

REPORT

OF

THE COMMISSIONERS APPOINTED TO
ENQUIRE INTO AND REPORT

UPON

CERTAIN MATTERS CONNECTED WITH
WORKING AND ORGANIZATION OF
PUBLIC WORKS DEPARTMENT

THE MADRAS PRESIDENCY.

SUBMITTED

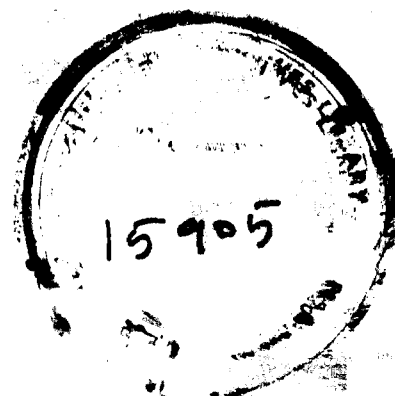
TO THE RIGHT HONORABLE THE GOVERNOR IN COUNCIL
OF FORT ST. GEORGE,

ON THE 5TH APRIL 1972

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To

HIS EXCELLENCY .

THE RIGHT HONOURABLE THE GOVERNOR IN COUNCIL.

MY LORD,

WE have the honour to submit our Report on the several questions referred for our consideration in Proceedings of the Madras Government, in the Revenue Department, of the 18th January last, No. 143.

2. *Questions referred to the Commission.*—The questions so referred were :—

1st.—The agency by which minor irrigation repairs should be carried out.

2nd.—The source from which the requisite money or labour should be provided.

3rd.—The agency to which the maintenance of the District Roads of this Presidency should be entrusted.

4th.—The organization of the Department of Public Works.

3. *Papers subsequently referred for the consideration of the Commission.*—Since the Commission was appointed, another

* Proceedings of the Madras Government, Revenue Department, No. 1778, dated 22nd June 1869.

Despatch* from the Secretary of State, directing the early transfer of the charge

of all minor works of irrigation or communication to the Revenue Officers of districts, has been communicated to us, and has received our careful consideration.

Proceedings of the Madras Government, Public Works Department, 2nd March 1869, No. 674.

We have also been called upon for our opinion on the suggestion

paragraphs 97 to 102, and ot.

Reports of Colonel Strachey, R.E., Inspector-General of Irrigation Works in India, having reference more particularly to the biting their financial results.

4 *Alleged deterioration of minor Irrigation Works and supposed cau-*

ent, in their order, appointing this Commission, refer to the al^l

the minor irrigation works in many, if not in most, lency, and state, that this deterioration has long be-

he part of the Revenue authorities, and a cause c^e

t. Two, or rather three, reasons for t^h

assigned :—

The :

ire to be placed.—We have received a great deal of evidence regarding the state of the minor irrigation works of the country. The conclusions at which we have arrived are, that the minor irrigation works are not in that state of efficiency which they ought to be, having regard to the interests and the just claims of the land-holders, and in a less degree the interests of the State; that, treating these works as a whole, the expenditure of money on them has not been sufficient; that there has been great inequality in the allotment of that expenditure among the different districts, and a want of method in its application to particular works; that the customary labour, which, according to the practice of the country, the ryots were formerly liable to perform on irrigation works, has been allowed to fall too much into abeyance, and that the establishments at the disposal of the Public Works Department have been, and always must be, inadequate to maintain in repair the numerous petty works scattered all over the country.

6. *Expenditure on Irrigation Works for a series of years.*—As regards the amount annually expended as repairs of irrigation works throughout the Presidency, we learn from the subjoined statement* furnished by the Controller of Public Works Accounts that the average expenditure for the last fourteen years, or from 1855-56 to 1868-69 inclusive, has been Rupees 11,38,569, or between six and seven per cent. on the Revenue now derived from irrigated land; but this average is considerably higher than it would otherwise be, owing to the exceptionally heavy expenditure incurred in the years 1858-59 and 1859-60, consequent on the floods which took place in the Southern Districts in the first of those years. If the average be struck on the last eight years of the series, it will be reduced to Rupees 9,45,210 or less than five and a half per cent. on the Revenue. We cannot but regard this rate of expenditure as insufficient for the proper maintenance of the works. When the Public Works Commissioners, appointed in 1851, wrote their report, the average annual outlay on repairs of irrigation works was seven lacs, which was five per cent. on the Revenue then yielded by irrigated land. Adverting to the great increase which has since taken place in the cost of labour, and bearing in mind how much the State expenditure on irrigation works at that time supplemented by the co-operation of the ryots, we have that the average expenditure of late years represents an outturn of work of minor works, far smaller than that executed in former years. The inequality which has characterized the allotment of the Repair Funds to the different districts is very remarkable, and, in our opinion, calls for correction. The per-centages which the outlay on agricultural repairs bears to the

* Years.	Repairs.
	RS.
1855-56	11,71,781
1856-57	11,95,244
1857-58	13,05,108

Revenue in the undermentioned districts, during the three years ended

March last :—

Ganjain.....	3½	Bellary.....	7½	Trichinopoly.....	14½
Vizagapatam.....	10	Kurnool.....	7½	Madura.....	8
Godavery.....	8½	Madras.....	10	Tinnevely.....	3½
Kistna.....	9	North Arcot.....	5½	Coimbatore.....	5½
Nellore.....	5½	South Arcot.....	5	Salem.....	6½
Cuddapah.....	4	Tanjore.....	3		

It would require an examination into the particulars of expenditure for a considerable number of years, to show how far certain districts have been unduly favoured, and others proportionately neglected, but we have no hesitation in expressing the opinion, that the expenditure in each part of the country should, unless influenced by storms, floods, or other causes, be as regular as possible, for otherwise judicious arrangements become impracticable, and the wants of the numerous works, each of which has a claim to attention, and to a greater or smaller expenditure for its up-keep, cannot all be properly provided for. It is also of the utmost importance that greater method and discrimination should be observed than has hitherto characterized the apportionment of the available Repair Funds among the works of each district. The evidence which has been laid before us shows that in this matter there has been great want of system. In some cases the expenditure on a work within a comparatively limited period has amounted to three, four, and even six times the maximum annual revenue derived from the work, while other works, apparently in urgent need of repair and improvement, have been altogether neglected, the result being an area of cultivation very much less than the area which might have been cultivated if the works had been kept in proper order, and large remissions of revenue.

7. *Particulars of wet cultivation and assessment for the whole Presidency.*—It is true that there has been a very considerable increase in the aggregate area under cultivation of late years. In 1848-49, the area* of irrigated land under cultivation

*The following Statement gives the particulars of irrigated land under cultivation and the assessment thereon for the whole Presidency from 1845-46 to 1868-69.

conferred by Act I. of 1858, Section 6; and, after hearing much evidence and subject and giving it, as its importance demanded, very full and careful consideration, we beg to make the following recommendations:—

In the first place we consider it to be both necessary and desirable in every way, that careful local enquiry should be made in and throughout each district to the work of this kind which is or has been customary.

Secondly, that customary labour, so ascertained, should be enforced by legal enactment. A draft Act has been prepared and discussed, and will be found appended to this report.

Vide Appendix E.

Thirdly, we have found a very preponderating weight of evidence against the commutation of customary labour into a money cess, and we are convinced that a cess could never enable the Government, or its officers, to do what can be done, without any considerable inconvenience, by the ryots. Almost the whole available labour of the country is needed at certain times in river-irrigated districts on the petty channels, or elsewhere on Coramboos and works for diverting and turning to account the supply of water. It is labour, not money, that is required; and while on the one hand the ryot can, for his own immediate benefit, manage to spare a few hours, or even a day or two from his fields, he could not so well afford to pay for labour, and, moreover, the labour would not be forthcoming. Wherever such cesses have been introduced, the result has been that difficulty in obtaining labour has led to the ryots being required to pay and to work as well. On tanks, the work to be done is of a different kind, but it is equally essential that the labour, rather than the money, should be given by the ryots. For the most part, what has to be done is to check or prevent damage, and the villagers, who are on the spot, alone have the opportunity of seeing what is required, and under any circumstances the village labour must do what is necessary. We, therefore, think that it will not be expedient to allow of any commutation of customary labour into a money cess, except in the manner provided in Section XV. of the draft Act which we have prepared.

11. *Result of the fixing of customary labour will be satisfactory.*—The ascertaining and fixing of customary labour in the manner above indicated will determine what channels are to be wholly kept in repair by the ryots, as well as those on which more or less Government money will have to be spent, and we think that the results of this enquiry will be satisfactory, as all parties will then have a clear appreciation of what they have to do.

12. *The agency by which minor Irrigation repairs should be carried out.*—We now proceed to consider the first of the questions referred to us for report, viz., the agency by which minor irrigation repairs should be carried out. Since this Commission was appointed, a despatch has been received from the Secretary of State, directing that the charge of all minor works, both of irrigation and of communication, shall be transferred to the Revenue officers. This order has not yet been acted on, because, as we understand, the Government entertain grave doubts as to its practicability. We are clearly of opinion, that the transfer of the works in question to the charge of a separate Public Works Establishment, acting under the orders of the Revenue Authorities, is not expedient. We are persuaded that, while under such a transfer the control and supervision of the officers of the Public Works

acres, bearing an assessment of Rupees 131,88,235, and in 1865-66, under cultivation was 30,20,444 acres, and the assessment Rupees 179,13,928; except as regards the Kistna and Godavery Districts, it cannot be said that the expansion of cultivation is due to any improvement in the condition of irrigation works. That other causes have contributed to that expansion is abundantly clear: the reduction and equalization of assessment, the exemption from taxation of improvements effected by the ryots, and, above all, the high prices which have prevailed of late years, have stimulated cultivation, and have enabled the land-holders to make profits even from small crops and slovenly agriculture. There is also reason

		No. of private wells.
In Fusly	1264	27,476
"	1267	48,019
"	1271	85,729
"	1276	99,151

to believe that wet lands, cultivated with dry crops in the absence of sufficient irrigation, pay the wet assessment, and appear in the cultivation returns as irrigated lands; private wells, too, have multiplied, and irrigation from tanks and channels has of late years been largely, and is every year increasingly, supplemented from this source.

8. *Inadequacy of Subordinate Establishment of Public Works Department.*—On the second of the reasons accounting for deterioration or inefficiency of minor works referred to in the Order of Government we need say but a few words. The inadequacy of the Subordinate establishments has probably prevented the generally neglected state of many of the works being prominently brought to notice, and the necessary remedy being applied, but it is certain that, even if the already costly establishments of the Department of Public Works were doubled, they could not properly look after the numerous scattered works over the many straggling districts of this Presidency, unless they had also the willing aid and co-operation of the ryots and of the large Revenue establishments at the disposal of the Collectors, and this, we trust, will be secured under the arrangements suggested in this Report.

9. *Customary labour has not been afforded to the extent necessary or formerly prevailing.*—The third of the reasons assigned in the Order of Government for the

ant would be lost, the practical result would be that no other control of ae would be substituted for it, or, in other words, professional work would co be done by unprofessional agency, the time and attention of that agency ng already heavily taxed by the additional work imposed upon it under the eration of the administrative changes introduced of late years. The considerations*

* The following is an extract from the Report of the Committee of 1863 :—

“ On the first question, the conclusion at which we have arrived is, that it is not possible, ve at a considerable increase of expense, to make any thing like a general re-transfer of the execution of pairs and minor works to the Revenue authorities. In stating this conclusion, we deem it right to bserve that we entered upon our inquiry with a very different impression. We were all (including the Engineer Member of our Committee) disposed to think that the only satisfactory plan for ensuring he execution of minor works and repairs, especially those connected with irrigation, was to re-transfer it to the Collectors and their Subordinates. Of the officers whom we consulted, Messrs. Cunliffe and Ellis, the late and present Collectors of the Madras District, and Colonel Ludlow, now Deputy Secretary to Govern- ment in the Department of Public Works, were of the same opinion ; (the latter, mainly on the ground of the relief which the arrangement would give to the Superintending Engineers). We had before us the strongly expressed opinions of two experienced Members of the Government, who had had ample opportu- nities of observing the administration of this branch of the Public Works Department, both before and after the organization of the present Department in 1855 ; and, lastly, the decision of the Secretary of State on a full review of the arguments adduced on either side of the question, that the former system, under which the execution of those works was entrusted to the Revenue authorities, should be reverted to. In these circumstances, notwithstanding the changes which recent measures have effected in the position of the Revenue Officials, and especially the Tahsildars, and in their ability to give time and attention to the works in their respective ranges, we should have considered it our duty to recommend that the experiment should be tried, at all events, in a few of the districts, if it had been in our power to devise any means of bringing it into operation without largely exceeding the limit of expenditure to which we have been restricted, or crippling the efficiency of what we may designate as the Engineering branch of the Department. This, we find, is impossible. The establishments of the Collectors and Tahsildars have been so much reduced of late years ; while, in the case of the latter, partly owing to the increased size of their talooks, and partly to the introduction of the Indian Penal Code and Code of Criminal Procedure, which have considerably added to their labours as Magistrates, the increase of work has been so great, that, if they are to be held responsible for keeping in order the irrigation works and cross roads in their districts, they will need an addition to their present establishments, the aggregate of which, at the lowest computation, would involve a charge of Rupees 80,000 in salaries of Accountants and Goonastahs, which it would be impossible to meet by any corresponding reduction in the establishments of the Executive Officers of the Engineer Department. Moreover, and this is the more serious objection, the necessary staff of Overseers and Maistries could not be furnished to the Collectors without either unduly crippling the Engineer Establishment, or again entailing a considerable increase of charge in the salaries of additional Overseers to aid the Executive Engineers in those works, which, under the proposed change, would still be reserved to them ; and, here, it would often happen that, with the two classes of work under distinct departments, two officers would be employed on duties which might easily be done by one. Take, as an example, the District of North Arcot. In the scheme of establishments, annexed to this letter, the establishment assigned to this district consists of two Executive Officers, three upper Subordinates (one Sub-Engineer and two Supervisors), and nine Talook Overseers at the rate of one to each talook. Looking to the size of the talooks, the number of Talook Overseers is not more than will be needed for the effective supervision of the minor works ; but most of these men will have other works within their talooks, on which, if they are at the disposal of the Executive Officer in charge of the Range, they may be occasionally employed without prejudice to their special duty of looking after the minor works ; while, if they were not available for such works, the proposed staff of two Executive Officers, and three upper Subordinates, would be obviously inadequate for a district containing 300 miles of metalled roads, and works connected with two important anients actually in progress. The Chandragiri Talook constitutes a range. In it there are four metalled roads, 111 miles in length. Most of the irrigation works in this talook lie along the valley of the Soormamooky river, no where far from the road from Pootulpett to Tripetty ; so that the Talook Overseer will have to travel along 40 or 50 miles of road, for the supervision of which he will not be available, if the transfer of the minor works to the Collectors should be carried out. Again, there is a section of the western trunk road, 48 miles in length from the junction of the Palar and Poincy rivers to Vaniambadhy through Vellore. This road follows the valley of the Palar. Irrigation works are dotted along, no where distant from the road, to the south of which runs a chain of hills. So, in this case, if the proposed transfer of the minor works be carried out, one man will have to inspect the road, while another will be going over the same ground to inspect the tanks.

It is not proposed to make over to the Revenue authorities any masonry works, whether new works or repairs, the cost of which may exceed Rupees 1,000. Suppose, therefore, a calin- gula has to be built at a cost of Rupees 1,200, the work must be entrusted to the Engineer Department. In the same tank a small upper calingula has to be built at a cost of Rupees 350, and other stone and earth-work, costing Rupees 2,000. The two latter would come under the head of minor works, and, if the latter are to be placed under the Collector, would have to be executed under the orders of the Talook Overseer. There would thus be two men independently superintending the execution of work on the same tank. Take again the case of a stone dam over a surplus channel. The partial restoration of such a work would be classed as new work, and might cost, say, Rupees 1,500. It would, therefore, be executed by the Engineer Department ; and supposing the channel, half a mile long, leading as

which influenced the Committee, who reported on this question in 1862 to us to possess great weight. We may add, that the transfer of the and works to the control of an establishment working under the Revenue oage would involve a state of matters very different from that which obtained prior t 1856. Up to that time the execution of all ordinary Public Works, both ne works and repairs, was entrusted to an establishment under the orders of th Collector of the district, and which was the only Public Works Establishment work ing in the district. Hence, there was no competition for labour between two Govern- ment Departments, and no waste of supervising agency, as there infallibly would often be, under the proposed transfer, consequent on two sets of officers, professional and unprofessional, being employed in the management of Public Works in the same locality. The duties of a Civil Engineer of a division, five and twenty years ago, were simply to project, and in some cases prepare plans of works to be executed by the Revenue Maramut Establishment, and to inspect them when executed. As t the present time the establishment under the orders of the Superintending Engineer is the only Public Works Establishment of a district, so in 1854 the only Public Works Establishment was the Revenue Maramut Establishment working under the orders of the Chief Revenue Officer of the district and of his Assistants and Tahsildars.

13. *Reasons which render it desirable that the ordinary repairs of minor agricul- tural works should be entrusted to the land-holders. Colonel Strachey's plan recom- mended.*—But while we consider the creation of a separate Public Works Establish- ment under the Collector to be inexpedient, we think it absolutely necessary that some arrangement should be made for handing over the ordinary repairs of agricultural works, not requiring professional skill, to the land-holders, whose crops depend on them. The number of these works scattered over the country is far too great to admit of any establishment which the Government could maintain, either under the Revenue authorities, or under the officers of the Engineer Department,

a branch from this dam, to be in need of repair, the repair, which might cost Rupees 800, would be treated as a minor work, and executed under the orders of the Collector ; so that one man would be superintending the work at the dam, and another at the channel ; thus entailing a needless waste of superintendence. There would also be a waste of office work, inasmuch as two separate estimates would have to be prepared for what, under the present system, would be included in a single estimate. Moreover, with two separate agencies competing for labour in the same locality, the price of labour must necessarily rise, and the cost of the works must be proportionately enhanced. This is forcibly urged by the Collector of Trichinopoly in one of the reports which have been placed before us. In short, it is impossible to provide two separate establishments for objects nearly identical and working side by side, without entailing a considerable increase of charge. And, on the whole, we think it is very questionable whether, irrespectively of the cost of establishments, the proposed re-transfer of the repairs and earth works to the Revenue Depart- ment would be followed by the advantages which are expected. Admitting that the Public Works Department has not hitherto answered expectation, it appears to us that much that is defective in its working is attributable to defects in the organization of the Department, which the changes recently sanctioned, and others which we are about to propose, will go far to remove. Among the chief of these defects are the attempt at over-centralization ; a needless multiplicity of accounts and returns ; inadequacy of local supervision by experienced officers ; want of defined responsibility ; and, what is rather a fault in the practice than in the theory of the system, a want of constant and unreserved communication between the local officers of the two departments ; and, lastly, the want of a sufficiently stringent law to compel the villagers to furnish labour for the execution of what are essentially village works. All these are defects which we think are susceptible of being remedied without removing the superintendence of the minor works and repairs from the department at present entrusted with it. And here it must be borne in mind that, under the old system, complaints of the inefficiency of the Executive were not unfrequent. It is shown in the Report of the Public Works Commissioners, and so far as we are aware, of their statements on this point have not been contradicted ; that numbers of tanks were continually out of repair ; that there was much delay in the execution of work ; that the accounts were often garbled ; that the labour employed was more or less compulsory, the rates of wages being too low, and the payment by no means prompt ; that the labourers were constantly defrauded of a portion of their hire ; and that the Maistries who had the superintendence of the work were, as a class, very inefficient.

g on them that prompt and frequent attention which is essential, if they be kept up in a really efficient condition. The land-holders have everything to lose or gain by the neglect or proper maintenance of works on which their cultivation depends. They are on the spot to do what is needful at once when the occasion arises, and by a timely patch here and there, to prevent damage, which, if allowed to go on, would lead to the loss of crops, and, in the long run, necessitate more costly repairs. Moreover, they very often have the command of all the available labour. Colonel Strachey has suggested that the maintenance of the minor irrigation works should be provided for by handing them over to the land-holders on a reduced assessment; the reduction of assessment being, however, given in the form of a payment, which should be made on the certificate of a Government Officer that the work was in satisfactory repair, but not otherwise. We find that many of the officers of both departments are averse to such an arrangement. It is alleged that the experience of the past with respect to Dasabundum tanks, and other irrigation works granted on favourable tenures, shows that they are almost invariably neglected; that sooner or later this neglect leads to serious injury; that then the large outlay required is beyond the means of the villagers; that the repairs are not enforced; that the works are then resumed and sometimes repaired, and sometimes left in ruin until a more convenient season. Another objection urged is that, under the proposed system, the interests of the poorer ryots would be injuriously affected. We do not consider either of these objections to be insuperable or sufficient to counterbalance the great advantages which would result to the great body of land-holders, and also to the State, from throwing what may be regarded as farm repairs upon those who are best able to attend to them. In regard to the first objection, we would remark that if the condition upon which a reduction of assessment is to be granted, viz., that the works shall be certified to be in good repair, is properly enforced, and in enforcing this condition there ought to be no difficulty, the experience derived from cases in which there was avowedly no practical attempt to enforce such a condition, does not really furnish any argument against the adoption of Colonel Strachey's proposal. The second objection is probably of more weight, and we have no doubt that if the system alluded to is brought into operation, it will be requisite to provide by Legislation for investing the Collector with such powers as will enable him to compel all the holders of land under any work brought under the system to contribute their fair share of labour or of money. On the whole we are of opinion that the plan ought to be tried, but we do not see any advantage in making the reduction of assessment in the form of a payment. We would make it a *bonâ fide* remission, to be determined at the annual settlement of the revenue, when the prescribed certificate as to the state of the works should be produced, and inquiry as to the correctness of the certificate, could, if necessary, be instituted. The remission should not exceed the estimated annual cost of keeping the works in repair. It should be treated as a first charge on the revenue, just as remissions for loss of crops, owing to failure of irrigation, are treated. It is our intention, when we come to deal with the question of organization, to recommend the re-establishment of the grade of District Engineer. The selection of the works which should be brought under the operation of the system of which we are now treating, and the settlement of the amount of remission of assessment to be granted for the up-keep of each work, should be made by the Collector in concert with the District Engineer.

