr Dykes or any Revenue Officer could

could do was to test the produce
on a certain number of care-
fully selected cases. The experi-
ments detailed in the last two reports seem to show
~~that the Board ought to~~ Idea
~~cautiously than it is willing, notwithstanding the~~
~~not known, should be confirmed~~
~~Boards opinion, I see little reason to doubt them~~
~~as former experiments go~~
~~as far as they go while the Bird Thurst~~
~~the results too high, the Engi-~~
~~neers consider them to be too low.~~
~~to establish a~~
~~cultivators~~ ~~enough to~~

As to the second question,
Mr. Dyster had no means
of forming an accurate es-
timate of the whole extent
he was necessarily reduced to
inferences from such limi-
ted data as he could com-
mand, and it is no wonder
that the results are disputed.

19 There is one fact brought
out strongly by these reports
viz. that very little has yet
been done in the way of making
zamindars and ~~encouragement~~ ryots
pay for the irrigation which
they derive from the anicut
works. The government lands
and villages have hitherto
paid but little, but directly
or indirectly they have
paid much more than
the zamindars and Dinamdars.
There is difficulty and many
cases in determining the
fair demand on Govt lands,
on account of the complication
of the joint rents, but in
zamundaries and on inam
lands this obstacle does
not exist, and I think
the attention of the Collr
may be directed to this, and
that no more time should
be lost.

20 With this exception it
does not seem to me that any
positive order can be passed by
Govt on these reports, but
they may be sent to the
Director

Director of Resettlement
to whom they may be of
use, they may be commu-
nicated to the Board of Rev:
also
the Chief Engineer,
and to Colonel Cotton: and
they may also be sent home,
and be laid on the Editors
table, or rather copies be sent
to the newspapers. An acknow-
legement may also be made
of Mr. Dykes' labors, which I
have not been wanting
in will. It is much to be
regretted that the rel-
ports are so enormously
bulky. This makes it
very difficult to deal
with them, and to
extract the useful
information

[Having
I have had it
sheets]

minuted my
divided on separate
Minute
information
contains, especially as no summary
is given of their contents.

Feb 28/69

the large extent of irrigated cultivation which has overspread these Districts of late years can be brought under contribution at the earliest possible and with the greatest advantage to the State and the least inconvenience to the Proprietors of cultivators; and the solution of this is to be found in the operations of the Land Revenue Survey and Settlement which have lately commenced in the Masulipatam and Rajamundry Districts. This important subject has already occupied

Minute

The object of this inquiry was to ascertain the extent of the irrigation which has resulted from the Works in the Deltas of the Godavari and Kistna and the value which that irrigation has added to the land but it does not appear that any distinct practical object was proposed beyond the elucidation of the conflicting statements of the Revenue and Engineer authorities. Upon this investigation an able Revenue Officer has been occupied since May 1858 and he has sent in four Reports consisting of 137 closely printed foolscap pages besides voluminous Appendices. This abundance of condensation is much to be regretted for Mr Dyke has no doubt recorded many valuable observations which will be lost to persons who are unable to read such long Reports in consequence of their having

other

other important duties to perform.

In this instance, however, no inconvenience will arise beyond the loss of the valuable time to the Writer. Robson, who is acquainted with the nature of the Works of irrigation and navigation in the Deltas of the Kistna and Godavari, can double that they have added greatly to the productiveness of the soil and consequently of the Land Revenue. The only practical question is, in what manner the large extent of irrigated cultivation which has overspread these Districts of late years can be brought under contribution at the earliest possible date with the greatest advantage to the State and the least inconvenience to the Proprietors and Cultivators; and the solution of this is to be found in the operations of the Land Revenue Survey and settlement which have lately commenced in

in the Masulipatam and Rajahmundry Zillahs. This important subject has already occupied my attention and I hope shortly to submit to the Board the conclusions at which I have arrived.

On the Godavari
7 October 1859

I have the honor &c
C. E. Trevelyan

The question, to be decided, if possible, was whether the Capital expended on the Annicut &c had yielded adequate returns

[illegible] that the Deputy's returns do not furnish the solution of the question & that they really do not

R. D.

№1421

Proceedings of the Madras Government
Under date the 20th October 1859.

Read again Extract from the
Proceedings of the Board of Revenue
10th December 1858 and recorded in Cons.
18th January 1859 №51.
Read also the following Papers.

Extract from the Proceedings of the
Board of Revenue.

Reviewing Mr. Dykes second Report on
the results obtained by the measurement
of four Villages in the Kistna Delta irri-
gated from the anicut.

(Here enter 3d Feby 1859 №155)

Proceedings of the Board of Revenue
Submitting with Boards observations
the third Report the subject of his mission to
ascertain the effects of the Godaveree and
Kistnah anicut in their bearing on the
Revenue present and prospective.

(Here enter 19th August — " 3222)

Proceedings of the Board of Revenue
Submitting with the Boards observations
a letter from Mr. Dykes on Special duty report-
ing on the entire Delta of the Godaveri, as well
as the effects of the anicut on the agricul-
tural state of the tract of Country, and the
Condition of the people generally.

(Here enter 30th — " — " — " 3397)

Minute by the Honble the President.
Records certain observations on Mr. Dykes'
reports on the return from the Godaveri and
Kistna anicuts.

(Here enter 7th October " —)

We fully agree in the
opinion expressed by the
President in his above
minute recorded. They con-
sider it unnecessary &
inexpedient to stop any
practical works on Mr.
Dykes' Reports, as the

For all by learned advice —

F. M.

Revenue 1859 Regd
Pay Dept. & Cotton

Minute by the
Hon'ble the President

Extract from the
Proceedings of the
Board of Revenue

Read certain
observations on Mr. Dykes
Report on Special duty
from Godaveri & Kistna
Anicuts &c &c

Cy Oct 1859

№1421 &c

Penrose Survey

[illegible] Plan with [illegible]
[illegible] [illegible] for a Judgment
[illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]
[illegible] be transmitted to the
Directors of Pen. Settlement
to the Inland Commissioners
[illegible] to be communicated
to the Ch. E. & 2 Ch. A. G. Cattle
& with the Case on the Exhibit Table

6 Copies to Bd of Pen. Pilotage
10 — Dr. of Pen. Settlement
5 — Inland Comr.
10 — Chief Engr.
1 — Coll. R.N. Cattle

both copies of this Judgment
Award recorded by Bir
Exhibit Reports

Revenue 1859 Department.

Govt 21st October

No 1621.

Madras Govt.

20th October 59.

Forms B. of Rend 4 Nov 59

No 2114 (pointing out certain mistakes)

Orders on Mr Dykes

Report on the returns from the

Survey and Settlement Officers

entered under my

Signature

M.E.O. 14—10,000—21-4-22.

MADRAS RECORD OFFICE.

Government of Madras.

DEPARTMENT.

G.O. No. 1421 Press
132—135 ~~Mis.~~

Dated 20 — 10 — 1859.

Not to be folded or roughly handled