14. *Alternative proposal.*—If the system here advocated, experienced and the approval of Government, or if it should be deemed inexpedient, many Range to adopt it in particular localities, we would suggest as an alternative, that the funds assigned to a district for the repairs of the year have to be made over to the villagers interested such works as the two officers supervisors, competent to execute. If the work to be done be indicated, as it generally is by a few simple instructions, the villagers would not need supervision of the might report when the work was ready to be examined and paid for, which is an arrangement would probably pave the way to the ultimate adoption of the work comprehensive and more permanent arrangement for making over the management to the land-holders, which has been suggested by Colonel Strachey, and whom we think should be introduced wherever it may be deemed feasible by the District, who in either case, the object with which the Secretary of State has directed this action; of the minor works to the charge of the Revenue authorities, will be met, and entailing the necessity of double establishments. In either case, the great advantages are of promptitude in the execution of the repairs, and, we may add, of economy the cost as compared with that of the present system under which the work, as a general rule, is given out to contractors, would more or less be secured. As regards efficiency we have no doubt that the repairs will be quite as well done by the ryots, who are so greatly interested in the efficient maintenance of the works, as by contractors whose object is, of course, to make all they can out of their contracts.

It will, we may remark, be a great incidental advantage of either of the arrangements above suggested for executing repairs to minor works through the agency of the villagers, that it will afford peculiar facilities for enforcing due attention on the part of the ryots to their customary obligations in respect of furnishing labour; and, of course, the value of any customary labour, for which it may be ascertained that the villagers are liable in respect of any particular work or set of works will have to be deducted from the estimated annual cost of keeping the work in repair. There will doubtless be numerous cases in which no payment in money or remission of assessment will be necessary.

15. *The maintenance as Government Irrigation Works of small tanks cannot be profitably maintained by the State to be formally abandoned.*—In regard to small tanks which are so circumstanced, owing either to silting up or to neglect, or from any other causes, as to make it unprofitable to the State to maintain them, we recommend that their maintenance as Government Irrigation Works be formally abandoned. In such cases, if the tanks are not taken up by private individuals under the rules already in force on the subject, we think that the assessment should be reduced to the rate charged on unirrigated land, and where it is not necessary on special grounds to retain water, the bed of the tank should be assessed for dry cultivation.

16. *A per-centage of the revenue from Irrigation to be devoted to the maintenance of the works, and to be treated as a first charge on the revenue.*—For the maintenance of those works which cannot be classed as minor works, and of those minor works, the up-keep of which it may not be deemed expedient to hand over to the ryots on the condition of a reduction of assessment, we think it very desirable that provision should be made by setting apart for that purpose a per-centage of the revenue derived from the land dependent on the works, and constituting that per-centage a first charge on the revenue. We recommend that this charge be fixed at eight per cent. on the Revenue, and that the sum so obtained be devoted

enance of such of the irrigation works of the several districts as on them provided for, including, under the head of maintenance, such as kept up, the construction of sluices, &c., as may be found requisite for the works, or for increasing their usefulness. Eight per cent. of the Revenue on irrigated lands at 170 lacs of rupees, would give an annual grant* of Rupees 13,60,000 for the maintenance of existing works. This sum is less than the grant, viz., 14 lacs, which, for the last two or three years, has been annually entered in the Budget under the head of agricultural works. But, as we have already shown, it is considerably more than has been spent on irrigation repairs. On the occasion of the late reduction of Public expenditure no less than three lacs were taken from the annual repair grant. It appears to us of great importance that the money required for the arrangement of works, which are essential to the maintenance and development of a so important branch of the Revenue, and also to the food supply of the people, should be provided for in such a manner as to be independent of the exigencies of Imperial Finance. It is also very desirable that the expenditure for this purpose should be regular and equable. We have already noticed how unequally the repair grant is at present distributed among the several districts.

17. *The source from which the requisite money or labour for the maintenance of Irrigation Works is to be provided.*—Turning to the second question referred to us, viz., the source from which the requisite money or labour for the maintenance of irrigation works is to be provided, it will be gathered from what we have already written, that we are not in favour of commuting the customary labour of the ryots into a money cess, nor can we recognize the propriety of providing for the cost of those works which will have to be paid for in money, being met by the imposition of a separate irrigation cess. The evidence which has been laid before us shows very clearly that the officers of the Government generally, and the natives of the country also, look to the State to keep in proper order the irrigation works, for the supply derived from which a special charge is made. There are about three and a quarter millions of acres of irrigated land in this Presidency, yielding a revenue of 170 lacs of rupees. The dry assessment on this land, were it unirrigated, would certainly not exceed forty-two and a half lacs; and the difference between this dry assessment and that received is the direct return obtained by the State from the irrigation works of the country, and, therefore, so long as payment for water is expected and demanded, it must be the duty of the Government to keep these works in a good and efficient state. And in dealing with this question, it should not be forgotten that the interest of the cultivators in the maintenance of the works in question in a proper condition is at least two or three times that of the State. We, moreover, do not think that it will be necessary for the Government to assign an undue proportion of the revenues derived from water to the maintenance of the works, by means of which it is made available. If, however, it should be found, that as the cost of maintenance increases, circumstances alter, and that while the produce from irrigated lands becomes more valuable, the expenditure of a fair per-centage of the revenue derived from them is found insufficient for the proper up-keep of the works, we consider that the Government would have an equitable right to raise the water rate, or, as it would be in practice, in most districts the assessment; and we feel assured, that such an arrangement, where shown to be equitable

and necessary, would be altogether preferable to an irrigation cess which experienced and would look upon as a transference of a State obligation to the Range be without reason for considering that the Government were charges without twice over for the same thing, once in the form of assessment, and a Superimposition of a cess.

18. *The agency to which the maintenance of District Roads should be entrusted.*—We are not in favour of entrusting the management of the District of experienced the Collectors. A very large majority of those officers are opposed to the arrangement. As a rule, we would place the construction and maintenance of District Roads in the hands of the District Engineer, but would leave to work that officer and the Collector to carry out any modification of the general being in with reference to particular lines of road, where the two officers may differ in whom regard to any special arrangement.

19. *Organization of the Public Works Department. Brief sketch of the present and the Department.*—In connexion with the question of the organization of the Public Works Department, it may be useful to give a brief sketch of the present arrangements of the department, that it may be the better understood how the present arrangements were brought about. Prior to 1857, the execution of Irrigation, and minor road repairs in the few localities in which roads existed, and of most new works in the districts, was in the hands of the Revenue Department, the Collectors being aided by eight Civil Engineers of divisions, who, with some Assistants and a small subordinate staff, checked the work done, and also prepared designs when requisite. The main roads of the Presidency were in charge of the Trunk Road Department, and Military Works were provided for by officers acting under the orders of the Military Board. In 1850, the importance of Public Works began to be more generally recognized, and a Commission was appointed to enquire into, and report upon, the whole subject, and the Public Works Report of 1852, which gave a very full and particular account of the system, was the result. The neglected state of the country in all but a few favoured districts, the inadequacy of the grants for, and of the progress made in, Public Works, were forcibly pointed out; and the duty of the State in promoting them, and the advantages which might be expected to flow from a right appreciation of this duty, were ably and prominently brought to notice. That Commission advocated the establishment of one department for the management of all Public Works, Civil and Military, and proposed that the control should be vested in a Board, consisting of a member of the Civil Service, to represent Revenue interests, and of two Engineer Officers, the Chief Engineer to be also an *ex-officio* member of the Board. There were to be thirteen Inspecting Engineers, and a District Engineer for each Collectorate. The establishment was to cost Rupees 39,000 annually, and the outlay on Public Works was estimated at 48 lacs of Rupees per annum. The Home Government objected to a Board as the controlling authority, and decided that this authority should be given to a Chief Engineer, aided by three Deputies; and after much discussion and consideration, an establishment, costing Rupees 13,06,614, was sanctioned by the Supreme Government in 1858. The mutiny brought Public Works almost to a standstill, and for some years afterwards the amount available for new works was very much less than it was expected, when the department was organized, would be laid out. To reduce expense, a considerable part of the establishment was discharged, and the department lost in consequence many of its best trained officers and subordinates. It began also to

changes made had been unnecessarily extensive, and had expectations formed of them; and so it came to pass that, from various changes were advocated and considered, and in the latter year of 1857-58 was destroyed, in order to carry out the wishes of the Government of India, who thought that, looking to the sum then likely to be expended, the cost of establishment should not exceed twelve, to at the most, and four-fifths, lacs of Rupees; and for it was substituted the organization of the present time. Under this new arrangement, eight Superintending Engineers took the place of the Deputy Chief Engineers, the District Engineers, and the Presidency was as before divided into between eighty and ninety Executive Ranges, some under charge of officers, but a considerable number under charge of subordinates, all of whom are independent of any control but that of the Superintending Engineer. We entirely concur in the opinion of our late colleague Mr. Sim, whose Minute is appended to this Report, and who, together with our President, was a Member of the Committee of 1863, that the arrangement then resolved on of rendering the officers independent of any control but that of a few Superintending Engineers was a mistake. We consider that the organization of 1857-58 never had a fair trial, and that it is to a system not unlike that, but modified in accordance with the experience of the last ten or twelve years, that we must look, if all the circumstances affecting the efficiency of a Department of Public Works in this Presidency be duly taken into account; and we will now proceed to show what steps were taken by us to obtain the information required to enable us to decide what changes it would be most advisable to recommend, and to state the conclusions at which we have arrived.

20. *Means adopted of obtaining opinions on organization.*—In order, in the first instance, to obtain the views of those, both in the Public Works and in the Revenue Departments, who might have suggestions of value to offer, Circular No. 4 was drawn up, and to this seventy-one replies have been received. Subsequently, twenty-eight Officers, representing almost every opinion which has at any time been thought worthy of consideration, were examined orally; and, in several instances, the evidence given in writing was very carefully and thoroughly sifted by cross-examination, so that its value, as well as the real grounds of the opinions expressed, might be ascertained.

21. *Variety of opinions upon organization.*—We do not consider it necessary to show in this Report how various have been the opinions expressed as to the duties of the Department of Public Works, or as to the way in which it could best be fitted to perform those duties. The hearing and examination of the evidence have been followed by a very full discussion, during which almost every point of importance has been very carefully considered; and it will probably be more useful, therefore, to confine our report to a statement of the conclusions at which we have arrived, and of the grounds of those conclusions, rather than to attempt to deal in detail with the mass of evidence which has been recorded.

22. *Present organization defective, and principal causes of inefficiency.*—We are unanimously of opinion, that the present organization of the Department of Public Works is not well calculated to perform efficiently the important duties devolving upon this department, and this view is supported by the evidence of nearly every one who has answered the Circular, or been examined before the Commission. The

chief defects are, the absence of the means of exercising, through experienced and responsible officers, an effective control over the proceedings of the many Range Officers, who are not qualified in any respect to hold independent charges without a much more frequent and constant supervision than it is possible for a Superintending Engineer to provide; secondly, the waste of power arising from giving to all grades of the department, from 1st Class Executive Engineers down to Supervisors, very similar duties and responsibilities, instead of employing the officers of experience to direct and control the operations of the department, with the aid of the junior officers and of the subordinate grades; and thirdly, the difficulty, which is probably insurmountable under this system, of getting the department to work co-operatively with the Revenue Officers of the districts, owing to there being in many parts of the country no officer of the Public Works Department, with whom the Revenue Officers can consult, other than the Superintending Engineer, who may for months together be absent from any one of the districts of his division; for, however efficient and useful subordinates of the rank of Sub-Engineer and Supervisor may be as regards such duties of the Public Works Department as are purely professional, their position is not well suited to enable them to be the advisers of the Collector and Sub-Collector, where professional and Revenue or administrative considerations are, as is so often the case, intimately connected.

23. *Principal requirements to be provided for.*—We have had, therefore, in deciding upon the organization to be recommended for adoption, to consider two essential, but very different requirements. Firstly, the organization should be such as to admit of, and indeed provide for competent and adequate professional supervision of all the operations connected with Public Works; and secondly, the departmental system should be such as will allow of its working in unison with the Revenue system of this Presidency.

24. *Two systems have been brought forward.*—Two systems of Public Works organization have been suggested as sufficiently meeting the conditions requiring to be satisfied to need special consideration. The one is that in which the country would be sub-divided into Executive Engineers' charges of convenient size, these divisions being, to the number of from six to eight, grouped together to form circles under the control of Superintending Engineers: this arrangement is commonly known as the Bengal system. The other plan is that in which the districts or collectorates form the unit and are the charges of District Engineers, who, under the general control of a smaller number of Inspecting Officers than is necessary for the Executive Engineer organization, are vested with considerably greater powers than could be entrusted advantageously to officers in charge of Executive Ranges. This system was in force from 1857 to 1863, when it was abolished not because, as a system, it had been fairly tried and found wanting, but because it was impracticable, within the limit of twelve lacs, or twelve and four-fifths at most, of Rupees laid down by the Government of India for the Public Works establishments in this Presidency to retain that organization in an efficient state. It has since been found that it was not possible to provide efficient establishments on any system of organization for that amount.

25. *Choice of system of organization dependent not entirely upon professional considerations.*—In making choice of one of the two systems to which we have referred, we have had to consider Public Works, not merely from the purely professional point of view, but in their relation to the Revenue administration; and looked at in this way, we are satisfied that the peculiar circumstances of this Presidency, and

especially its Land Revenue tenures, and its system of Revenue Administration render it not only advisable, but essential, that the Public Works system of organization of this Presidency should be specially adapted to ensure, in the several districts, the intimate association of its principal local officers with those of the Revenue Department, and we consider that no plan, which has come under our notice, presents, in this respect, the same probability, and we may add certainty of success, as the District Engineer system will afford, if placed upon a satisfactory footing, at and steadily maintained in that position by the Government.

26. *Influence of Collectors and the position they should occupy.*—In this Presidency, the Collectors of districts have always exercised an important influence on all questions affecting the progress or well-being of their collectorates, and, among other things, the system of land tenure has brought them into closer relations with the people than perhaps would have been possible had they found it requisite to deal directly with a few large proprietors of villages, rather than with villagers individually. We consider that it would not be to the advantage of either the people or the State that this influence, which is a natural result of the circumstances of the country, should be in any way weakened or disregarded. On the contrary, we are persuaded that, if the administration of Public Works in this Presidency is to be placed on a thoroughly efficient footing, the influence, which the Revenue Officers of all grades are able to bring to bear, should be fully utilized; that they should receive every encouragement to co-operate cordially with the officers of the Public Works Department in all matters connected with the material improvement of their districts; and that with this view the Collectors should have a potential voice in the selection of the works, whether original works or repairs, on which the funds available are to be expended. It is impossible to read the evidence which has come before us without perceiving that in some districts, we may almost say in most districts, there has been a separation, sometimes amounting to a positive antagonism, between the two Departments, which must have been most prejudicial to the public service. In connexion with this subject, our attention has been drawn to a plan proposed in 1846 by the Marquis of Tweeddale, and in 1860 by the Honorable Mr. Maltby, of placing the Public Works Officers of each district, with their establishments, under the general direction and authority of the Collector of the district. This measure is advocated by our late Colleague, Mr. Sim, as a means of attaining the object with which it has been proposed to transfer the execution of all minor works to the Revenue authorities, without involving the execution of professional work by unprofessional agency. Mr. Sim “would give to each Collector the necessary professional aid by attaching to each district a Civil Engineer, with one or two Assistants, who should stand in the same relation to the Collector as the Sub-Collector now does. On purely professional questions, the dictum of the Civil Engineer should prevail, subject to reference to higher authority; but in other respects the Civil Engineer would act under the authority and direction of the Collector.” “An arrangement of this nature,” Mr. Sim observes, “would secure to the department all the influence which the Collector possesses, would ensure the co-operation and aid of the Collector’s extensive establishments, and would improve the relations of the department with the people.” We believe that such an arrangement might have been carried out with advantage and without any material difficulty when the execution of Public Works was transferred to the professional department in 1856; but, considering the length of time which has elapsed since the depart-

ment was placed on a practically independent footing, we think it questionable, whether it would now be advisable to introduce any measure which would have the effect of placing District Engineers in a position of positive subordination to the Chief Revenue Officer of the district. The measure would obviously be most distasteful to the officers of the Corps of Royal Engineers, by whom, for sometime to come, the appointment of District Engineer will usually be filled, and who have hitherto regarded themselves as the members of an independent department, responsible only to their departmental superiors, usually the senior officers of their Corps, and to the Government. It would probably be not less unacceptable to the Civil Engineers, who have been sent out from England of late years, and some of whom, at no very remote date, will doubtless occupy the position of District Engineer. But, while for these reasons we should deprecate any arrangement for subordinating the District Engineer to the Collector, we do not apprehend any practical difficulty in conferring on the administrative head of the district such powers as are requisite to enable him to co-operate effectively with the professional head of the department.

27. *Previous rulings on this subject.*—It has been repeatedly laid down that the Collector is to have a voice in the determination of the works to be undertaken. In the second report of the Public Works Commissioners appointed in 1851, it is stated that “the right or the duty of declaring his opinion upon the merits of every project originating in any other quarter for improving either the irrigation or the means of communication, should still be preserved” to the Collector. “This position,” the Commissioners observe, “properly belongs to the Collector as the custodian of the Revenue and the general representative of the Government within his district. He should be, as Major Pears expresses it, the official authority on the probable effect of a proposal, both with regard to the Revenue and the general interests, as the Engineer is, and still should be, on the professional part of the subject.” In a Circular Order issued in 1856, the relative position of the Collector and his professional associate is described as that of head and hand; and in 1860, it was ruled, in the 2nd paragraph of Chapter XI. of the Public Works Code, that the Collector should have “an authoritative voice on all questions connected with Public Works in his district in the Revenue Department, except on professional and departmental points. This rule shall include the choice of works to be undertaken whether new works or repairs; the distribution of the funds allotted to the district, whether General or Local Funds, so far as the distribution is left to local officers; the relative importance of works; and other such matters of administration.” In other parts of the Code, the instructions given are not altogether consistent with those above quoted: as for instance, in Chapter V., where it is laid down that “the District Engineer shall select works for repairs, but he shall attend, as far as possible, to requisitions from the Collector for the repair of particular works.” Again, in an Order passed in 1856, the officers of the department were told that, beyond transactions connected with the supply of funds, they would have little occasion for assistance from the Revenue Department; and that they were to understand distinctly that Engineer Officers are to depend on themselves for obtaining labour and materials; that they are not to apply to the Revenue Officers for aid in obtaining them; and that the latter are not to give such assistance. It is clear that if a system of effective co-operation between the two departments is to be

introduced, the rules for their guidance must be more definite and more consistent. The relative powers and responsibilities of the two classes of officers must be clearly and accurately defined, and consistently upheld in the Orders of Government, and of the other superior authorities. As we have already said, we do not think it advisable to place the local professional department in a position of positive subordination to the local administrative department, and we are disposed to think that some of the rulings, to which we have referred, go too far in this direction. In our opinion it is not desirable that the Collector should be empowered to overrule the District Engineer in determining what works shall be undertaken, or how the money available for the district shall be allotted. In all such matters we would require the two officers to act conjointly, leaving them to refer any points on which they may differ for the decision of superior authority.

28. *Collector and District Engineer together to dispose of Budget lump sum grants for repairs from Imperial Funds.*—With the view of ensuring that this joint action shall be thoroughly and practically carried out, we recommend that the disposition of all Budget grants, which may be given in lump sums for particular classes of works, shall be left to the Collector and District Engineer. To enable them to perform this duty satisfactorily, it is necessary that these officers should meet, prior to the preparation of the District Budget, in order to settle what the Budget entries should be, and the discussion should be based upon as complete a sketch as possible of the work to be done. At the same time, the relative claims of the works, on which outlay may be proposed to be made, should be fully gone into, and it should be decided also what reserves are to be retained to meet emergent demands for repairs. There will generally, we apprehend, be no difficulty in coming to a full agreement, and in any case there will be but little room for difference of opinion, after full discussion, as to the way in which the great bulk of the funds for repairs are to be laid out. Should differences of opinion arise in any case, the particular points to be decided should be submitted to the Chief Engineer and Board of Revenue, and eventually, if necessary, to the Government in the Department of Public Works for decision. We consider that the sanctions for all expenditure on works of this kind and for all subsequent transfers of expenditure from one work to another should be given by the District Engineer with the concurrence of the Collector, and this is advisable because the Collector can rarely, if ever, be in a position to know how much must be spent on a work to make it efficient, and some officer must be held responsible that there is no waste either from excess in expenditure on the one hand, or from the expenditure of an inadequate amount of money on the other hand. The Collector and the District Engineer should, therefore, agree as to the work on which it is desirable to spend money. The Collector will be kept informed by the monthly progress reports, the form of which should be altered so as to render them more intelligible to unprofessional persons, of the actual state of the various works going on in the District.

29. *Selection, &c., of new projects.*—With regard to projects for new works, the selection, with a view to sanction, or for subsequent execution when funds are insufficient for full progress on all, should be settled in the former case, as occasion may require, by a full discussion of the advantages anticipated from each, and with reference to the wants of particular parts of a district, and in the latter case at one or more special meetings prior to the preparation of the District Budgets.

30. *Duties of District Engineer need not here be exhaustively defined, some noticed.*—It is not necessary that we should here attempt to define the special duties and

responsibilities of the District Engineer. These should be laid down, as clearly as may be possible, in a revised Public Works Code, but we recommend that every district should be divided into executive ranges, each being placed in charge of an Assistant or other Subordinate, who should have a larger or smaller extent of country, and a greater or lesser number of lower subordinates, according to circumstances. When practicable, it will be advantageous to fix the head-quarters of the Range Officers at the stations at which the Sub-Collectors and Assistant Collectors reside.

31. *District Engineer to prepare certain annual reports.*—There are one or two points, however, which appear to us to be of such importance as to demand special notice. In the first place, every District Engineer should be required to draw up, at the time of the preparation of the Budget in each year, a clear account of the objects desired to be attained by the proposed expenditure of the following year. Such a document will necessitate some forethought; and, in the event of a change in the district, in either the Public Works or Revenue Department, it will be of great use. At the close of each year also, the same officer should prepare a full report of the preceding year's operations, and this should show what may have been accomplished, and with what results, in each branch of expenditure; in what respects the anticipations formed when the Budget was prepared have been disappointed or exceeded; what administrative improvements have been successfully introduced; what the condition and prospects of Public Works may be; and, in short, all matters of interest should be fully gone into. This report should supersede that now prepared by the Collector, and it should be forwarded through that Officer, who will be at liberty to make any comments which may seem called for, to the Chief Engineer. It should then be reviewed by the Chief Engineer and by the Members of the Board of Revenue, whose duty it should be, under an arrangement which will be suggested in a subsequent paragraph, to record their opinion on the work done, and on the success or otherwise of the Public Works administration of the District for the information of the Government. Such reports will, we consider, be of great value, and they will afford the very best data on which to form a judgment of the progress of the districts as regards Public Works, as well as of the interest and ability evinced by the officers of that department. It is also of great importance that more attention should be given to the Irrigation Registers than has hitherto been the case. It is laid down in Chapter V., paragraph 49, of the Public Works Code, that "The register of revenue shall be the basis of the District Engineer's proceedings in the repair of works; and he shall be strictly responsible for the correct use of the information before him, according to the rules." To this we would add that he shall take care that each of his Assistants or Range Officers is in possession and duly makes use of the information relating to the works within the limits of his charge. The Collector in like manner should require his subordinates to keep themselves thoroughly well informed in regard to the state of the works in their respective Divisions and Talooks. We must remark here how very different would have been the position of this Commission in reporting on the condition of the Irrigation works of the several districts, had the orders of Government, regarding Irrigation registers, which were issued in 1857, been duly carried out, and these registers kept posted up to date. We should have had the fullest and best information possible from each district regarding the expenditure on such works and its effects, and regarding also the absence of outlay and its results from the year 1852 up

to the present time, instead of which, from a few districts only have we received any detailed information at all. These Irrigation registers are all-important, and we would suggest that no considerations should be allowed to stand in the way of the speedy bringing up of all arrears of entries, and the preparation of copies and extracts to be placed in the hands of all who are to exercise, in any degree, a responsible control over expenditure on the works. We may add that the object is not likely to be secured by the mere issue of Circular Orders on the subject. Special arrangements should be made for scrutinizing and comparing the registers of different Districts and watching their progress.

32. *Advantages of the proposed system of Annual Reports.*—We are persuaded that if the system above indicated be carefully carried out, great benefit will result. The Collector, and the District Engineer will, between them and each from, in some respects, a different point of view, be fully informed of the circumstances and wants of each part of the district, and of the relative importance of the works, and they should therefore conjointly be charged with the responsibility of the distribution of the funds available, and in order that their proceedings and the success, or otherwise, of their administration may be thoroughly understood, they should be required to prepare a scheme of operations, and to produce a full report of the results obtained. In this way the Chief Engineer and the Board of Revenue and the Government will have the opportunity of forming a judgment, based upon very complete evidence, of the way in which the business connected with Public Works expenditure of this kind is being conducted, and of applying such remedies and directing such alterations of procedure as may appear to be necessary. Moreover, a great advantage will be gained by the facility which will exist for a comparison of results in one district with those in another, and for gradually bringing up each to the highest standard of efficiency attainable, by ascertaining and removing the causes of inefficiency, whatever these may be found to be. The joint responsibility above indicated must be rigidly enforced to be really felt; otherwise it will become a mere form as at present, the Engineer simply transmitting estimates prepared hap-hazard and without method or consideration, and the Collector countersigning them *pro forma* without scrutiny or inquiry. The District Engineer should be constantly on the move, and should visit every part of his district, not only to superintend his subordinates, but to make himself accurately and thoroughly acquainted with the requirements and condition of the several works under his charge; while, on the other hand the Collector, personally and through his divisional officers, should use the many opportunities he has of acquiring similar information; and the two officers should frequently meet and discuss matters affecting the material interests of the district in a spirit of unreserved cordiality.

33. *Controlling Agency. Re-establishment of the Office of Chief Engineer and abolition of the grade of Superintending Engineer recommended. Chief Engineer for Irrigation to be in future styled Superintendent of Irrigation.*—On the question of the superior Controlling Agency to be provided, we are in favour, partly on financial, and partly on other grounds, of abolishing the grade of Superintending Engineer, of restoring the office of Chief Engineer as it existed prior to 1862, and of replacing the Public Works Secretariat under the Civil Secretary, who has charge of the Revenue Department of the Secretariat. With a District Engineer for each District, who will be able to devote his whole time and attention to his limited charge, and whose duties will be entirely of the nature of superintendence, it will not be necessary, in our opinion, to have any intermediate Controlling Agency permanently

established between those officers and the Chief Engineer. For the present, at all events, we would retain the Chief Engineer for Irrigation, but would alter his designation to that of Superintendent of Irrigation, or some similar title consistent with his position as subordinate to the Chief Engineer, who should be the one responsible and controlling head of the whole Department. As we elsewhere point out, it would be undesirable, even if it were practicable, to separate Irrigation from other works in this Presidency. The past history of Irrigation shows that it is not necessary. Moreover, the ablest Hydraulic Engineer will naturally be selected to occupy, as at present, the post of Chief Engineer in this Presidency, and such an officer would, probably, be rarely willing to surrender the most scientific and important part of his functions to a junior Co-adjutor. Departmental clashing and inconvenience might therefore result from having two Engineers of co-ordinate authority, though for different branches. At the same time, it would undoubtedly be an advantage, for the present at least, when so much remains to be done to develop and perfect the Irrigation system of the country, to give to the head of the Department the aid of an officer specially qualified to act under him for the purpose. We therefore recommend that the Chief Engineer for Irrigation be retained, but, as already stated, under a different designation.

34. *Two Inspecting Engineers to be appointed.*—We would also place, at the disposal of the Chief Engineer, two Inspecting Engineers, to be employed in such inspection duties, either in connection with important works or projects, or in connection with Districts which may need inspection, as from time to time it may be deemed advisable to entrust to them. In order that the services of the Inspecting Engineers and Superintendent of Irrigation may be fully utilized, the Chief Engineer should be required to submit annually to Government a programme of the work which he proposes to assign to each of these officers during the ensuing year, reporting subsequently for previous sanction any alteration of the programme which may become necessary. With these officers available for examining into the details of important estimates or projects on the spot, and to furnish the Chief Engineer and Government from time to time with full information, as to the manner in which the general work of any particular District and all large projects are being carried on, we think that every useful purpose for which Superintending Engineers might be said to be required, will be answered, and that it will be an unnecessary addition to the cost of establishments to retain the grade of Superintending Engineer on its present footing.

35. *Inconvenience of the present arrangement under which the office of Chief Engineer is merged in that of Secretary to Government. Sir William Denison's opinion regarding it.*—Next, as to the expediency of restoring the Chief Engineer to his proper position, we regard it as a great defect in the present arrangements, that this important office is merged in that of Secretary to Government in the Department of Public Works. The practical result of this arrangement has been, that the Chief Engineer has ceased to exercise independently any of the functions appertaining to his office, and an important Department of the State is virtually left without a direct controlling head responsible for its efficient management. Up to 1862 the Department was under the control of the Chief Engineer, but the discussions which took place in 1860 and 1861 resulted in that officer being made also Secretary to Government in the Department of Public Works. The advantages expected from this change were that it would facilitate business, lessen correspondence and place the head of the Department in direct and free communication with the Government. After the arrangement had been in operation for more than a year, however, the

question again came under consideration at the beginning of 1863, and the then Governor Sir William Denison recorded the following opinion as to how the arrangement had worked :—

“ I am confident that the simplest, cheapest, and, if properly carried out, the most effective organization for the Public Works Department, would be to have a Chief Engineer who should be responsible altogether for the efficiency of the Department, he should have a competent Assistant in an Officer of rank and talent * * * * The District Engineers should correspond directly with the Chief Engineer, submitting all plans and estimates for his inspection and approval, after which the responsibility for the *character of the plan* rests with him, while that of *the execution* rests upon the District Engineers; the responsibility for the correctness of the estimate should also rest upon the Chief Engineer, he having been made acquainted by the District Engineers with all the peculiar circumstances affecting prices. If the Chief Engineer is to be useful as such, he cannot of course continue to act as Secretary to the Government. This appointment has not worked satisfactorily; there has been a confusion of functions, the same person being addressed at one time as Chief Engineer, and at another as Secretary to Government; and the Secretary has often to write a letter to himself. At the time when the appointment was made, I mentioned some objections to which it was liable, but I assented to it in the hope that the time of the Government and of the Chief Engineer would be economised. I find now that I have lost a Chief Engineer and have got merely a professional Secretary.”

No change was, however, made chiefly on the ground of the expense which a separation of the two offices would have involved and the Department has been practically without a Chief to this day. We are satisfied that this should no longer be the case, and that it is on every account advisable that the Chief Engineer should assume his proper functions of direction and control.

36. It has been urged that thus placed at the head of the Department, one Chief Engineer could not thoroughly perform the duties that would devolve upon him, and that deprived of the aid of Local deputies in the persons of Superintending Engineers, the work would prove overwhelming. But we cannot share in this apprehension. As the Chief Engineer will be in correspondence with nineteen District Engineers, we propose to give him a Professional Secretary with a suitable office Establishment to aid him. With such assistance, with the Superintendent of Irrigation and the Inspecting Officers at his disposal, and with the increased powers which, under the organization we have proposed, may well be conferred on the District Engineers, we have no reason to apprehend that the work will prove more than can be properly performed by the Chief Engineer.

37. *Chief Engineer to be an ex-officio Member of the Board of Revenue.*—We are further of opinion that this officer should be in constant and unreserved communication with the Board of Revenue on all questions affecting the revenue and the material progress of the Presidency, and with this object we recommend that he be an *ex-officio* Member of the Board, and be furnished with an office at Chepauk, in the range of buildings occupied by the Board. It should be a standing order that, on all general questions, not of a purely departmental or professional character, connected with Irrigation and communications, and the Budgets pertaining to them, and also on all references relating to differences of opinion between a Collector and a District Engineer, the Chief Engineer should consult the Board before submitting the matter for the orders of Government. In

such cases, the course of business would be as follows:—The Chief Engineer would circulate the papers to the other Members of the Board with a statement of his opinion. The decision of the Collective Board would be recorded in the form of proceedings; and, in matters requiring to be submitted for the orders of Government, the proceedings of the Board would be forwarded by the Chief Engineer. In the event of the decision of the Collective Board being in opposition to the views held by the Chief Engineer, it should be competent to him to record a Minute, which, after having been seen by the other Members, should be laid before Government. It should be incumbent on the Board, in like manner, to consult the Chief Engineer on all Revenue questions in any way connected with Irrigation, or with the administration of the District Road Fund. The same reasons, which render the close association of the local Engineer and Revenue Officers in the districts expedient and necessary, appear to us to require the proposed union of the Chief Engineer and the Board as the administrative heads of the two departments. This is but reverting to the constitution which obtained prior to 1856, and which was originally devised by the far-seeing wisdom of Sir Thomas Munro, as peculiarly adapted to the circumstances of this Presidency. It may be urged that the consultative functions, thus sought to be imposed on the Chief Engineer, are likely to hamper him in the performance of his proper duties and delay his office work; but as we have carefully limited the occasions on which he should sit with the Board, to those exceptional matters in which joint deliberation will be useful, and as he will be further relieved by a competent Professional Secretary from the details of office work, we are not apprehensive of such a result.

38. *Reunion of the Departments of Revenue and Public Works under one Secretary.*—The next measure we have to propose, and to which likewise we attach very great importance, is the reunion of the Office of Secretary to Government in the two Departments of Revenue and Public Works in one person. The business of these two branches of the Administration is, in this Presidency, so intimately connected, that it is most desirable that the duty of laying the papers before Government should be entrusted to the same officer in both. We regard this arrangement as essential in order to complete the union of the Revenue and Public Works Departments, and to secure the harmonious working of the two. The Revenue Secretary should be aided by a separate Under Secretary in the Department of Public Works, and that officer should be an Engineer Officer of some standing and experience, who will be able to render the Secretary material assistance in disposing of the details of the business coming before him. Thus, with a professional Assistant in his own office, and with a responsible Chief Engineer at the head of the Department, capable of advising the Government with regard to the professional aspect of questions coming up for disposal, we think that the Revenue Secretary will be quite competent to deal with the business of the Department, and that it will not be felt as an objection to him that he is an unprofessional Officer. We base this proposition on very strong considerations of the public interest. It is necessary for the purpose of securing to the Public Works Department the co-operation of the Revenue Officers throughout the country, and for the purpose of improving its relations with the people. To its failure in these respects, we see reason to attribute, in a great measure, its shortcomings as a Department; and if it is of importance to remove these defects, the principle of combining the two branches should, it appears to us, run through the whole organization. The business of both Departments was in the hands of the Revenue

Secretary up to 1862, when the Chief Engineer was brought into the Secretariat and made Secretary for Public Works; but, after this arrangement had existed for little more than a year, Sir William Denison, himself an Engineer, gave in his decided opinion that it would be better to revert to the old plan, to make the Revenue Secretary also Secretary to the Department of Public Works, giving him a special Assistant for that Department, and such clerks, &c., as he might require.

39. *Objections to the arrangement considered.*—It has been objected to this arrangement that revenue interests are not the only ones which have to be considered, and that much of the business with which the Revenue Secretary will have to deal will be entirely unconnected with, and foreign to, these, and that the measure will be highly unpopular with the large body of professional Officers in the Department, and will make it far less easy to enforce that ready obedience and attention to orders which is indispensable, if the administration of the Department is to be really successful. These objections would have great force, if it were sought to place the Department under an unprofessional head; but the Chief Engineer will be the real controlling head, while the Revenue Secretary will be simply the medium of communication between him and the Government. We therefore fail to see that there will be any valid ground for dissatisfaction. The present relations between the Revenue and Public Works Officers of all grades clearly point to the necessity of a radical change, and the remedy appears to us to lie in restoring the old bond of union between the two Departments.

40. *Separation of Irrigation from other Public Works. Reasons why not considered advisable.*—Another subject which we have had to consider is the suggested separation of Irrigation from other Public Works and of the establishments employed upon them. Question 21 of Circular 4 was framed to elicit opinions on this point, and it will be seen that on no single question is the evidence, both of Revenue and Public Works officials, so entirely unanimous as the answers received to this question show to be the case, and they are all adverse to the idea of any such separation. We are altogether of the same opinion, and we think that while, on the one hand, there is no necessity for any such sub-division of work and duty, on the other hand, it would be impracticable to provide an efficient establishment, if so sub-divided, without a very considerable increase of cost. In saying this, we do not at all under-rate the importance of Irrigation, which is quite certain never to be overlooked in this Presidency, and we fully admit that special provision is necessary in view to the steady and systematic prosecution and management of such works, but we consider that this is secured by the appointment of a Superintendent of Irrigation. The circumstances of this Presidency are peculiar and probably entirely different from those of other Governments of this Empire. The Irrigation works are not confined to large works in a few localities, but in nearly every district they are to be found in all directions, and as works of this description are extended, they will be still more general, and, as the intention is, every part of the country will have the most made of the water-supply which it possesses. It would be comparatively easy to provide for the formation of Irrigation charges in four or five districts, but the fact is that this is really done already, and will be still more effectually accomplished under the District Engineer system, for a not inconsiderable advantage of that arrangement will be that the Godavery, Kistna, Pennair, Cauvery (in Tanjore), Vellaur, and Tambrapoorney systems will each be entirely in charge of a District Engineer, instead of, as would be the case with the Executive

Engineer arrangement, being, as regards the three largest at any rate, divided into three, four, or five separate and independent charges. Under the arrangements we propose, the best Irrigation Engineers will naturally be appointed to these districts, and their duties will be mainly the proper care, management, and development of the works of Irrigation. They must, if competent for this work, be fully able to manage the district roads, for which their Range Officers will have subordinates specially provided, and they will do this not only without difficulty, but with advantage, for there are times of the year when Irrigation repairs are necessarily suspended, and when they will have time to devote to works of other descriptions, and they will thus, throughout the year, be able to make the best use possible of the establishments under their orders, and to keep them fully employed. We consider also that it is very desirable that the area of executive ranges should not be unnecessarily enlarged, and this would be the inevitable result of a separation of Irrigation from general duties throughout the department, while it would increase considerably the difficulty of obtaining a sufficiency of labour, even now a matter of no inconsiderable importance. We apprehend no practical difficulty whatever in providing for the efficient management of works of all kinds, and we feel assured that, if our scheme of organization generally be adopted and managed by competent officers, the Government will have no reason for desiring any separation of Irrigation from other works. If Colonel Anderson's memorandum,* which explained the scheme of establishment which he had drawn up, be referred to, it will be seen

* Enclosure of letter, dated 18th December 1867.

that while, in deference to the views which had been expressed by the Government of India, he proposed to introduce, what he himself terms, "a half measure" of separation, his experience had led him to conclude that such a system was generally inapplicable to this Presidency, and that even where he thought it might be practicable to constitute irrigation divisions, it was still necessary to give the officers in charge of them not only the management of the Irrigation, but of all other works comprised within their limits.

41. *Other points connected with organization to be considered.*—There are some other points connected with the organization of the Public Works Department which we desire to bring under the notice of Government, and on which we think it advisable to make the following recommendations:—

42. *Employment of Europeans as Overseers not advisable, with reasons for this opinion.*—The employment of Europeans in the grade of Overseer is, we think, inadvisable. Unless these men be paid very much more than natives performing the same duties, we do not think that they can live in tolerable comfort, and we feel assured that the duties of appointments of this class can be more successfully carried out by natives than by any one else, and that the pay, which is altogether insufficient for a European, will secure the services of thoroughly qualified and efficient natives. We are convinced that the life of a European Overseer employed on the general duties of the department, and obliged to travel about from day to day without having either then, or when at head-quarters, any suitable associates, must be one of great hardship, and it is not surprising that many have, under such circumstances, with probably more or less sickness superadded, taken to intemperate habits, and lost the good characters with which they have entered the department. Men of this class do not generally get on well with the natives with whom they are brought in contact. They do not usually understand their language well; they are

unacquainted with their habits and customs and prejudices, and even when willing to be obliging and conciliatory, they but seldom know how to set about acquiring the confidence of those for whose benefit much of their work is intended. On large works, however, Europeans are often most valuable assistants, and we would recom-

May be appointed as Supervisors,

mend, therefore, that those who, at the Civil Engineering College, show an

aptitude for the work of the department should be required to qualify as Supervisors, when they may be allowed to enter the department in that grade on the occurrence of vacancies. It should, however, in all cases be considered a necessary part of the qualification that they should be able to converse freely in either Telugoo or Tamil, and that good conduct and a conciliatory manner towards the natives be considered essential requirements. As Supervisors, they will have sufficient pay and travelling allowance to enable them to live in comfort and respectability; and if, in the first instance, they be employed under officers able and willing to instruct them in their practical work, and to show them how their duties are to be conducted, there can be no doubt their energy and resource will be of great advantage in the execution of those descriptions of work in which these qualities tend to ensure success.

43. *Natives are not at present sufficiently represented in the higher grades of upper Subordinate establishment.*—We find from the annual list of the establishments of the Public Works Department, corrected up to the 1st January last, that out of fourteen Sub-Engineers only one is a native, and that out of forty-one Supervisors but ten are natives. Notwithstanding the views expressed by several Professional Officers, we are satisfied that it is expedient to hold out to the natives of the country better prospects of promotion in the Department than have as yet been open to them. We would remark that natives have shewn themselves well qualified for the performance of all the ordinary duties of the Public Works Department, that they have within recent years successfully filled many offices of trust, and that in many respects they have strong claims to suitable employment, and have many advantages in ascertaining correctly the wants of the villagers, and in being able to explain to them to what extent these can, or cannot be provided for by the Government under the rules in force. We think that a serious mistake has been made in the administration of the Department in not fostering and encouraging Native talent and enterprise in a profession for which the old hydraulic works of the country show that the Native of this Presidency possesses a remarkable degree of natural aptitude. We consider that two-thirds of the appointments in the grades of Supervisor and Sub-Engineer should be reserved for them, and this arrangement will not by any means give them too great advantages, or more than a sufficient opening for advancement.

44. *Occasional appointment of natives as Supervisors on first appointment recommended, high qualification to be required.*—In the next place we would recommend the occasional appointment of natives to the department as Supervisors, in order to stimulate exertion on their part at the Civil Engineering College, and to afford an opportunity for well-educated and thoroughly well-qualified men of this class, who may have some taste for engineering work, making a fair start at an age when it may be anticipated that the distinction will be appreciated, and lead to their seeking to qualify themselves for promotion to the grade of Assistant Engineer, to which, as yet, no native has attained. We would limit these direct appointments to one in

four of the vacancies reserved for natives, and none but those who have distinguished themselves at College should be so appointed; we do not think that it would be advantageous to offer any lower inducement than this to natives who may obtain, as some have done, the B. C. E. degree, or who may have been favourably reported on in that examination.

45. *Engineering classes in Provincial Schools suggested.*—We would further suggest that, as it will always be difficult for natives to come from distant districts to Madras to qualify as Overseers at the Civil Engineering College, it will be of advantage to institute Engineering classes in the Provincial Schools, the examinations being conducted by means of papers sent from the College, and the results being determined by the College Examiners. In this way, exactly the same standard will be maintained throughout the country, and the acquisition of the necessary knowledge will be much facilitated. For the present, at any rate, it will be advisable to maintain the existing rules as regards the examination for the higher grades of the subordinate establishment.

46. *Lower Subordinate establishment required. Three classes of maistries should be entertained.*—When the re-organization of 1863 was carried out, the lower subordinate establishment, the members of which were then called Sub-Overseers, was abolished. Many of the Sub-Overseers were doubtless of little or no use; for on the formation of the Public Works Department in 1857, it was considered necessary to provide for members of the old maramut establishment, without much regard for their fitness for the duties of the appointments to which they were transferred, but there were nevertheless many very useful men got rid of, whose services could be ill-spared, and the want of them has since been much felt. In this Presidency, in which there are so many petty works to be repaired and maintained, as also so much work to be done, which, without a numerous subordinate class of officials, cannot be attended to at all, but which is essential nevertheless to the welfare of the agricultural classes, and to the security of the revenue, a considerable establishment of maistries is necessary, and the officers of the department have been obliged to make use of temporary establishments, which are not as efficient as more regularly trained men, while from the circumstances of their engagement they must be tempted to make as much profit as possible during the short period of their employment. We recommend, therefore, the regular entertainment of maistries in three classes or grades, the pay of the lowest to be 25 Rupees a month, and that of the highest 50 Rupees. The qualifications of Sub-Overseer under the organization of 1857 are laid down at paragraphs 554 and 555 of the Circular and Standing Orders of the department, and these may be taken generally as an indication of the proper standard for maistries, but we do not think a first class maistry should be required to be “able to survey with the chain and compass, or to take levels;” what is necessary is a practical knowledge of the proper way of estimating for, and executing ordinary earth-works and minor masonry works, such as small tank, sluices and road tunnels, and of the preparation of materials, together with the ability to lay out simple work from plans, to keep simple accounts, and to measure work done in a systematic manner, in anticipation of the examination which should always be made by responsible officers. We would leave the appointment and dismissal of maistries in the hands of the District Engineer, who should be entirely responsible for the efficiency of this portion of the permanent establishment, but who should be required to record the grounds of appointment and dis-

missal in each case, and to furnish a copy of the latter record to each man dismissed by his orders.

47. *Consolidated salaries for all grades recommended.*—We consider it advisable to recommend that the salaries of all grades in the Public Works Department should be consolidated, and that the pay drawn *in this department* should be the same for all, whether the appointment be held by a Military or Civil Officer. Of the justice of this arrangement, there can, we think, be no doubt. The existing rules on the subject of salaries are not only complicated, rendering it impossible to fix the cost of the establishment for any year with precision, but they are so framed as to give satisfaction to no class, though of course individuals may have no objection to them when they happen to benefit by them. They occasion very wide differences of pay to different officers for doing precisely the same work; and while the result is, as regards Military Officers, that a considerable portion of the pay fairly due to those of low Military rank is transferred to those of higher rank, who occupy the same position in the department, it unfortunately follows that the former draw considerably less, and the latter considerably more, than Civilians of the same grade, and it can hardly be surprising that such rules have produced almost universal dissatisfaction. The only difference which we propose should be retained in the total emoluments of a Military Officer and of a Civilian is that, when the former is not in the Staff Corps, he should be allowed to draw the pay proper of his Military rank in the Military Department. Staff Corps Officers in civil employ are practically Civilians, as no branch of the Military service has any special claim to their services; but as regards Military Officers not in that Corps, the Military Department has a claim which has always been recognized, and which has always been most cheerfully and readily met whenever an emergency has arisen, though leaving Civil for Military employ has involved the loss of one-half of the Civil salary. The only charges against the Military Department not now falling upon it would, we are informed, be the pay proper of the Royal Engineers of the Imperial List, and there will, we presume, be no difficulty in arranging this, because those officers fill the places, which, but for the determination to allow the Indian Corps to die out, would have been occupied by the officers of the latter, and these officers of the Imperial List are equally available and equally ready for Military service when required.

48. *Reasons for alteration of scale of salaries from that now in force. Scale recommended secures efficiency and economy.*—In remodelling the Public Works Department on the District Engineer system, it will be necessary to adopt a scale of salaries different in some grades from that which is in force at present in this Presidency. We would make the Department more attractive to natives of a superior class than it is at present; for it must not be forgotten that, since 1857, when this special Department was first organized, the openings in all branches of the Civil Administration have greatly increased both as regards number and rates of pay; and it is not desirable that a Department like that of Public Works should be treated ungenerously in comparison with other branches of the Administration. The salaries of the Chief Engineer and of the Superintendent of Irrigation should be fixed at the rates now assigned to the Secretary to Government and Chief Engineer for Irrigation respectively. To the two Inspecting Engineers we would assign consolidated salaries of Rupees 1,600 each. The District Engineers we would divide into three classes, the salaries being 1,200, 1,050 and 900 Rupees respectively.

The mean is Rupees 1,050 against Rupees 943 in the organization of 1857, when there were but two classes; and when the expenditure on Public Works was about half what it now is, while the cost of living has very greatly increased. We may point out also that many of the District Engineer's charges will be more important than some of the Superintending Engineers' Divisions in other Presidencies; for instance, in Tanjore, there are upwards of 700,000 acres under irrigation, in the Kistna about half that area, and in the Godavery upwards of half a million of acres, while in Tinnevely, South Arcot and Nellore, the value of thoroughly able officers cannot but be great; we desire therefore to offer every reasonable inducement to officers, who are in the Department, to make themselves as useful as possible, by doing all that is in their power to promote the welfare and advancement of the several districts; and we wish also to induce well educated gentlemen to enter the Department while young, and to look forward to rising in it to positions of responsibility by a diligent attention to their duties during the many years which must elapse before they will obtain the charge of a district. A greater difference should be made between the mean pay of the District Engineers and that of the Assistants, than formerly existed, in order to make the salaries more in accordance with the responsibilities involved. The rate of pay for Probationary Assistant Engineers should be fixed at Rupees 250, which is as low a salary as a young officer can possibly live upon, in a way befitting his position, at the present time in most parts of this Presidency. When an Assistant has passed the test in languages, and has been favorably reported on, with regard to knowledge of his duties, acquaintance with rates, and all details of the work appertaining to an Assistant Engineer, and we would suggest that a regularly prescribed examination to ascertain these points should be required to be held by or under the orders of the Chief Engineer, he would become eligible for promotion to the grade of Assistant Engineer of whom, we think, there should be three grades with salaries of 600, 500, and 400 Rupees respectively. Probably in most cases eighteen months would be required to qualify for this promotion, and, after passing his examination, and being called upon to undertake considerable responsibilities, the scale of remuneration proposed appears to us to be moderate. We would also propose two grades of Sub-Engineers and two of Supervisors, with salaries of 300 and 250 Rupees for the former, and 200 and 150 Rupees for the latter.

49. *Promotion by merit should be the rule.*—We would further recommend, that promotions throughout the Department should be made on the ground of merit rather than by seniority. The successful performance of duties depends upon sustained effort, and upon a willingness to devote time and thought ungrudgingly to those duties. If the comparatively lazy and incompetent be allowed to get on as well as the more useful and valuable members, the interests of the Government, and the efficiency of the Department cannot but suffer, for the best will not be made of the indifferent, and the zeal of the more intelligent and capable members will be diminished.

50. *A change in the rules regulating travelling allowance considered advisable. Arrangement advocated explained.*—The existing rules which regulate the grant of travelling allowances, appear to us to be needlessly vexatious in their operation, and, as is generally the case, under such circumstances, those who do their duty the most conscientiously suffer the most. It would seem to be only reasonable, that those who are required from the nature of their duties to keep up a marching establishment, should receive regularly, and constantly, the sum deemed requisite for the

maintenance of this equipment, according to a prescribed scale, and we accordingly recommend, the grant of half the usual allowance to each grade as a fixed charge, dependent only upon a certificate that the necessary equipment has been maintained, and the other half, in addition, when and whenever the officer or subordinate is absent from Head-quarters, provided his superiors consider that he was properly so absent. We consider that the superior officers of the Department should be required to see that their subordinates do their duty thoroughly, whether that duty consist in, or require, much or little travelling; and we think the proper remedy for unnoticed inefficiency of subordinates, is the punishment of those whose business it is to look after them, rather than in the issue of rules which tend to destroy, or at least injuriously affect, the efficiency of the members of the Department generally. We would, therefore, vest the power to pass the varying allowances of subordinates and Assistant Engineers, in the District Engineer, and of District Engineers, in the Chief Engineer.

51. *The Commission have not deemed it advisable to prepare any detailed scheme of Establishment Course suggested for ensuring the effective performance of this duty.*—We have not deemed it advisable to prepare any detailed scheme of Public Works Establishment. Judging from the experience of the past, we are convinced that this is a duty which cannot be satisfactorily performed by a Commission sitting at the Presidency. The course which we would suggest is, that in the event of the system of organization recommended by us meeting with approval, the Governor in Council should appoint a Chief Engineer with a Secretary and the requisite office establishment, two Inspecting Engineers, and twenty District Engineers, at the same time transferring the Public Works Department of the Secretariat to the Revenue Secretary, and placing under the latter an Engineer Under Secretary; and that the Chief Engineer should thereupon take steps to frame, with the aid of the Inspecting Engineers, the Superintendent of Irrigation, and the District Engineers, the establishment required for each district, and when the whole has been completed, to submit it for the approval of Government. We have already indicated the scale of salaries which, in our opinion, ought to be assigned to the different grades. The number of Officers and of Subordinates of each grade required for each district, their location and the apportionment of their respective duties can, we feel sure, be best determined by an Officer on the spot, after careful examination of the condition and wants of the district, and after consultation with the District Engineer and the Collector. We would recommend that each district should be visited either by one of the Inspecting Engineers, or by the Superintendent of Irrigation, (the latter Officer would naturally be deputed to the Delta Districts), who should be instructed to confer with the District Engineer and the Collector, and then to submit to the Chief Engineer the scheme of establishment which he may deem most suitable, noting any points on which the local Officers may differ from him, or from each other. It will, of course, be necessary to prescribe a maximum limit, within which the aggregate cost of the Public Works Establishment is to be kept, and in this aggregate must be included the requisite provision for Projecting Engineers, and, as far as may be, for Officers required for Special Works. We find that the present sanctioned expenditure on establishments is Rupees 19,15,791 per annum, but that the actual expenditure has risen to Rupees 20,08,191 per annum. This is exclusive of the petty establishment, costing Rupees 1,27,225 per annum, which is employed on Local Fund Works. We are under the impression that, notwithstanding the increase

in the expenditure on works, since the Department was organized in 1856, an annual allotment of nineteen lakhs, or about 21 per cent. on the aggregate expenditure from Imperial Funds, ought to be sufficient to provide an adequate establishment for Imperial Works, and for the duties at present discharged by the Department in connection with works executed from Local Funds. As the expenditure from the latter source increases, as it doubtless will increase, the cost of the additions to the establishment, which may be requisite, should be met from the Local Funds.

52. *Part III. of Colonel Strachey's report, "on the returns required for the exhibition of the financial results of irrigation work." Accounts Branch of Public Works Department to prepare Capital and Revenue Accounts.*—This part of Colonel Strachey's Report is the last subject on which we have been called to express an opinion. The first

* In paragraph 106.

proposition made* by that Officer is that the Account Office of the Public Works

Department should exercise a discriminating audit of the expenditure of Public Works Officers, with a view to distribute that expenditure in a proper manner between the Capital and Revenue accounts of irrigation works and other heads of charge, and to this we see no objection.

53. *Capital outlay has to be determined and classified.*—Paragraphs 108 to 113 relate to the determination of the Capital outlay on works, and to its classification in such a way as will enable the cost of the different component parts of works in different parts of the country to be compared; we apprehend that, in the case of new projects, these propositions may be without difficulty carried out, but that for those already executed, or in an advanced state of progress, it would be impracticable to ascertain what the actual outlay had been on any but some of the principal items of the classification given at page 34* of the Appendix

* Referred to in paragraph 115.

to the report. When old works have been improved, it has been customary to

take the average revenue of a period of five or ten years prior to the commencement of such improvements with that afterwards obtained, and to compare the difference with the outlay; but, in one respect, the accounts have been defective, in that they have not included the cost of establishments, and this defect may, without much difficulty, be remedied for the future, though as regards the past it will probably be found advisable to make an arbitrary addition of 10 per cent. to the cost of the works, to cover the probable expense incurred in supervising them.

54. That the sum on which the results of expenditure are calculated should

Paragraph 114.

include all capital outlay from whatever source the funds may have been

provided is undoubtedly the only right arrangement, and in this Presidency it is believed that it has always been adopted.

55. *Nature of establishments employed on construction of irrigation works.*—Where large new works are sanctioned for execution, there will, according to the magnitude, be either—

A complete establishment for them, or
An establishment more or less subordinate.

In the first case, as Colonel Strachey remarks,* there will be no difficulty in debiting the works with this portion of their real cost. In the second case, we

* Paragraph 116.

think that the charge should be paid with reference to the share, based upon expenditure, of the cost of that part of the Public Works Establishment of the division or district which is not specially provided for the work. Thus, if the special provision included only lower subordinates, the work would be charged with its share, in direct proportion to the expenditure on it, compared with that of the rest of the division, of the whole establishment superior to the subordinate grade; while, if the special provision included subordinates and Assistant Engineers, its share of the general establishment should not include any part of the cost of those grades. The proposition made by Colonel Strachey to debit a fixed charge of 10 per cent. would not be approximately accurate as regards the generality of works in this Presidency, and, unless fair accuracy be attained, we think it would be well to omit all establishment in the first instance, and at the year's end to debit each work with a share, in direct proportion to the expenditure, of the whole of the Public Works establishments, the cost of which would thus be entirely distributed every year to Irrigation New Works and Repairs, to Communications, Buildings, &c. This would be the simplest plan as regards account, and for all practical purposes, it would, we think, answer sufficiently well. Were this done, we would make the cost of investigations, preliminary to the sanction of works, when such were made by special establishments, a part of the estimate; and, if the latter were not sanctioned, this outlay would be so much loss, which would not be fairly chargeable to anything else.

56. *Revenue Account.*—Paragraphs 117 to 132 refer to the Revenue Account of works, and the remarks made in paragraphs 117 to 119 require no comment. We entirely agree with the view expressed in paragraph 120 that the practice of deducting yearly a certain per-centage from the Capital outlay on the ground of deterioration is incorrect. So long as a work is maintained, it should be kept in a state of efficiency, and, as a matter of fact, in the case of works not liable to gradual and inevitable deterioration and ultimately to extinction, the tendency is to improve, by expenditure which comes out of revenue, and thus really to increase their capital value. Where, as in the case of Tanks, deterioration is inevitable, the money value of such deterioration should be a charge against revenue, in which way alone can correct results be obtained. If a work be swept away or so injured as to be useless, it will, according to the state of its accounts at the time, have been a failure, or there will be a balance of profit. If not restored, the interest in the Capital will be lost; and, in the Accounts of a Province, containing perhaps many such works, the amount of that interest would, so far, lessen the beneficial results of expenditure taken as a whole, and reduce the average return from the whole. If it be decided to restore the work, it may be, we think, an open question whether the old and new accounts should be incorporated or not, for in some cases a restoration might be likely to be advantageous, if considered on its merits independently of past transactions, but on the other hand, it might be incapable of yielding any surplus income after providing for losses previously sustained. This view is, we think, in accordance with paragraph 121, though the circumstances contemplated there are somewhat different.

57. *Mode of estimating Revenue.*—Paragraphs 122 to 128 refer to the way in which the revenue derived from Irrigation works should be estimated, and the views expressed are in accordance with the practice in this Presidency, which is to credit works with the whole *increase* of land revenue, including water rate where this is separate on the area affected.

58. *Old net Land Revenue not easily ascertainable. Reasons why charges for share of Land Revenue Establishments need not be charged.*—We think there will be considerable difficulty in ascertaining the old *net* Land Revenue of the area affected

Paragraph 129.

by irrigation works, owing to no accounts for such a purpose having been kept. In the remunerative statements, the average revenue, taken as the standard by which to judge the effect of improvements, has generally been derived from the actual collections, without deductions sometimes even on account of repairs, and this might comparatively easily be corrected, but the other deduction on account of Land Revenue establishments could not easily be made. This forms the third description of charge proposed to be entered on the debit side of the Revenue Account mentioned in paragraph 129. The other three can and should be exhibited, but we think that no useful purpose would be served by requiring the cost of the Land Revenue establishments to be exhibited, for their duties are various; they are not in direct proportion to the revenue of a district; and to obtain any degree of accuracy would, we believe, involve more trouble than the result would be worth. It might be truly said that Irrigation Revenue is in some districts more easily collected than in others, and that, therefore, the proportion should vary; there are also local peculiarities of land tenure and customs, which affect the strength and cost of Land Revenue establishments, *i.e.*, of the Collector's establishment for all purposes, and the determination of the proper charge in each case would be a matter of labor and difficulty. We are, therefore, averse to the introduction of this item into the accounts of individual works. It will not be very far wrong to consider that the reduction which the old Revenue would have had to bear on their account is about equal to the share which the new Revenue should carry, and, therefore, that a comparison of the two will be equally valuable with or without such deduction; and, if it be said that this may be true for Madras, but would vitiate comparisons between the Madras Irrigation Works and those of the North-west Provinces, we would remark that it will be a simple matter to eliminate such charges from the accounts of the latter, and then to make a comparison.

59. *Capital outlay should not generally be reduced without a corresponding debit to Revenue.*—Our previous remarks (paragraph 67) will show that we agree with Colonel Strachey as to the proper way of effecting reductions of capital outlay; we may add, however, that Revenue can only be debited to the extent of the amount available, and when a work has ceased to irrigate, and part of the capital, after absorbing the whole available Revenue, remains to be dealt with, it can only be arbitrarily written off.

60. *General or Provincial Accounts of Irrigation Works.*—The rest of Part III. of the Report refers to accounts of irrigation generally, as distinguished from large separate works, for which special accounts are to be kept. We would include the large as well as the small works in those general accounts, and we see no objection to, but rather a probability of beneficial results from their preparation; we think also that, for these general accounts of the whole Presidency, prepared, as we would suggest, district by district, it will not be difficult to enter the share of the Land Revenue establishments appertaining to Land Revenue irrigated, though our opinion has been already stated to be adverse to the entry of an item of this kind in the accounts of separate works, which would, for one work perhaps, require the sub-division of the establishments of three or four talooks into several or many

shares, one for Judicial, another for Salt, another for Land Revenue ordinary, and a fourth for Land Revenue irrigated, and a fifth for Stamps, Income Tax, and Miscellaneous Revenue. This sub-division of charges may be managed once a year for a whole district, but the labour would be increased greatly were it to be required for each large work.

61. *Summary.*—Colonel Strachey, in paragraph 145 of his Report, recapitulates his proposals as follows :—

1st. That the Accounts Branch of the Public Works Department should henceforth be made responsible for the exact preparation of all the Capital and Revenue Accounts of Irrigation works.

2nd. That the outlay chargeable to capital should be classified for all works in an uniform manner.

3rd. That in the separate yearly Revenue Accounts of irrigation works, the income should be held to include all increase of land revenue actually obtained on irrigated lands, a corresponding share of the ordinary Revenue establishment, proportionate to such increase, being at the same time shown as a charge.

4th. That the increase of Land Revenue should be ascertained simply by deducting from the actual Revenue on the irrigated lands from time to time the former Revenue received, before the irrigation began, or before the improvements charged to the Capital Accounts were brought into operation.

5th. That in the general annual accounts of Revenue and Expenditure, the present head of *Land Revenue* be divided into two: *Land Revenue Ordinary* and *Land Revenue Irrigated*, and that the entire Land Revenue of irrigated land, together with all direct Revenue derived from irrigation works, be credited under the latter head, and that all the corresponding charges be debited in like manner. With regard to the first proposal, we have already said that we see no objection to the Accounts Branch of the Public Works Department being held responsible for the correct preparation of the accounts of expenditure in that Department, and we may now add that we consider that the Accounts Branch may properly be required to compile the accounts, including the particulars which will have to be furnished by the Revenue Department, and which should, we think, as regards works, for which separate accounts may be ordered to be kept, be sent through the local officers of the Public Works Department, and for the general annual accounts through the Accountant General to the Madras Government.

62. On the third proposition we need only remark that a share of the ordinary Revenue establishment should not, in our opinion, be charged against individual works, because the calculation of such a charge would be difficult, and would produce no useful result; we may add that it would be a mistake to suppose that in this Presidency, the conversion of dry into irrigated cultivation adds materially to the cost of the Land Revenue establishments taken as a whole; on the contrary, by rendering collection more easy, it does sometimes make the fair share of charge against a particular area of cultivation really less than was the case before irrigation was introduced or improved, though of course no actual reduction of establishment is made, but more time can be devoted by talook establishments to other duties. In the other proposals we have already expressed our concurrence, and no additional remarks are necessary.

63. We offer these remarks on the distinct understanding that the proposed separation of the Irrigation Revenue from the General Land Revenue is to be a mere matter of account, designed to show the Home and Supreme Governments, at a glance, the Irrigation Revenue of the Presidency, and that the change is not intended to carry with it, now or hereafter, the transfer, from the Revenue to the Public Works Department, of any part of the duty of determining and collecting that Revenue; for we entirely agree with the Board of

Proceedings of the Board of Revenue, 7th April 1868, No. 2589.

Revenue that in this Presidency "irrigation laws, rights and privileges are so interwoven with, and form so essential a part of the land tenures, that any such transfer could not be effected without the most seriously injurious consequences, alike to the interests of the State and the people, and would be highly unacceptable to the latter."

64. We regret that it is not in our power to submit a report which has received the unanimous concurrence of the Members of this Commission. The two Engineer members, Majors Mullins and Shaw Stewart, dissent from the conclusions arrived at by the majority on several of the most important of the questions which have engaged our attention, and have stated their reasons in Minutes of Dissent which are appended to this Report. Mr. Robinson, while expressing a general concurrence in the Report, differs from the opinion stated in the 12th paragraph, to the effect that it is not expedient to transfer the minor irrigation works to the immediate charge of the Revenue Officers, and has recorded his views on this subject and on one or two other points in a Minute which is annexed to the Report.

Vide Appendix A.

Vide Appendix B.

We have the honor to be,

My Lord,

Your Lordship's very obedient

and humble Servants,

(Signed) A. J. ARBUTHNOT.

(„) W. ROBINSON.

(„) V. RAMIENGAR.

MADRAS, 5th April 1870.

APPENDIX A.

MINUTE OF DISSENT BY MAJOR MULLINS.

I regret that, while agreeing with much of the report of the majority of the Public Works Commission, I am unable to subscribe to many of the opinions expressed, or to concur in the principal recommendations made in connection with the organization of the Public Works Department. As regards this latter question also, it is with much reluctance that I find myself obliged to express views directly opposed to those of the majority, and to support my opinions by arguments which I would much rather not have had to bring forward in a document of this kind. No other course is however open to me: the report contains recommendations, which, as the Proceedings of the Commission will show, were brought forward and discussed, and abandoned principally on the ground, that it was found that they would be considered highly objectionable by all the Members of the Public Works Department, as also that they would render it impossible for the Commission to submit a unanimous report, and that the dissentients would be obliged to criticise, in a way which could not but be distasteful to the officers concerned, much of the evidence which had been received. On the abandonment of the objectionable resolutions, I was asked to draw up the draft report which I proceeded to do, and it was not until some weeks after that had been completed, that I learnt with surprise that the Members of the Commission, who have signed this report, had reverted to the ideas regarding the arrangements of the Public Works Department, which had been before considered to be impracticable. The draft report was confessedly and necessarily a compromise, but it was based upon the principle that the officers of each department should have assigned to them such duties, and such duties only, as they were competent to perform, and that responsibility should rest where it could be effectively exercised in the interests of the State. I cannot admit the dictum that, because the officers of a certain department have, under very different circumstances, been for a time the only influential advisers of the Government, they should always continue to be so. Good government appears to be altogether inconsistent with any such idea, and while I am not surprised that many uphold a system which is incompatible with the great increase of public business, I am glad that the evidence affords no warrant for considering that the radical changes advocated are in any way necessary.

2. The order of Government, in the Revenue Department, of the 18th January 1869, No. 143, indicates that the complaints of the Revenue Authorities, regarding the deterioration of minor irrigation works, occasioned the appointment of a mixed Commission to investigate the subject, and to this was doubtless due the circumstance that a report on the organization of the Public Works Department was called for in the Revenue Department, as also that in the Commission the Revenue or Civilian Members greatly predominated.

3. Such being the case, and the Government having stated that the alleged *deterioration* of minor irrigation works had occasioned serious anxiety, it might have been naturally expected that the Revenue Officers would have been prepared with the fullest information in support of their complaints. The Commission took accordingly certain steps to ascertain the real facts concerning those works, and it will be seen, on referring to Circular No. 5, with the answers thereto, with what results. It may be said generally that the Revenue Authorities knew nothing more about these works than that they were not in that state of efficiency which was desirable, and this every one knew before. They had neither examined into the actual circumstances of the minor irrigation works, nor compared their present condition, as indicated by the cultivation and revenue under them, with their former state. They had not ascertained from what causes works, under which the cultivation

had diminished, had become less efficient: they appear to have, without much discrimination mixed up old ruined works, abandoned years and years before there was any Public Works Department, or perhaps before the British came into possession of the country, with others which had become useless during recent years: they seem to have made no inquiry as to whether the works, which they considered to have deteriorated or to be inefficient, were capable of being restored to complete efficiency: while implying that the management of those works since the formation of a Public Works Department had been less satisfactory than before, they would appear to have entirely ignored not only the actual condition of the means of minor irrigation in former years, but the fact that for the most part what little has been done to improve them has been effected during the period of alleged deterioration. It would seem to be somewhat remarkable, to those unacquainted with the position occupied by the Revenue Officers in this Presidency, that complaints founded on so little actual knowledge, leading indeed from nothing to nothing, should have occasioned anxiety to the Government until it had been found that the opinions expressed by the Collectors and the Board of Revenue were supported by reliable data. It might have been thought that the Revenue Officers, having at their command all the records of past years, would have been able to show with great clearness, and in full detail, the actual circumstances of the works, the condition of which they considered to be unsatisfactory; but it is the fact, as the evidence shows, that very few officers had really examined at all into the question before the appointment of the Commission, and that, even after a special call had been made by Circular 5 for information, from no one district has any complete statement been obtained.

4. It will be seen that the report of the majority contains no definite information whatever regarding the minor irrigation works of any part of the country. Some officers, however, did supply details of more or less value, and these should, it appears to me, have been noticed.

No definite information regarding Irrigation Works in the report of the majority.

Summary of the information available.

5. The districts from which the statements have been received are the

Kistna.	South Arcot.
Madras.	Tanjore.
North Arcot.	Kurnool.

6. *Kistna*.—For the sub-division of this district the Sub-Collector has furnished two statements, the one in answer to Question 23 of the Circular No. 5, giving a list of twenty-two tanks, under which the revenue shows a falling off during the last ten years, and from this it appears evident that in some cases the tanks have been going from bad to worse, while in others the variations in the revenue would seem to indicate that other causes than the inefficient condition of the tanks have been at work. The other statement gives, for 10 years up to 1869, the particulars of ayacut area and assessment, collections, amount expended on repairs, and sum supposed to be required for expenditure, for seventy-four tanks in the Guntoor Talook, for thirty-four tanks in the Krosur Talook, and four tanks in the Baputla Talook. As regards the seventy-four tanks in the Guntoor Talook, the following is an abstract of the statement:—

	Acres.	Assessment.
		Rs.
Ayacut.....	2,858½	18,241
Occupied.....	2,596	16,716
Average revenue.....	...	10,715

On forty-three tanks, Rupees 13,433 have been expended during a period said to be thirteen years, but which appears to be ten years, and on these same tanks it is reported that Rupees 8,005 are still required to be spent. For twenty-seven tanks on which no money has been laid out, Rupees 3,631, are stated to be needed, and there are four tanks on which there has been no outlay, and which require none. In six cases tanks which yielded no outlay at the beginning of the period were turned to some account in the later years, and upon only one of these was any State expenditure incurred. It will be observed that the

money laid out added to that required would have been Rupees 25,119, which would further have to be increased to Rupees 27,119 to provide for a tank, against which nothing has been entered in the statement, though in the remark column it is mentioned that it is ruined and that 2,000 rupees will be necessary for its restoration. The total amount is therefore just one and a half times the ayacut assessment, and dividing by ten it would appear that these tanks require an average yearly outlay of fifteen per cent. on that assessment for their maintenance in an efficient state. Taking next the thirty-one tanks of the Krosur Talook the

	Acres.	Assessment.
		Rs.
Ayacut is.....	1,320	10,522
Occupied.....	420	3,401
Average revenue.....	...	3,012

The remarks show that nine of the tanks are ruined, and one has been made over to the

* No. 69. Ryots; in one case* it is said that the tank is distant from the village, and the Ryots are too lazy to go and cultivate; one tank has an ayacut assessment of 600 rupees; the village is depopulated, and the average revenue has been only 87 rupees; on thirteen tanks Rupees 4,750 have been spent, and of these eleven require Rupees 1,385 at present for repairs. There are thirteen unrepaired tanks which are reported to require an outlay of Rupees 6,700, and the rest have not been repaired, and do not need repair. The money spent added to that necessary, amounts to Rupees 12,885, which, divided by ten is twelve per cent. per annum on the ayacut, and nearly thirty-eight per cent. on the assessment of the occupied lands. The four tanks of the Baputla Talook are shown to have

	Acres.	Assessment.
		Rs.
Ayacut.....	1,031	5,364
Occupied.....	140	907

There has been no expenditure on repairs, two, and these the two larger, tanks are ruined and have yielded no revenue, if 80 rupees levied in 1869 (on what account not mentioned) be excepted; the other two tanks have yielded within a few rupees of the full ayacut assessment regularly. Rupees 450 are stated to be required for the efficient, and Rupees 1,400 for the ruined tanks. Perhaps the lands under the latter could be watered from the anicut channels. The information given is so far incomplete that it does not show when the ruined tanks came into that state. The estimates of outlay required are, I am afraid, not very reliable, and in the absence of the particulars of cultivation for a considerable series of years it is very doubtful whether these tanks were ever efficient, and whether, were money spent upon them, they would be capable of cultivating the ayacut area.

7. *Madras*.—From the Madras District the Assistant Engineer of No. 1 Range furnishes a statement giving particulars of revenue and expenditure for certain tanks in the Trivellore and Ponnair Talooks. The statement refers to 41 tanks in Trivellore, the average revenue derived from which for the years

	Rupees.
1856-57 to 1860-61 was	7,598
1861-62 to 1865-66 „	10,406
1866-67 to 1868-69 „	11,359
The total Revenue derived during the whole period	1,24,216
Total outlay on repairs	10,953
Per-centage of repairs	8.81

All the tanks have had more or less money expended on them. The average revenue per tank is Rupees 233, the average outlay Rupees 20½ nearly. The statement shows that expenditure was closely followed by increased revenue, and this increase not only paid for the repairs, but left a balance to the State of Rupees 14,493 over and above their cost, which would have been lost had the revenue been only maintained at the average of the first five years of the period.

Forty tanks are shown for the Ponnair talook, but here the returns are not brought up to as late a date. The average revenue of the years

	Rupces.
1856-57 to 1860-61 was	13,441
1861-62 to 1865-66 „	16,198
Total revenue	1,48,197
Cost of repairs	8,876

Per-centage of repairs just under six. The increased revenue derived in the second period compared with the first was Rupees 13,789, so that attention to these tanks rendered possible, if it did not actually result in, a gain to the State of nearly 5,000 Rupees over and above the outlay upon them. The average revenue per tank was Rupees 370½, and the expenditure Rupees 22½.

8. *North Arcot*.—The Collector has furnished two statements, one showing the ayacut area and assessment of 17 tanks, the revenue derived in each of the five years up to and inclusive of 1868, and the expenditure on repairs for the same period,

Ayacut { Area	...	...	...	Acres	1,447
Assessment	...	...	...	Rupces	6,058
Average revenue	...	...	...	„	5,112
„ expenditure	...	...	...	„	1,138

In this District, as regards these tanks, there has been no such increase of revenue, consequent upon expenditure, as might have been expected, and the cause of this needs examination. The statement is practically of no use, as in the first place it is confined to the last five years, several of which have been remarkable for short rainfall, and in the next place there is nothing to show what the cultivation in really good seasons has, in former periods, been.

The second statement gives a list of 133 tanks under which the revenue has fallen considerably. The particulars given however admit only of a comparison between the ayacut assessment, and the revenue of Fusly 1277 (1868) a very bad year, and from this no information whatever as to the state of the works themselves can be deduced. The assessment of one tank is as little as Rupees 1-15-9. There are twenty-two tanks assessed at less than 10 rupees, and but one out of the 133 exceeds 100 rupees. The assessment of the whole is Rupees 6,066, and the revenue derived in 1868 was Rupees 1,086: seventy-nine of the tanks yielded no revenue at all, and it is highly probable that very many of them were dependent for their supply on the surplus of other tanks which did not fill. The difficulty of dealing effectually with such tanks as these may be in some degree appreciated from the following remarks of the Collector, in answer to Question 17 of Circular 5:—“Any attempt to interfere with established high water marks,” and this in the case of perhaps hundreds of tanks in the North Arcot District, which have not been thoroughly repaired for a quarter of century, would be unavoidable, “provokes the immediate opposition of all villages (and of these there are many) dependent on surplus supply.”

9. *South Arcot*.—No general view of the minor irrigation works of this district has been given, but for the Trikalore Talook a statement showing the outlay on the repairs of, and average revenue from, ninety-one tanks, for two periods of thirteen years each, has been furnished, and gives the following particulars:—

	Actual outlay.	Average revenue.
No. of tanks ninety-one, 1844 to 1856...	1,136-4-0	4,655
Do. 1857 to 1869...	4,325-0-0	10,987

Per-centage of revenue spent yearly on repairs, in the first period nearly five, and in the second period nearly eight.

Two other statements, one in detail, and the other in abstract, show certain particulars for 170 tanks, having an average revenue of Rupees 199 each, for the last five years.

	Rs.
The total assessment of these tanks for the six years is	1,68,926
Remissions granted	26,207

Per-centage of remissions RS. 16
Expenditure on repairs 3,869
Per-centage of repairs 2·3 nearly. Of the remissions granted, Rupees 13,413, or nearly one-half of the whole, appertain to Fusly 1278 (1868-69) the last year of the series, which was undoubtedly a bad year owing to short rain-fall; and omitting this year the average remissions would be eight per cent., which probably, on works of this class, is not an excessive amount. Looking however to the results of a more liberal expenditure on the ninety-one tanks previously noticed, it may be considered as highly probable that had eight per cent. of the revenue been laid out on these 170 tanks, the remissions in ordinary years would have been reduced to a nominal amount; and, if so, the result would have been that the Government, after providing for the necessary additional establishments of a subordinate kind which, it may be presumed, would have been required, would have been a gainer to a small extent directly, the tanks would have been in a more efficient state than is the case at present, and the villagers interested would have been benefited to the amount of about 15,000 rupees. The Sub-Collector appears, from his replies to the Circular, to have made himself well acquainted with the state of the minor irrigation works of the sub-division; and he says of them that, with the exception of a few small tanks or ponds which have gradually silted up, the works are not inefficient with reference to any former standard of efficiency, but that many of them need sluices, and escapes to facilitate and economize the use of water on the one hand, and to obviate risk of damage on the other. He does not think that generally the supply could be improved except at a disproportionate cost. This officer has not furnished the particulars of revenue and expenditure necessary for judging how far the latter has fallen short of an amount which might be considered the minimum capable of keeping the tanks up to a moderate standard of efficiency, without providing for their improvement by the construction of masonry works of distribution and regulation.

10. *Tanjore*.—The Collector, in reply to the Circular, has furnished two statements. One gives information regarding all the tanks in the district, and they are, with few exceptions, all minor works, from Fusly 1263 (1854) to Fusly 1277 (1868). The following is an abstract of this statement divided into two periods, the first, when they were under the management of the Revenue Officers, and the second after their transfer to the Public Works Department:—

Years.	Fusly.	YEARLY AVERAGES.				Remission for waste and withered crops.	Net amount Collected.	Sum spent on repairs.
		Irrigable Ayacut.	Assessment.	Actual Cultivation.	Assessment.			
		Acres.	RS.	Acres.	RS.	RS.	RS.	RS.
1854 to 1858...	1263 to 1267...	30,720	1,02,501	28,270	95,096	17,313	85,188	8,292
1859 to 1868...	1268 to 1277...	35,547	1,16,430	33,864	1,04,701	19,906	97,424	8,694

The Collector gives, on the whole, an unfavourable report of the condition of the tanks, and probably they are not in as good a state as is desirable, and it might be advantageous to spend more money upon them; for by so doing the remissions might, on the average of years, be much reduced. At the same time it must be remarked that the statement shows no such general and prejudicial neglect as the Collector thinks has occurred, for the expenditure has averaged nine per cent. during the later period against about 9½ for the earlier years, and in Fusly 1272, the fifth year after the transfer, the remissions were lower (2½ per cent.) than in any other year. The general results of the second period are at least not less favourable than those of the first. The great variations from 2½ to 35 per cent. in the remissions, and the alternation of small and large remissions, indicate that the seasons had very much to do with results, and that, like all cultivation depending upon local rains, that in Tanjore is not exempt from the vicissitudes of tank irrigation.

The second statement gives the particulars of eleven tanks for fifteen years. It shows one

fact clearly, and that is that the expenditure on the repairs of these tanks has been extremely limited, and that what little has been spent was laid out prior to their transfer to the Public Works Department. The following is an abstract of the statement, divided like the other into two periods, before and after the alteration of charge:—

For 11 Tanks yearly average.	Fuslies.	Irrigable Ayacut.	Assessment.	Actual Cultivation.	Assessment.	Remission for waste and withered crops.	Net Collections.	Expenditure on repairs.
		Aeres.	rs.	Aeres.	rs.	rs.	rs.	rs.
1854 to 1858...	1263 to 1267...	1,998	5,372	1,755	4,433	1,352	4,018	64
1859 to 1868...	1268 to 1277...	2,107	5,315	1,667	4,373	1,274	4,041	...
Two of these tanks are hardly minor works, so these may be shown separately.								
No. 6	First period	582	1,075	582	1,075	181	894	21
"	Second "	615	1,140	520	990	275	865	...
No. 9	First "	339	1,168	324	1,137	74	1,091	...
"	Second "	463	1,570	402	1,365	394	1,176	...

What in these statements is termed the irrigable ayacut, would seem to be the area in the occupation of the Ryots, for otherwise this area would generally be invariable. Without the real irrigable ayacut or area for irrigation under each work, and without also particulars of the cultivation, for five yearly averages of the preceding twenty or twenty-five years, it would be impracticable to make reliable deductions from these figures, but little demonstration is necessary to prove that the outlay of one and a half per cent. per annum, while the tanks were in charge of the Revenue Department, was altogether insufficient, and that as, for the ten years after the transfer of the executive to the Public Works Department, nothing was spent, these tanks must have suffered still further dilapidation. The fact has been that the allotments for the Tanjore District have been altogether inadequate, and that consequently many works have been altogether neglected for a considerable number of years, and such neglect cannot be remedied without a provision for expenditure more in accordance with the claims of this most important district. For the years 1866-67 to 1868-69, the outlay on repairs was but three per cent. on the revenue derived from irrigation works, and it cannot be a matter of surprise that the results have been unsatisfactory.

11. A few words may be added on the irrigation of this district generally. The Irrigation of Tanjore revenue derived from this source varies somewhat from year to year, but may be taken as about 36 lacs of rupees. The water-supply of the river-irrigated portion of the district, which is about $\frac{1}{2}$ % of the whole area under irrigation, is in quantity most ample, as it varies, according to the seasons, between five and eight times that actually necessary for the lands watered. Owing, however, to the absence of efficient works of regulation which have never, it may be remarked, existed, it has naturally followed that those rivers or branches of the Cauvery which have the greatest fall have carried off excessive, and ever increasing, shares of the supply available, leaving other rivers very ill-supplied. Recently this subject has been under investigation and a commencement, and, indeed, considerable progress has been made in the construction of regulating works at the heads of the rivers, and I have two recommendations to make, the first being that the provision of these regulators, throughout the district, should be completed as rapidly as possible, and the second that, until this can be done, special attention should be given to the construction of temporary works, and to the adoption of such measures as will render remissions unnecessary and save crops. I am quite aware that the expenditure, which the adoption of this second suggestion will necessitate, may appear large and excessive, compared with the total revenue concerned, and that it may seem to be altogether improper to spend, say, twenty or even twenty-five per cent. of the revenue concerned on

temporary works which are confessedly useful for but one, or perhaps at most two, seasons, and I would certainly strongly recommend that the necessity for any such outlay should be done away with at the earliest possible date; but it does not need argument to show that it is better to spend 5,000 rupees, to secure even an equal amount of revenue, than to avoid the expenditure and lose the revenue, and in the generality of cases at least two or three times the amount spent would be saved in remissions, and a much larger amount in unfavourable seasons. A wide discretionary power should therefore be given for dealing with the Eastern part of the district, until the sources of irrigation there have been brought under proper regulation. In support of this I would refer to the evidence of the Tahsildar of the Negapatam Talook, in answer to Circular 4, and to the Appendices A. B. C. attached to that evidence. It is not necessary, and it would probably be impracticable, to determine who is to blame for the facts therein brought to notice, but there can be no doubt that something should be done, and that with as little loss of time as possible, to remedy, so far as may be practicable, the evils and loss which have occurred during the last ten or twelve years, and in all probability for a long period before. Appendix A. shows that the average area of waste which might have been cultivated, viz., the column "waste charged," was, for the years 1859 to 1868, 447 $\frac{1}{2}$ velis or 2,953 acres, and that, further, remissions on 250 velis or 1,650 acres of shavy or withered crops were allowed. These figures cannot but represent a very great loss to both State and people. Appendix B. shows that the remissions of the talook for eleven years from 1858 to 1868 amounted to Rupees 2,98,900, and those under one river, the Vellaur, to Rupees 1,01,545. It is not possible to form an approximate opinion as to the amount which might have been saved by judicious expenditure, but there can be little doubt that 50,000 rupees spent on temporary measures for securing a supply, would have saved more than that amount of revenue, and have made the Ryots richer to the extent of two or three times that sum. "Waste charged for" is land in the occupation of the Ryots which they have not the means of cultivating, but are unwilling to relinquish, and which, under the influence of the present high prices, they are able to pay for out of the profits of other lands. Nevertheless, as there is plenty of water, it must be a matter of great regret that this water is not made available, but suffered to run to waste into the sea. Were the remissions alone saved, they would re-imburse the State for an outlay of 5 lacs of rupees on account of this one talook, and besides these there are the returns on 1854* acres of waste lands not in the occupation of the Ryots, most of which, it is evident, would be cultivated or taken up were water provided, for in Fusly 1272 only 376 acres were unoccupied. It may be further remarked that it would be far more advantageous to the Ryots to pay a somewhat higher assessment than is now levied, rather than to pay for lands uncultivated and lose on a considerable area of those under crop. It appears from Appendix C. that the assessment actually charged was in 1277, 3 $\frac{1}{2}$ lacs on 10,646 velis of cultivation, and Rupees 23,372 on 910 velis of waste. Now taking the profit to the Ryots as equal only to the amount of the assessment, instead of paying Rupees 23,372 for nothing, they would have made that amount of profit, and the 11,556 velis could have borne an assessment, of in round numbers, four and a quarter lacs instead of three and half lacs, without any additional burden upon the landholders, had a full supply of water been provided. The assessment shown in the Appendix is 33 rupees a veli, or 5 rupees an acre, and the increased rate would be a little over 6 rupees an acre. These remarks are intended to show that, when the water-supply is good, far more than the outlay necessary for making the most of it will yield ample benefits to both State and people. The Ryots of Negapatam would be richer and more prosperous were the Government to require them to pay five per cent. in the shape of increased assessment, on an outlay of even fifteen lacs of rupees; and the Government could afford to spend five lacs, in order to save remissions, even were no waste lands taken up, and no additional assessment imposed. The circumstances of the Mayaveram Talook are somewhat similar.

12. Kurnool.—From Kurnool certain statements have been received, but they do not show with any accuracy the condition of the minor irrigation works. Two of these statements,* one in detail and the other in abstract, show the actual cultivation under several small tanks in each talook, for the

* Prepared with reference to question 28, Circular 5.

ten years up to Fusly 1277 (1867-68), but they give no information regarding the ayacut area or assessment, nor do they show the actual cultivation of a preceding period, and, therefore, no comparison can be made. Particulars of expenditure on repairs are also wanting, the Superintending Engineer having been unable, with the limited establishment at his disposal, to furnish them, while the Collector cannot state what the remissions on each tank have been, as the records, it would appear, show only the talook remissions. All that can be gathered from the statements is, that the one in detail shows very great variations in the area of cultivation under some of the tanks, and very little in the case of others. From a report made by the Collector, which is contained in the Proceedings, No. 2,211, dated 3rd April 1869 of the Board of Revenue, the following information, regarding both the minor and major works of irrigation in this district, has been obtained. The first of the following statements gives the Nunjah ayacut and cultivation for three years, viz., Fuslies* 1274 to 1277, and the other three show similar particulars for the three parts into which the district is divided, geographically, by ranges of hills :—

Tanks, &c.	Number of Tanks.	REGISTERED AYACUT.		CULTIVATION AT THE AVERAGE OF THREE YEARS LAST PAST.	
		Acres (Sircar and Inam).	Assessment (Sircar).	Acres (Sircar and Inam).	Assessment (Sircar).
Under 10 acres ...	257	2,136	Rs. 5,590	2,280	Rs. 6,124
" 20 and above 10 acres ...	100	3,195	10,567	2,873	9,401
" 30 " 20 " ...	72	3,008	11,111	2,743	11,667
" 50 " 30 " ...	88	5,760	18,499	5,713	22,525
" 100 " 50 " ...	114	10,733	45,303	9,154	36,578
" 500 " 100 " ...	121	14,547	60,324	12,253	65,890
Above 500 acres ...	6	9,813	47,017	7,701	56,590
Total...	758	49,192	1,98,441	42,717	2,08,775

It may be remarked here that the classification is not always correct, for the 100 tanks stated to be under 20 acres each, but over 10 acres, average according to the ayacut areas 32 acres nearly, and the seventy-two tanks in the next line average over 40 acres.

It will be seen that the collections are five per cent., in excess of the ayacut assessment, and this is due to a considerable area of land being cropped twice. Supposing the assessment on second crop equal to that on the first crop, it would seem that about 40,000 rupees are due to second crop cultivation, and that about 10,000 acres were so cultivated, and it does not appear under these circumstances that there could have been anything in the condition of the tanks to prevent the whole ayacut being cultivated with one crop. To enable a clear idea of the state of the tanks now, as compared with a former period, to be obtained, it would be necessary to show the area of first and second crop cultivation for two series of years, say, for twelve years in each series. The Collector reports that, with the exception of those in the Pattikondah Talook, which was not long ago transferred from the Bellary to the Kurnool District, the tanks are in a very bad condition; but in the absence of the information just referred to, it is not possible to say whether they were ever more efficient than they now are, much less to determine whether deterioration is of recent or remote date. The Collector further remarks on the inadequacy of the grants for repairs. He shows that the allotments for the years 1864-65 to 1866-67 averaged about 20,000 rupees, and this amount he calls four per cent. on the Revenue, circar, and Inam. It will be seen that it is ten per cent. on the Government Revenue, and it is not apparent how, including the assessed value of Inam lands which, from an abstract appended to one of the statements furnished by the Collector, appear to have an area, under tanks only, of 15,949 acres against 24,784 acres of Government Nunjah lands, the per-centage could be reduced from ten to four, as it would seem that, to effect this, the assessed value per acre of Inam lands must be about two and a quarter times that of the Government lands. There is need for inquiry into the matter, because the Inamdars have upon the Government a claim to a water-supply only of the same character as that which they enjoyed

when the country came into the possession of the British, and should it appear that the tanks, &c., are not now in a less efficient state than was the case then, and that nevertheless a much larger annual outlay than has hitherto been customary is requisite to place and keep them in a thoroughly satisfactory condition, it may be considered requisite, and also only fair, that the Inamdars, who would in that case greatly benefit by the outlay, should contribute to re-imburse the State for the expense incurred. The Collector says that an outlay of one lac of rupees in the first instance, and afterwards a yearly appropriation of one-tenth of the revenue will be needed, but if he calculates the ten per cent. in the same way in which his four per cent. has been estimated, the yearly allotment would be 50,000 rupees, or no less than one-quarter of the revenue derived from these works by the Government, and such a very heavy demand could not be complied with except upon very clear proof that the Government, while benefiting others, would obtain, in a corresponding increase of revenue, an adequate return for the outlay represented to be required. The following statement shows the particulars of irrigation in the several parts of the district :—

Talooks.				Number of Tanks.	AYACUT.		CULTIVATION AVERAGE OF THREE YEARS 1274-1276.	
					Area including Inam.	Assessment (Sircar).	Area.	Assessment.
CENTRAL DIVISION.					Acres.	Rs.	Acres.	Rs.
Nundikotkur	...	...	...	33	5,335	14,511	5,428	16,505
Nundial	...	...	...	81	4,857	26,258	5,230	32,003
Sirwell	...	...	...	36	3,584	14,163	3,586	15,363
Koilkuntla	...	...	...	86	6,259	23,814	4,436	23,917
Total...				236	20,035	78,746	18,680	87,788
WESTERN DIVISION.								
Pattikondah	...	...	...	192	5,878	18,248	4,688	16,034
Ramalakottah	...	...	...	168	4,207	11,686	3,362	13,522
Total...				360	10,085	29,934	8,050	29,556
EASTERN DIVISION.								
Cumbum	...	...	...	85	12,519	57,121	10,993	67,974
Markapur	...	...	...	77	6,553	32,640	4,989	23,457
Total...				162	19,072	89,761	15,982	91,431
Grand Total...				758	49,192	1,98,441	42,712	2,08,775

13. Insufficient as the information obtained on the subject of the condition of minor irrigation works is for any practical purposes, the result of the inquiries made is to show, I think, that the officers who made the complaints, which occasioned so much anxiety to Government, did not give themselves the trouble to ascertain with any sufficient degree of definiteness

Complaints of Revenue Officers were made without due consideration.

First.—Whether the works had deteriorated at all.
Second.—Whether, if they had not deteriorated, there had been any noticeable falling off in cultivation and revenue.

Third.—Whether it was practicable to make these works more efficient at any moderate outlay, and if so, what that outlay would be, and what effects it might be expected to produce.

It might reasonably have been anticipated, that officers holding such important positions as Collectors of districts would have understood how essential it was, if any good were to result from their reports, that cause and effect should be clearly laid before Government: and that no information, which their records could furnish, and which might be deemed of value in aiding the Government to determine what steps should be taken, would have been left uncollected. These officers can hardly be expected to be able to do more than show the

revenue particulars of the irrigation works in their districts, and to express opinions based upon what they hear from the Ryots interested in the works, but if they would do so much, others, capable of judging of the wants and requirements of the works, would be in a better position for demonstrating to the satisfaction of Government what measures would probably be efficacious in producing the results which might be shown to be desirable.

14. I concur entirely with the Report* of the majority in considering that the irrigation works generally are not in that condition of efficiency in which they require to be placed, as also in the opinion that the grants of money for irrigation repairs have, for a series of years, been altogether inadequate. In deciding each year how the funds available for Public Works expenditure are to be distributed, it appears to me that the first point to be attended to is the maintenance of existing works in a state of efficiency; and of such works, those of irrigation must naturally, both on account of their importance to the revenue, and of the fact that the State is under a direct obligation to maintain them in consideration of the revenue demand for the water-supply, be entitled to be first provided for. If this be recognized as only just and fair to the Ryots, and as moreover most beneficial to the State, there cannot be any question of the ability of the Government to provide the requisite funds. I observe that in the Report (paragraph 16) it is recommended that the allotment for repairs should be fixed at eight per cent. on the revenue derived from irrigation works, and while admitting that this amount, which would be about 14½ lacs of Rupees, would be very much better than the inadequate grants of past years, and that were the works once placed in thoroughly good order, it might be possible in conjunction with a proper enforcement of the obligation of the villagers to take care of the works and to repair trifling injuries, to maintain them in an efficient state, I am of opinion that it will be necessary to allow, for several years to come, a considerably larger outlay, and I believe that such expenditure will produce very satisfactory results in the saving of remissions, if only proper arrangements be made for ensuring a judicious use of the allotments which may be given. The precautions against wasteful expenditure which are requisite are of two kinds: first, it should be ascertained whether an irrigation work, on which it may be proposed to expend money, is really worth the outlay necessary to make it efficient. The evidence shows conclusively, I think, that there are, in most districts, many minor works which cannot economically be restored or maintained by the State, and it is therefore not advisable to attempt to bring all minor works indiscriminately into an efficient condition. In the second place whenever expenditure, exceeding that requisite for the ordinary up-keep of works, is contemplated, the decision should be made with reference to definite considerations of the results to be reasonably expected from outlay, and care should be taken, when repairs or improvements are carried out, to see what relation the actual bear to the anticipated results. Then although mistakes will sometimes continue to be made, unnecessary or unprofitable outlay will be reduced to a minimum, and it may be hoped that in time, with increasing knowledge, any serious waste of money will very rarely occur.

15. In paragraph 7 of the report it is stated, after mentioning that the area of irrigated land was in 1848-49 acres 2,146,579, and in 1865-66 acres 3,020,444, that, "except as regards the Kistna and Godavery Districts, it cannot be said that the expansion of cultivation is due to any improvement in the condition of irrigation works." It appears to me that this opinion is eminently incorrect. In the Nellore District there has certainly been a large extension of irrigated area due directly to the execution of new works for improving the supply of water, and in a less degree to the much better condition of the old tanks. In South Arcot anicuts have been constructed on the Vellaur and Pooniaur, as well as on several of the smaller rivers, and have proved most efficient. In Nellore, for instance, the area in 1848-49 was acres 88,711, and in 1865-66 acres 144,677. In South Arcot for the former year the area was acres 153,913, and in the latter acres 258,379. The Members of the Commission, who have signed the report, think that wells have had a good deal to do with the expansion of irrigation, but were they credited with every acre they could water, the total for the difference of 72,000 wells, which are said to have been constructed since Fusly 1264, would not amount to 150,000 out of the

Irrigation works generally not as efficient as they should be.

* Paras. 5 and 6.

Expansion of irrigated area is due to improved condition of Irrigation Works.

880,000 acres of increased irrigation, and there is no proof whatever that any large proportion of the wells is used for wet cultivation, i.e., rice lands, at all. In some parts of the country the wells are used for the seed beds, and at intervals, generally at the commencement and end of the irrigation season, to start or mature the crops, but wells are generally employed to irrigate garden lands, and for such produce as chillies, onions, raggy, sujalu, and other crops on lands paying dry assessment only. The increase in the number of wells is due mainly to the discontinuance of the levy of additional assessment on lands cultivated under them. Formerly, if a Ryot constructed a well for the irrigation of dry lands, he had to pay an enhanced assessment on that land. Now, so long as he spends his own money, he has the benefit of the improved crops thereby obtained. The reduction and equalization of assessments, coupled with high prices, have undoubtedly stimulated cultivation, and probably also enabled the Ryots to make profits from small crops and slovenly agriculture, but these measures do not supply more water, while new works of irrigation and improvements to old ones do effect this; and as demonstrably in several districts such works have been executed for this very purpose, and have been followed by a great increase of the area irrigated, it would seem to be more reasonable, as also more fair in an inquiry of this nature, to conclude that at least a considerable portion of the increase has been at any rate rendered practicable by the provision of a better supply of water for irrigation. One cause is obvious, the other remote, and of itself altogether inadequate to produce the results which have been experienced, and perhaps it would have been better had some little definite information been procured by those who believed that wells were capable of accomplishing so much more than is usually expected from them.

16. With regard to the inadequacy of the subordinate establishment of the Public Works Department, referred to in paragraph 8 of the report, it must be remarked that the grants for irrigation repairs being confessedly inadequate, an increase of the number of subordinates would, in the absence of funds, have been of little avail. Had money been given the men of the class required could without difficulty have been found.

17. I concur in the views expressed in paragraphs 9 to 11 of the Report regarding "Customary labour." With reference however to the sentence in paragraph 9, "This decline of customary labour dates from the formation of the Department of Public Works, and is doubtless more or less due to the operation of that change:" it seems to be necessary to mention that the enforcement of customary labour has always rested with the Revenue Officers, and that the Public Works Officers have never had anything to do with it beyond occasionally reporting its neglect, or in some cases declining to estimate for work which ought manifestly to have been done by the Ryots. Had the enforcement of customary labour with the necessary powers, been entrusted to Public Works Officers, there can be little doubt that the custom would have been maintained. As it is the very people who neglect their duties are those through whom alone the Collector and his Assistants can generally hear of its neglect, and it is hardly surprising that the Ryots should have ignored their obligations. It has perhaps hardly been a want of power which has prevented Revenue Officers from requiring the people to look after their irrigation works, for the power possessed has been but rarely exercised, but I think nevertheless that it will be of advantage to confer upon these officers additional and more definite authority, and I hope that when what labour is customary shall have been defined and made known to all interested, the duty of its performance will be systematically enforced.

18. Paragraphs 12 and 13 of the Report refer to the Agency by which minor irrigation repairs should be carried out, and I concur generally in the recommendations therein made. I however differ from the majority in my opinion of the value of the alternative proposed in paragraph 14. Public Works Officers would very gladly entrust village works to villagers, and it is just because it is impracticable generally to secure promptitude in the execution of repairs by them, or attention to the instructions given, that it has been found requisite to employ those

Inadequacy of subordinate Public Works Establishment not under the circumstances of much consequence.

Concurrence with the part of the report relating to customary labour.

Agency for the execution of repairs of minor Irrigation Works.

who know that their livelihood depends upon their carrying out the orders they receive. All work for which Public Works Officers are responsible should be carried out by them under such arrangements as they may find to be most convenient and advantageous. Different Collectors have different notions; some think that every thing, and some that nothing should be done on contract, and if they would abstain from expressing their thoughts on such matters, instead of considering that their views ought to be adopted, they would probably find that their opinions on subjects, more within their cognizance, would carry more weight.

Recommendations of the majority on organization of Public Works Department.

19. The Report from paragraph 19 to paragraph 52 deals with the subject of the organization of the Public Works Department. The principal recommendations made by the majority of the Commission are:—

1st.—That the business of Government in the Public Works Department should be conducted in the Revenue Department, the Revenue Secretary being aided by a professional Under Secretary.

2nd.—That there should be one Chief Engineer for the whole Department of Public Works, and that he should be ex-officio a Member of the Revenue Board.

3rd.—That the Chief Engineer for Irrigation should occupy the position of an Assistant to the one Chief Engineer, and be styled the Superintendent of Irrigation.

4th.—That the grade of Superintending Engineer be abolished.

5th.—That two Inspecting Engineers be appointed, "to be employed in such inspection duties, either in connection with important works or projects, or in connection with districts which may need inspection, as from time to time it may be deemed advisable to entrust to them."

6th.—That the grade of District Engineer be restored, and that one such officer be placed in charge of each Collectorate or District.

20. With regard to the first point the abolition of the professional Secretary, and the transfer of the duty of placing Public Works business before the Government to the Revenue Secretary, the reasons are given in paragraphs 40 and 41 of the Report. These reasons are:—

1st.—That the business of the Revenue and Public Works Departments is so intimately connected, that it is most desirable that the duty of laying the papers before Government should be entrusted to the same officer in both.

2nd.—That such an arrangement is essential in order to complete the union of the two departments, and to secure their harmonious working.

3rd.—That it is necessary for the purpose of securing to the Public Works Department the co-operation of the Revenue Officers throughout the country, and for the purpose of improving its relations with the people. It is added that prior to 1862 such an arrangement was in force.

It might perhaps have been expected that the question, Could the Revenue Secretary, in addition to the business of that department, possibly get through the duties connected with the work of the Public Works Department? would have been duly considered and satisfactorily answered, before such a proposition was seriously brought forward. It cannot be denied that the business in the Public Works Department has enormously increased since 1862; had the Revenue Secretary been able to do the work satisfactorily at that time, the change would certainly not have been made, and if not able then, it is quite clear that he would be far less able to perform the double duties now. It is quite true that the business of the Public Works Department in some respects, and with regard to certain classes of work, is intimately connected with the Revenue Department, but nevertheless the duties appertaining to the one are essentially different from those of the other, and each requires totally distinct qualifications and a special training. Were the business transferred in the manner contemplated in the Report, either the Secretary laying the papers before Government would be a mere channel of communication, and the Government would be deprived of the

personal explanations and information, which a professional officer at the head of the department would be able to afford, or he would, in laying the papers before Government have an opinion of his own to offer, in which case he would often be obliged to advise either without due and complete knowledge of his subject, or to base his recommendations on the opinion of the professional Under Secretary, and in either case, were the Chief Engineer an officer of any value, business would very soon be brought to a dead lock, for it may without any improbability be assumed that no Chief Engineer worthy of his position would consent to have the measures he might propose laid before Government, coupled with the recommendations which an officer of another department or a subordinate professional officer might think fit, or find opportunity to make. Were it any way necessary or advisable to unite under one Secretary the duties of the Public Works and Revenue Secretariats, it would not be difficult to show that it would be preferable to transfer the Revenue work to the Public Works Secretary, rather than to carry out the changes advocated in the Report, and the reason is tolerably obvious. Two of the Members of the Government are usually well acquainted with Revenue business in all its details, and they can at once, and with facility, express a decided opinion on propositions brought forward in that department. It is necessarily altogether different with much of the business of the Public Works Department; there is no professional Member of Council; the work to be done involves questions and considerations which are not always patent or familiar to all, and these require not only to be placed in a complete form before the Government, but also to be explained and their bearing made evident, so that the propositions of the responsible officers of the department may neither be accepted nor rejected, except upon a clear understanding of their import. The work of the Public Works Department is not a matter which any one, whatever his previous training, can get through in the time which he may be able to spare from other duties which are supposed, it may be presumed, to occupy his attention pretty fully. The scope and importance of that work have increased rapidly of late years, and they are likely to go on increasing; and it is of no little moment that the working head of the department should be in close communication with the Government, and should possess their confidence, which probably he could not do fully without frequent opportunities of explaining the measures which he had originated, in order that the most may be made of the funds available.

21. The second and third reasons for a change in the Secretariat may be taken together. It is said that it is essential to the harmonious co-operation of the officers of the two departments that there should be a complete union of the two, and it is stated that the proposed arrangement is necessary in order to secure "to the Public Works Department the co-operation of the Revenue Officers throughout the country." I am glad that this latter point has been so clearly stated. I only wish that the meaning which the majority attach to the term co-operation had been defined. After hearing the opinions of many officers of the Revenue Department, I have come to the conclusion, that their idea of co-operation may be thus expressed:—"We will do all that we can to help you if you will do just what we wish: the Revenue establishments will be required to aid you, so long as you work in perfect accord with the Collector for the time being, but if this be not done you must not expect any assistance from us: as there is nothing connected with your duties on which we may not properly and advantageously express an opinion, we expect a ready attention to our views on all matters whatever: you must work according to our notions of what is right and proper, and so long as you do so all will go on smoothly; we shall not then be ready to listen to unfavourable reports from our subordinates, for we shall know that they cannot be true: and *vice versa*." The statement made in the Report appears to me to confirm this conclusion very fully. It says in effect "if the arrangements be such as to enable the Revenue Department to have its own way, by making its influence felt at every step from the initiation of works or measures to their final disposal by Government, then the Revenue Officers will work with the Public Works Department heartily, if not there can be no co-operation." The somewhat important point, as to whether the proposed arrangements would tend to secure the co-operation of the Public Works Officers has not been adverted to, except somewhat casually in paragraph 40, and the explanations there made seem to be altogether insufficient

to satisfy the requirements of the case, for, even according to the views of the majority, is it at all probable that, if Revenue Officers will not co-operate unless the business of the Public Works Department is managed by the Revenue Secretary, the Public Works Officers will be disposed to work with the Revenue Officers, when the business of their department is in the hands of an officer who could not be expected to understand their representations, and to deal impartially between them and members of his own service in the event of differences of opinion occurring. As regards this point the argument of the majority is, it seems to me, strongly against, instead of for, the arrangements proposed.

22. I entertain very different views as to the nature of the co-operation required, and as to the means by which it can be made easy, and here I may remark, that the good sense of many officers of both departments has made such co-operation to a considerable extent possible in spite of rules and orders, which have done much to make difficulties, where none would otherwise have been felt, and to prevent that cordial intercourse and interchange of views and opinions which are usually so efficacious in preventing the misapprehensions, which are at the bottom of more than half the disagreements that take place. Co-operation between any two departments should be considered to mean, that each should, to the full extent of its knowledge, powers, and opportunities, aid the other in carrying on that other's duties in the most efficient manner. If the duty of co-operation were thus understood, it would seem to be impossible that officers of the two departments should be unwilling to work heartily together to carry out in the most effective way possible the views and wishes of the Government. They can do much to help each other, and the officers of each department are under equal obligations to do all that can be done to aid and assist those of the other. Hitherto Revenue Officers have been permitted to do many things, which have, without any possible advantage to the public interests, had necessarily the effect of placing them in antagonism to the Members of the Public Works Department. I remember a Collector who thought proper to ask me officially why I employed water-carts in connection with the maintenance of a metalled road, and who considered that, without his concurrence in the propriety of every detail of the work, I had no authority to do anything. The same Revenue Officer once drove along a few miles of road, made some casual inquiries from villagers about road coolies, and, with much assurance, jumped at the conclusion that the maintenance grant had been misappropriated. A Collector of Bellary, in 1864, reported very unfavourably of the condition of the tanks and roads of that district, and the Board of Revenue accepted his remarks and opinions without hesitation. The report was, on the Collector's own showing, to say the least, very misleading; and after two or three months had been occupied in obtaining information and explanations, the Government, in passing orders upon the papers, expressed regret "that their time, and that of their officers, should have been wasted to no purpose merely because" the Collector "has chosen to express an opinion upon matters of which he was ignorant, and as to which he did not take the ordinary means of acquiring information."

23. It would be altogether useless, I think, to attempt to secure co-operation, in the sense I have explained, between officers of the Revenue and Public Works Departments, if the former be allowed to interfere in matters with which they ought to have no concern, or to express opinions without having first taken the trouble to obtain some proper data for them. Fortunately, the officers of both departments have, for the most part, been better than the regulations under which they have worked, and those of the former department have many of them abstained from using the powers of interference and annoyance with which they have been vested, and where such has been the case the public business has been carried on without difficulty. What appears to me to be essential is, that neither a Revenue nor a Public Works officer should be allowed to make any complaints whatever regarding the way in which the duties of the other are being conducted, without previous consultation and mutual explanations. As it is, the Government are often called upon to pass orders when the facts, on which alone a decision can be based, are not only unascertained, but even not examined into; and in the next place, the Revenue officers should be restricted, in offering

their opinions, to such matters as they are competent to understand and appreciate. To speak of the Collector and Public Works officer in connection with Public Works matters, the former as the head, and the latter as the hand (Circular Order of 1856), seems to me to show a great want of knowledge of the requirements of officers who have to deal with Public Works.

24. A member of the Public Works Department is a professional officer in connection with his own proper work, just in the same way that a Revenue officer is a professional as regards revenue matters, or a Judge in respect of judicial business. Some speak and write of Public Works Officers as professional and executive in contradistinction to administrative officers. This is evidently the view entertained by Mr. Sim, as shown in para. 5 of his minute; and here again it is, I think, easy to see that Public Works officers are, like the officers of every other department, executive or administrative, according to the nature of the duty at the time to be performed, or the position of the officer on whom that duty may devolve. The Government in the Public Works Department has to determine the policy upon which Public Works shall be carried out: and, unless it be better to employ amateur, rather than trained, officers to execute that policy, the officers of the department must be responsible for all which cannot be determined by the Government. Revenue officers have undoubtedly their part to perform, but this should not, in my opinion, be that which has been given to them. Chapter XI., para. 2, of the Public Works Code runs thus: "The Collector shall have 'an authoritative voice on all questions connected with Public Works in his district in the Revenue Department, except on professional and departmental points. This rule shall include 'the choice of works to be undertaken, whether new works or repairs, the distribution of the 'funds allotted to the district, whether general or local funds (so far as the distribution is left 'to local officers), the relative importance of works, and other such matters of administration.'" The chapter appears to have been written at a time when Revenue officers had begun to resent the expression of opinion by Public Works officers as to the value or importance of works, and so, altogether ignoring the inconsistency of its provisions with earlier parts of the Code, this order was passed. It has of necessity been either in disuse from the first, or, where acted upon, a cause of much disagreement between the local officers of the two departments, and of much trouble to the Government. Revenue Officers generally have not the information requisite for properly performing a duty of this kind, and many of them have had the sense to leave the responsibility with the Public Works Officers, whose time is devoted to learning the condition and wants of the Public Works within their ranges or divisions. The actual meaning of the paragraph it would not be easy to determine, but it was doubtless intended to leave the decision regarding all works, not belonging to some other than the Revenue Department, to the Collector. In paragraph 10 these words occur: "The Collector shall have power * * * to make suggestions respecting works * * under execution." In paragraph 2 the Collector is told to do what he certainly, with very rare exceptions, could not accomplish at all, and perhaps in those few cases, without exception, only at the expense of the neglect of his proper duties. With regard to new works, he may be able to show that their execution is in itself desirable, but the Government usually decide whether the cost and the advantages are in correspondence. In respect of repairs, the Collector neither can tell what the actual state of a work is, what is necessary to make it efficient, or what this would cost; nor whether any outlay would produce the results desired. There are plenty of instances in which Revenue Officers have entirely misjudged the state and circumstances of works, and it would be remarkable did they not generally do so. Usually too a Collector has no personal knowledge whatever of a work, and his ideas and opinions about it, such as they are, are based upon the reports of his subordinates, who are themselves mere channels of communication. The selection of work to be undertaken requires, among other things, knowledge of a different kind to that which a Collector usually possesses; and, if the Public Works administration in this Presidency is to be successful, it will be necessary to recognize the fact that people, whatever their position, generally do better the work they understand than that to which they have never specially devoted their attention. Now a Collector has

The proper meaning of the term co-operation.

In what sense Officers of the Public Works Department are professionals, with deductions.

Improper interference inimical to co-operation.

plenty to do even in connection with Public Works. He should know the circumstances of his district, and the peculiarities of its agriculture with the vicissitudes to which agricultural operations may be exposed; the effect of these upon the produce, and consequently upon the revenue on the one hand and the prosperity of the people on the other. He should know also the statistics of trade, and ascertain what obstacles impede its development, and what measures would be most likely to remove these. Then, with the facts thus carefully obtained, he should consult with the Public Works Officer, who, on his part, should know the character of the rivers, rain-fall and climate, the nature of the soil of the several parts of his range, and the two together would then be able to discuss the subject of improvements, and the Public Works Officer would devise the means of effecting them, or show that Public Works could not, under the circumstances, effect the change desired. It appears to me that projects thus originated would have a good chance of obtaining the approval of Government, and that a Collector's time would be better spent in acquiring information on matters within his proper sphere of duty, than in suggesting particular schemes of the practicability of which he must necessarily be ignorant, or in expressing his opinion of works under execution. Revenue and Agricultural statistics are lamentably deficient at present, and they are wanted for everyday use, and particularly for the purpose of determining the best way of distributing and spending the funds available for public works. As an instance of some importance, I would refer to the reduction of assessment on irrigated lands in the Trichinopoly District in 1864. The Collector of that district in answer to the question, "Has there been a loss of revenue in your district from anything attributable to the neglect of the Department Public Works?" gave this answer:—"The revision of the assessment in 1864 caused such a reduction in the revenue, that I cannot say what falling off is attributable to any neglect, but I can say that the anticipation that the sum of Rupees 3,80,000 relinquished, would be recouped to Government this year, has not been verified." Now from this it would seem that it was expected there would be a large increase in the area of cultivation, and it might have been imagined that, before concluding that such a result would take place, some inquiry would have been made as to whether existing works were capable of supplying the additional area, and if not whether new works for the purpose could be designed, and what their cost would be. The Collector (see a late answer) did not know whether the requisite information to enable the Public Works Department to decide these points had ever been furnished, and he explains that he came to the district years after the new settlement was carried out; but it might have been supposed that the difference between actual and anticipated results in a matter so intimately connected with the revenue would have soon attracted his attention, and that, even if his predecessor had neglected his duty, steps would have been taken to ascertain what had been done, and what could be done to restore the revenue as quickly as possible. The officer who made the settlement was, when the evidence was given, a member of the Commission, and he could not show that any thing had been done to make his anticipations possible. From a statement furnished by the Collector, it appears that the cultivation and revenue for four periods from 1851-52 to 1868-69 were as follow:—

Periods.	Area.	Assessment.	Remissions.	Net Collections.	Expenditure on Irrigation works.
	Acres.				
1851-52 to 1855-56 ...	1,25,188	7,73,907	62,439	7,11,468	1,06,216
1856-57 to 1860-61 ...	1,42,327	8,06,663	1,56,423	6,50,240	1,47,261
1861-62 to 1865-66 ...	1,40,935	7,56,536	57,730	7,08,806	86,637
1866-67 to 1868-69 ...	1,26,924	6,18,343	32,384	5,85,959	1,19,320

These figures do not agree with the answer above given, but they show that the area of cultivation is liable to considerable variations, and that, since the reduction of assessment, it has not expanded. Perhaps the Revenue Officers believed in the law of supply and demand, and considered this law applicable to supplies for irrigation. They had to deal with matters

which they did not understand, and it is not surprising that the usual consequences followed. Had co-operation in its proper sense been recognized, they would have told the Public Works Department what proposals were about to be made as regards reduction of assessment, and have asked whether the results, with respect to extended cultivation, which they hoped for would be likely to be realized. The same Collector advocates strongly the regulation and distribution of water by the Revenue Officers, and he shows that personally he knows little about the subject, for he presumes that the sluices "are all built with due regard to the supplies to be furnished therefrom to the villages dependant upon them," which is directly contrary to the fact, the existing sluices in many instances having no relation to the circumstances of the channels and cultivation, and moreover these sluices have to be worked under constantly varying heads of water. He explains that what he means by regulation by the Revenue Officers is practically leaving it altogether to monigars and shuttermen, whom he deems to be perfectly competent, because they "have been doing the work of distribution for years, according to the rules in practice, and to the necessities of the case." He

* Q. 8-V.

implies* that this management is perfectly satisfactory to all concerned, but from other parts of the evidence, it would appear that complaints of want of water are numerous, only they are considered to be the result of the omission of the Public Works Department to do what is required to the channels. I have no doubt the Collector firmly believes this, but any one not possessing the same faith in monigars and shuttermen would suppose that the absence of intelligent regulation might possibly have something to do with the irregularity and insufficiency of the supply in individual channels, and that when the freshes in the river happened to be low, some little skill might usefully be employed in making the most of them. Were this Revenue Officer to devote more attention to revenue business, which perhaps he does understand, and to leave matters which he clearly does not understand to those who ought to know something about irrigation works, his district might possibly yield more revenue and fewer complaints.

25. In any case the ultimate determination of all Public Works expenditure should rest with Public Works Officers, and with the Government in the Public Works Department, according to the rules which may be in force. The Public Works Department should be responsible for all outlay provided for in the Public Works Budget, and all that may be proposed to be laid out, whether on Public Works of general utility, or for the convenience of other departments, should be reviewed in the Public Works Department. The reasonableness of this arrangement seems to follow from the fact of the provision being made in the Public Works Budget. If the expenditure contemplated be of a kind, the propriety of which in all its bearings and details can be more properly estimated by some other department, the responsibility should rest with that department, and the Budget of the latter should contain the requisite entry: but if on the other hand it be a Public Work, i.e., if it is to be planned and carried out by professional officers, it would seem to follow that they are the proper persons either to decide what should be done in small matters, or to advise the Government in cases in which the decision should rest with the latter. This course would not prevent any department making known its wants or wishes, but these would have, perhaps, to be supported by more complete information than is under present arrangements forthcoming, for now the officers of some departments have merely to satisfy themselves, that expenditure on works which they wish to see carried out is advisable, while under the system I have suggested they would have to do much more, inasmuch as, where demands for funds are greatly in excess of the funds available, they would be obliged to demonstrate that their wants were entitled to be satisfied before those of other applicants were provided for.

26. Some stress is laid in paragraph 35 of the Report on the defect in the present arrangements, which has resulted from the Secretary to Government not having, since 1863, exercised in the Public Works Department any of the functions appertaining to a Chief Engineer. This is a defect no doubt, but the remedy is very simple, for all that is requisite is that he should be placed in a similar position to that now occupied by the Chief

The Secretary to Government should be also Chief Engineer and exercise the functions of such.

Engineer for Irrigation, who, as such, though he is also Joint Secretary, issues instructions, and is responsible for the efficiency of that branch of the department. The union of Secretarial functions with those of the Chief Engineer is principally useful, inasmuch as it saves expense, as also the re-duplication of work. Generally speaking, it would be a useless waste of time for two officers, each of whom is, or should be, ex-officio capable of disposing of the business coming before him, to go over the same ground in succession. The work will be better done, supposing, of course, the same number of officers to be employed upon it, if it be divided between them, than if both try to go through it all—the one to check the other. Whenever questions of importance arise, the Government can, and do have the benefit of the opinion of the senior, on the views of the junior Chief Engineer. There is nothing, so far as I can see, to prevent the Government calling for the opinion of the junior Chief Engineer on any subject not belonging to his branch of the department, if his experience happen to have been such as to make his views of any value, and on the same conditions the opinion of any other officer of the department might be asked for.

27. The next point for consideration is the proposition that there should be one Chief Engineer for the whole of the Public Works Department in this Presidency, and that he should be ex-officio a member of the Board of Revenue. The first part of this proposal appears to me to be due to a desire to see a theoretically proper arrangement carried out, and were it not unfortunately practically unadvisable, and this for reasons which can be very readily adduced, I should be most happy to agree with the majority. They had the disadvantage of not knowing the circumstances of the case: perhaps had they been better informed, or had they possessed some little practical experience, they would have sacrificed theory to efficiency. There are at present two officers of the rank of Chief Engineer, one being, as it happens, of the first, and the other of the second class. The former has charge of all the general duties of the department, and disposes of all business connected with Public Works other than those of Irrigation. He is also kept informed of the results of the work done in the Irrigation Branch by the Chief Engineer in charge of the latter. The work of the department has so far increased, that all the papers requiring the personal attention of an officer of the rank of Chief Engineer could not be examined, in the careful way necessary, by one Chief Engineer. Instead of the present sub-division of duties, according to the class of work, it would have been quite feasible to have made a territorial or geographical sub-division of the Presidency, and such an arrangement would have had some advantages, the principal one being that the two Chief Engineers would have worked with separate establishments entirely under their individual control, and each would have been entirely responsible for the efficiency and good order of the department throughout a defined area. I think, however, that the present plan is the better one, because the work in the two branches is really very different, and the substitution of complete and systematic arrangements for such as are less efficient, can be the more easily made where the controlling authority has to deal with requirements which are familiar to his experience, and not essentially dissimilar. To take an example, Public Buildings, whether Civil or Military, should be designed and carried out, with reference to considerations, totally different to those which influence the arrangements of Irrigation works. An officer capable of devising most satisfactory and efficient measures in respect of the one class of works, might not be at all competent to control effectively the work in the other class, and as more knowledge is of greater importance than less space, the division of duties, according to their well marked differences of character, rather than to their geographical position, would seem to secure the balance of advantage.

28. The majority of the Commission further propose (Report, paragraph 38) to make their one Chief Engineer an ex-officio Member of the Board of Revenue. During the discussions at the Meetings of the Commission, a somewhat similar proposition was brought forward, and some of the Members were desirous of obtaining the views of the Collectors and Superintending Engineers upon this idea. It was, however, at that time abandoned, because other

Members were strongly opposed to it, and wished, were opinions from District and Divisional Officers called for to ask at the same time for their views as to the way the Board did its own work, especially as regards the disposal of references. I am very sorry to have to say anything about the Board, but as it is suggested or implied that it has time to attend to much of the business of the Public Works Department, in addition to its own work, I am compelled to show, as well as I can, how the case stands. I have not the statistics which would have been doubtless available had the idea of making the Chief Engineer a Member of the Board not been given up when it was first under discussion, and I cannot therefore make my remarks throughout as definite as I could wish. And first it may be noticed that one question of some importance, in connection with the Public Works Department, was comparatively recently referred to the Board, in accordance, I presume, with custom. In Proceedings, Madras Government of the 16th October 1867, No. 3,207, the Board were asked, after communicating with four Collectors, to report their opinion "on the efficiency," or otherwise, of the Public Works Department, and to make "such suggestions for its improvement or assimilation with the same department in the other Presidencies as may occur to them." In the same order, four Superintending Engineers were called upon for their opinions, and three of them reported accordingly in the following November, and the fourth sent in in December a very full report, with a complete scheme of establishments. The Board on the other hand, in February 1869, asked for leave to remove this subject from the list of unanswered references because, by that time, the whole question had been referred to a Commission. I have had some little official experience of the meaning of a reference to the Board, and there is apparently no limit to the time required to obtain an answer. I will however give an instance of delay in dealing with a report made by a Revenue Officer. The Collector of Tinnevely wrote to the Board on the 6th March 1868, making various suggestions for the improvement of the irrigation of that district, his report being the result of three months spent in a close examination of the area proposed to be irrigated. The Board's Proceedings, transmitting this report to Government, are dated 10th November 1868, and the result of eight months' consideration was a few observations which left the contents of the Collector's letter almost unnoticed, and which might have occupied about as many minutes as they did months. The order passed upon these Proceedings shows what the Government thought of the Board's way of disposing of a report, which, it may be noticed, was so intimately connected with those interests, of which this body is the official guardian.

It was probably because a Board had to deal with the question, that the revision of the wet or nunjah assessments in many of the districts was carried out about ten or fifteen years after the necessity, according to the present prevailing opinion, had passed away, and it would seem to be the great draw-back to the value of the collective wisdom of a Board that it is but rarely available early enough to be of any use. I have travelled a great deal in Southern India, and I do not remember to have ever met with any officer, even of that service which is especially connected with the Board, who considered it to be otherwise than an obstruction to the disposal of Public business.

Now the Board's method of conducting business seems to me to be altogether inapplicable to the work to be done by a Chief Engineer. The latter officer has often to go through very voluminous papers, and he is not likely to have time to do this over and over again. Supposing then that he forms an opinion, and sends it on in circulation to the Members of the Board, and supposing that he gets their opinions within six months, which would be a very moderate allowance of time, he would, in the event of a difference of opinion, have to go through all the papers again: and there is apparently no particular reason why another six months or so should not elapse, for, when the Board and the Chief Engineer disagree, the latter is to record a minute, which then is to be seen by the other Members, who, it may be supposed, might have something more to say, and at last the Government would be asked to decide. In revenue matters such arrangements may answer, and it may, with respect to them, be good policy to interpose a powerful brake between the energy of District Revenue Officials and their work. Public Works business on the other hand does not usually require any such prolonged consideration, and most questions, which a Chief Engineer has to deal with, can be

disposed of as soon as the facts have been ascertained, if that officer thoroughly understands his work, and, if he does not, I am afraid, waiting for the Board's views, would be an unlikely way of enlightening him. Whenever the Chief Engineer thinks it necessary or advisable to consult the Board by all means, if delay be of no consequence, let him do so, but it would be far preferable, I think, were information or opinions from the Revenue Department obtained from the District Officers on the one hand, and in consultation with the Revenue Secretary on the other, and, if anything more were wanted, the Government could call upon the Board for its views. The definition of the class of business to be disposed of in consultation with the Board is, as defined in paragraph 38 of the Report, all embracing. There are very few matters with which the Public Works Department has to do which are not connected more or less with the "material progress of the Presidency," and if the work, which the one Chief Engineer of the report would have to perform, were not in itself overwhelming, and the report says that it would not be, I can imagine nothing so likely to make it so as to require its performance in "constant and unreserved communication" with the Board of Revenue. I am quite ready to admit that the Board would sometimes benefit by having a Chief Engineer in the same office building, to whom to apply for information or advice, but the price which the State would have to pay for such an arrangement would be too heavy. It is not long since that a proposition was made by a Revenue Officer to plant up the beds of the Chembrambaukum and Red Hill lakes with grass and trees, and the Board approved without any misgivings, and without its occurring to its members to ask the department, then engaged in enlarging these reservoirs at a very great cost from Loan Funds, whether such a course would be in any way objectionable. Fortunately, the Government considered that tanks were made to hold water rather than grass, and so the Board's approval was over-ruled.

I observe from paragraph 49 of the Report, that it is proposed to give the Chief Engineer, when an ex-officio member of the Board, the same salary that he now draws, and not to assimilate it to the pay of the Revenue Members. This is quite in accordance with precedent, but only so because the members of the Covenanted Civil Service have had sufficient influence to secure for themselves very much higher salaries than are assigned to other officers for undertaking the same work, and the same responsibilities. I do not suppose that any Chief Engineer would wish to be associated with the Board, however advantageous such an arrangement might be to him as regards pay, but should he be obliged to become an ex-officio member of that body, he should, I submit, be paid accordingly, and in proportion to the salaries received by the Revenue Members. No doubt this requirement would make it the more difficult to carry out the recommendation of the report, and perhaps this consideration, rather than any idea that the Chief Engineer need not be placed on a footing of equality with the other Members, occasioned the omission of any notice of this point. Mr. Sim, in the scheme of organization appended to his minute, faced the difficulty, and proposed to give the Chief Engineer a salary, Rupees 3,500, equal to the average of the salaries of the three Revenue Members. This provision would not make the arrangement more attractive to a Chief Engineer who desired to be able to do his work properly, but it renders it at least equitable.

29. As regards the abolition of the appointment of Chief Engineer for Irrigation, and the substitution of a Superintendent of Irrigation, subordinate to the one Chief Engineer for the whole department, I have already, in paragraphs 25 and 26 above, said nearly all that seems necessary; but, with reference to the remarks in the latter part of paragraph 33 of the Report, it may be noticed that—

1st.—It is not at all certain that "the ablest Hydraulic Engineer will naturally be selected to occupy, as at present, the post of Chief Engineer* in this Presidency," for the selection would more naturally fall upon the officer, whether his experience had been gained in Hydraulic or General Engineering, who happened to be considered most fit for the post.

2nd.—It would be quite unnecessary, were an Hydraulic Engineer at the head of the department, for him to surrender the work connected with Irrigation to a Junior

Co-adjutor. There is, so far as I can see, no reason why the senior Chief Engineer should take the General, rather than the Irrigation, branch duties. The most advisable arrangement would seem to be that he should, in addition to the work common to both branches, take the duties of that particular branch in which his experience would be of most use.

3rd.—The proposal of the report would leave the work of the General Branch undone, for if the one Chief Engineer were to devote himself to Irrigation, he would have little time for anything else, and the officer who is to aid him is also to be specially qualified for that particular kind of work and therefore, though it is not so stated, he also would probably be employed on Irrigation business.

The majority fear lest two Chief Engineers, though for different branches, should lead to departmental clashing, but really, with a proper definition of duties, they would have perfectly distinct responsibilities, and a collision would be as improbable as one between two trains running on different lines of rails. It is when officers of the same or different departments interfere with each other's duties that clashing results, and co-operation becomes impossible.

Other organization proposals of the majority considered.

30. The next three recommendations, viz., the abolition of the eight Superintending Engineers;

The appointment of two Inspecting Engineers;

The restoration of District Engineers; may be considered together. From para. 33 it would appear, that practically these propositions amount to the substitution of twenty for eight Superintending Engineers, for it is stated that the duties of the District Engineer "will be entirely of the nature of superintendence," with two Inspecting Engineers and a Superintendent of Irrigation to help. I may state at once that I have no objection, on principle to the reappointment of District Engineers; the management of a district is, I know from a good many years experience, particularly interesting. If also funds be abundant, there would be no waste of power, for undoubtedly there is sufficient room for improvement in each district to provide ample occupation for the most energetic District Engineer. Money, however, is unfortunately not very abundant for any number of years together, and as it is quite practicable to work the department efficiently with Executive Engineers of Divisions, without the aid of a Superintending Engineer (or an Engineer for superintendence only) in each district, it would seem hardly necessary to make a change which circumstances do not require, and which would lead to additional expense. With regard to the two Inspecting Engineers, I am of opinion that, for the purpose of seeing that the work of the department was being everywhere properly done, they, like the three Deputy Chief Engineers prior to 1863, would be useless. They would be simply assistants to the Chief Engineer, without any definite responsibility, without any special interest in anything that was going on, and unable to do anything of their own authority. An Inspecting Engineer could not look after half the Presidency in any way which would be of value. The work of the department is not of a kind which could be so easily discerned, that "he who runs may read." The works over a large area of country cannot be examined like a Police detachment or a regiment, and an inspecting officer to do good must look to the why and the wherefore, as also to the results, of expenditure, and particularly to that made on the sanction of local officers. We are fortunately not without experience of the inapplicability of an arrangement, which would place the Head Quarters of all the inspecting officers at Madras, to the business of the Public Works Department. It has been tried, and it was universally condemned; it was distasteful to these officers themselves, and the district officers but very seldom saw anything of the Deputy Chief Engineers, while the latter, having enormous distances to travel, could only pay flying visits, and could not spare the time to afford that advice and assistance which are often of great value, and which the executive officers are always glad to obtain. Inspecting officers should live in their Circles, know the country well, visit each part occasionally, take a personal interest in all projects of improvement, satisfy themselves that money is well spent, see that orders are duly attended to, and make their experience available wherever required.

31. I am therefore of opinion, that the best arrangement for this Presidency will be, taking both cost and efficiency into account, to divide the country into Superintending Engineers' Circles, and Executive Engineers' Divisions. There are at present eight Superintending Engineers, and I propose to retain seven, but to make a considerable alteration in their charges. The Godavery and the Kistna Deltas together in the north, and the Tanjore Delta in the south, are of sufficient importance to occupy the time and attention of a Superintending Engineer, and I would make these therefore Irrigation Circles.* These Circles will, I hope, be the training field for Assistant Engineers, so that they may be fully qualified to become Executive Engineers of Irrigation Divisions, or to investigate and mature important hydraulic projects. I anticipate much advantage from such an arrangement, for the great northern and southern systems of irrigation need close attention and skilful management, and they are fully worthy of every care which can be bestowed upon them. Not only have the existing works to be maintained, but many radical improvements have to be carried out, regulation and drainage, economy of water, and the amelioration or eradication of evils attending the use of water for irrigation over large areas, each and all require to be looked after, and to be dealt with by skilful and experienced officers, who will have to carefully collect information, and then to carry out such measures as may be found to be most advantageous. The rest of the Presidency I would divide into five Superintending Engineers' Circles, as shown below :—

1st Circle..... Ganjam.
Vizagapatam.
Godavery, exclusive of the Delta.
Kistna do. do.
Area of 1st Circle about 20,000 square miles.

3rd Circle..... Nellore.
Cuddapah.
Kurnool.
Bellary.
Area of 3rd Circle 22,500 square miles.

4th Circle..... Presidency.
Madras.
North Arcot.
Bangalore (Station).
South Arcot.
Area of 4th Circle 11,550 square miles.

5th Circle..... Salem.
Coimbatore.
Neilgherries.
Malabar.
South Canara.
Area of 5th Circle 26,500 square miles.

7th Circle..... Trichinopoly.
Madura.
Tinnevelly.
Area of 7th Circle 12,257 square miles.

Some of the Circles are large, but in the 1st the districts lie along the coast, and the Superintending Engineer will be able to get by steamer from one end to the other. In the 2nd Circle two of the districts are traversed by a Railway. In the 5th Circle, which is the largest of all, a Railway runs through Salem and Coimbatore; Malabar and South Canara are long narrow districts on the West Coast, and there are several ports at which steamers touch periodically. On the other hand, in the 4th Circle, the expenditure will always be

* About 3,500 square miles.

heavy, and in the 7th, the area shown is exclusive of the large Zemindaries* in the east and south-east of Madura, in which roads, though nothing else perhaps, will have to be looked after.

Establishment subordinate to Superintending Engineers.
† Sub-Engineers and Supervisors.

32. Under the Superintending Engineers will be the Executive Engineers of Divisions, with their Assistants and upper subordinates,† and the numbers and distribution of these should, I think, be as follow :—

ION : -										
Circles.	Districts.	Executive Engineers.	Assistant Engineers.	Upper Subordinates	Circles.	Districts.	Executive Engineers.	Assistant Engineers.	Upper Subordinates.	
First.	Ganjam.....	1	...	2	Fifth.	Salem.....	1	3	3	
	Vizagapatam, including	1	3	4		Coimbatore.....	2	4	4	
	Jeypore.....	1	2	2		Neilgherries.....	1	1	2	
	Godavery, upland.....	1	2	2		Malabar and Wynaad.....	1	3	3	
	Kistna do.	1	2	2		South Canara.....	1	2	2	
	Total...	4	7	10		Total...	6	13	14	
Second.	Godavery Delta.....	2	4	4	Sixth.	Tanjore	4	7	6	
	Kistna do.	2	4	4		Seventh.	Trichinopoly	1	2	2
	Total...	4	8	8			Madura.....	1	3	2
Third.	*Nellore.....	2	3	4	Summary.		†Tinnevelly.....	2	3	4
	Cuddapah.....	2	3	4		1st Circle.	Total...	4	8	8
	Kurnool.....	1	3	1			2nd do.	4	7	10
	Bellary.....	2	4	4			3rd do.	7	13	13
	Total...	7	13	13			4th do.	7	11	11
Fourth.	Presidency, including the	1	2	1	5th do.		6	13	14	
	Mount	1	2	2	†6th do.	4	7	6		
	Madras.....	2	3	3	7th do.	4	8	8		
	North Arcot.....	2	3	3	Total...	36	67	70		
	South Arcot.....	1	1	2		Supernumeraries to take the place of superior officers on leave....	2	10	12	
	Bangalore.....	1	1	2			Total numbers required...	38	77	82
	Total...	7	11	11						

In an Appendix will be found the proposed arrangement of the Divisions and Subdivisions, as also the intended allotments of overseers and maistries thereto. Another Appendix shows the cost of the establishments on the system proposed. I do not suppose that every detail of the organization will be capable of adoption without modification, for although I am fairly acquainted with the majority of the Districts of this Presidency, it is highly probable that, when the Executive Divisions and Subdivisions come to be constituted, circumstances will be brought to notice which may modify the boundaries of some of these, as shown in the Appendix, and make some difference in the distribution, and perhaps in the strength, of the subordinate establishments. Nevertheless as much consideration, extending over a long period, has been devoted to the organization of the department, I hope that no very material alterations will be found requisite. The scales of office establishments have been fixed in communication with the Controller of Public Works Accounts. The scale of establishments I have proposed is intended to carry on the ordinary duties of the department, and will, I consider, be capable of managing an expenditure* of about 100 lacs a year. It will not suffice to furnish officers, and

* Imperial and Local Funds.

* One irrigation, and one general division.
† One irrigation, and one general division.
‡ Irrigation.

subordinate staff, for the special investigation of large projects, but all other work it should be able to undertake. In this Presidency area plays an important part in determining what establishments are necessary. A reduction of expenditure does not set free any material portion of the staff, for all over the country there is something to be done, and it occupies almost as much time to look after the smaller as the larger outlay in each 500 square miles. Were a road or some large masonry works to be the only occupation of the establishment in any tract of country, the stoppage of expenditure upon such work would make that establishment unnecessary, but this is not the case, as there is no considerable area of inhabited country which will not require to be traversed in many directions under all circumstances, and whether the outlay within its boundaries be large or small. The condition of existing works, many of them of irrigation, has likewise to be seen to once, or more than once, in each season, and it is a very common result of the diminution of the funds available for their up-keep or improvement, that extra, instead of less, work is entailed in the endeavour to make a little money go a long way.

33. The present is perhaps not a favourable time for bringing forward a scheme of reorganization intended to secure greater efficiency, but I may safely say that, if there is to be a reduced scale of expenditure for the next year or so, this fact, so far from making it advisable to postpone reconstruction, will be not without its own special advantages in enabling those who may be charged with the duty of carrying out the alterations, to effect the change with less inconvenience to the public service than would otherwise be possible.

34. The scales of salaries adopted in the revised scheme of establishment are, for all grades down to Assistant Engineer, those proposed by the Government of India for general introduction, and which have already been made applicable to the staff of the State Railways. For Sub-Engineers and Supervisors the old scale has been retained. Overseers I propose to consider as lower instead of upper subordinates, because, in this Presidency, the majority of them will usually be of a different and less educated class than the members of the superior grades of subordinates. The maistries are a class additional to the present establishment. The want of these useful men has been very much felt, and it has been a source of much regret to Executive Engineers that they were all (they were then Sub-Overseers) discharged in 1863. They should be men with a practical knowledge of the ordinary constructive work of the department in all its details. It will take some time to collect a sufficient number of these men, but in Southern India there are many very excellent maistries, who are competent to construct efficiently very considerable masonry works, and to carry out instructions intelligently, so that I hope that in time this very necessary part of the establishment will be placed on a satisfactory footing.

35. The Report of the majority of the Commission does not contain any detailed scheme of establishment, it not having been deemed advisable to prepare one. It is however mentioned that the majority considers 19 lacs should cover its cost. How this conclusion was arrived at is not clear, for, without going into details and examining the requirements of every kind, it appears to me that it must be quite impracticable to obtain a reliable total for the expense requisite. The majority however recommend a certain system, and prescribe a certain number of officers of the superior grades, and then omit to ascertain what this arrangement would cost, and how much would be left for the subordinate grades. The gentlemen who have fixed the limit of cost have for many years been engaged on duties which could not possibly enable them to understand the requirements of the Public Works Department, and it is not surprising therefore that they were unable to furnish details of the component items of their limit of 19 lacs. Were that exact sum to be taken, it would at once render it impracticable to adopt the leading features of their scheme, and at the same time provide for an efficient subordinate establishment. Waste of power in all directions cannot be economical, and it will, I think, be the universal opinion of those, whether in this Presidency or elsewhere, who from practical knowledge of the subject, are most competent to judge, that were funds available for an establishment costing half as much again as that of the majority,

or 28½ lacs, it would still be impracticable for such an establishment to render the State as good service as one much less costly, if administered by those acquainted with the duties to be performed. It is absolutely quite appalling to contemplate the task which would be imposed upon a Chief Engineer, who had to enlighten the overcharging Board of Revenue in Public Works matters, and similarly local officers of the department would be doomed to teach ere they could hope to convince.

36. The Government may however doubt how far my allegations are true, and I will therefore adduce, from the evidence, a few examples of the views of Revenue officers. The Collector of Nellore considers the present system radically defective in the distribution of duties. He would separate execution and supervision altogether, and he considers the present examination by superior officers of work done by their subordinates to be equivalent to the hearing of an appeal from a magistrate by that magistrate himself. This Collector, and several other Revenue officers, are desirous of placing the local officers of the Public Works Department in the same relation to the Revenue officers as the Police hold to the magistrate. They appear altogether to have ignored the fact that the magistrate should be as well informed, as to the proper duties of a Police officer, as the latter himself, whereas the Revenue officer does not generally know anything of the way in which Public Works officers should do their work, and is absolutely incompetent to instruct them. The Collector of Nellore, however, would make one difference, he thinks it would not be advisable to entrust what he terms the Chief Executive Engineer with the appointment of his subordinates, in the same way that the Police Superintendent fills up the subordinate appointments in the Police. To the Chief Executive Engineer he would give a rank and position corresponding to that enjoyed by a Deputy Collector, and he would ensure the due audit of bills by having a Chief Executive Engineer in every district, and an Executive Engineer-in-Chief at the Presidency, though what this latter functionary would do to make that particular title appropriate is not explained: it is not usually thought to be the special duty of an Executive Engineer to audit bills. Some bills also he would have passed by the talook and village authorities. He thinks that Revenue Officers would not require any special training, to enable them to occupy in due course the position occupied by the Magistracy at home, as regards Public Works in an English county, but it does not appear to have struck him that this would leave the Magistracy here without any connection with State works, or with any works, unless they themselves became large contributors to their cost. This Revenue Officer further proposes to make the Superintending Engineer useful in ascertaining, for the information of Government, that a certain amount of money is annually misspent on Public Works. This is already indirectly one of the duties of a Superintending Engineer, *i.e.*, it is his duty to see that the Government get the value of the money spent, and to take notice of all shortcomings in this respect: there is no proof required, that some money is, and will always be, misspent annually, just as it is quite certain that the Government are paying annually very considerable salaries to some officers of the Revenue and other departments, the value of whose services does not quite accurately correspond with the pay enjoyed by them. This is inevitable; the most that can be done is to keep down the per-centage of waste. I must here notice that the evidence of this Collector, as printed, gives but a very imperfect idea of his examination. I append therefore (*vide* Appendix No. 3 to this dissent) a list of the questions put when this officer was before the Commission, the answers to which he was to write out. This he does not appear to have done, and consequently the reasons for many of the opinions he expressed are not forthcoming. It is an easy matter to make assertions, but it is not so easy always to substantiate statements on cross-examination, and this difficulty would seem to have been experienced. The Collector of Bellary entertains very decided views as to the need of reformation in the Public Works Department, and as to the necessity of giving Collectors practically supreme power. He says, "I need not amplify on the defects of the present system under which the country is rapidly deteriorating." Now it so happens that a former Collector made a very unfavourable report on the condition of the tanks and roads of this district, and, on being called upon to

substantiate his complaints, was unable to do so, and was found to have indulged in gloomy anticipations of a future, when his complaints would be true. His successor after a long

* He says, * * * "in the early part of November (1866) I commenced a tour of the district, and have in three months up to date ridden slowly through eight talooks, inspecting with one exception all the principal irrigation works of the district." * * * "The irrigation works are in good order." Again, in a letter written a month later, in consequence of an unfavourable report by the Acting Sub-Collector, he says, "The tanks I examined were the Anantapur, Singhanamalla, Bookaputnam, Durmaveram, Purghee, and some minor ones, such as Hindupur, Madacsara, Harisamudram, &c. These first five I have specified by name are magnificent first class reservoirs, and nearly all were full of water." * * * I think the state of these tanks reflects great credit on * * * the former Engineer of this district," and afterwards, "I consider the state of the Sub-division of Bellary, in

† The officer named was not the writer's immediate predecessor.

"irrigation works and roads, as most creditable to the former Collector, * * *, and Engineer, * * *"

never properly undertake the responsibility; secondly, because I do not believe in the retrogression, and, therefore, it would be unjust to blame him for what is non-existent. When I first went to the Bellary District, there was hardly a tank not breached, and the roads consisted of two rows of aloes about thirty yards apart. It would be difficult to get back to the miserable state of things which then existed, but there was no Public Works Department then, and the Collector had it all his own way. This officer writes, "A project for bringing a large area under wet cultivation recently came before me. The Deputy Tahsildar and Ryots brought it forward, and declared that it was feasible. The Supervisor reports that it is impracticable, and the Superintending Engineer merely passes on his report without being in a position to offer an opinion, and although I may have a shrewd suspicion that the Ryots have reason on their side, I am obliged to drop it. A District Engineer would have been able to test the accuracy of his subordinate's report before sending it on. I do not for one instant assert it, nor have I any reason to believe such was the case in this instance, but it is quite within the limits of possibility that the Supervisor may have received a handsome *douceur* from interested parties to make this unfavourable report," and this officer thinks that he is qualified to manage the Public Works Department!! One wonders whether he carries the same judicial tone of mind to the Magistrate's bench; and, if so, whether the Supervisor, even if he were to decide on the *douceur* system, would not, on the whole, make the better magistrate of the two. This Collector thinks that the "entente cordiale" between the Revenue and the Public Works Departments cannot, as a rule, have a practical basis until the Collector is recognized as *de facto* the administrative head. There is at any rate a very practical basis in his remarks for the absence of the *entente*

Collector of North Arcot.

cordiale. The Collector of North Arcot says, that he "should be empowered to enforce any requisition he may make on the time and attention of the Engineer," and he adds, "any project regarding which such a requisition would be made, would probably have been fully discussed by the Collector in consultation with his Revenue Officers and the villagers, and such information would have been gained as would give a *prima facie* presumption of the feasibility of the project. The irrigation requirements of a district are, in the first instance, a purely revenue matter; and such projects will generally arise spontaneously, and not from any ferreting out on the Collector's part." These views are remarkable, but not moreso than are those of very many members of the Revenue Department. Experience shows, first, that such evidence as the Collector would adduce would be worthless; secondly, that where such a course has been followed, the time of the Engineer has been very frequently wasted, or works not entitled to the approval of Government have been sanctioned. I would instance the Mambankum project on the Cheyaur, in the North Arcot District, the construction of the Cheyaur anicut at its present site instead of below its junction with the Seear, and the Poiney anicut. These last two works have been failures, just because the Government were induced to undertake them upon the recommendation

of Revenue Officers, who did not, and ought not to have been expected to, understand the first principles upon which projects of this class should be based. I would beg to call attention to this Collector's evidence generally as shown in the answers given to the questions

Vide answers to Questions 17 and 19 of Circular 4.

of Circular 4, and in cross-examination. His idea that an establishment, the highest professional member of which would be a Sub-Overseer on 60 Rupees a month, could be properly controlled by Talook and Village Revenue Officers and by "moral checks," which are explained to mean the "self-interest and antagonism in the village," and which are confessedly equal to the detection of only "very flagrant irregularities," would be somewhat novel were it not that it is said that he looks almost entirely "to these checks for the disclosure or exposure of concealed cultivation, embezzlement of collections, &c." The administration of the North Arcot District by moral checks would, I am afraid, if inquired into, reveal a good many results which are not at present patent, and it is perhaps not surprising that not long ago a sharp native found it easy to get possession of a public stone quarry, advantageously situated near the Railway; and, but for the action of the Government, this would have secured to this very fortunate individual a monopoly of the supply of stone, for which, in connection with the Revenue Survey and Public Works Departments, there happened to be a very great demand. The next evidence by a Revenue Officer, to which I will refer, is that given by the Sub-Collector of South Arcot. This officer, in his answers to the questions of Circular 4, advocated the initiation of works by the Revenue Officers, and the examination of projects or repairs of works so selected, and their subsequent execution, by the Public Works Department. He thinks, however, that the extent to which Revenue Officers should originate works should be left to their own discretion, and that it would depend therefore upon the taste of particular officers, whether they did much or little in this way, and the Engineers should do the rest. The Collector should have no responsibility in the matter, but it should be perfectly optional with him to take a large share, or none at all, in the direction of Public Works expenditure. He admits that the practical initiation of works rests with Public Works Officers, because they are necessarily more conversant with the requirements of their ranges, and of particular works than any one else, and that the system works very well; but he appears to have an idea that if the Revenue Officers knew more than the Public Works Officers, and this is impossible unless the former give up their own proper work altogether, they might with advantage do more than at present in the direction of expenditure. The evidence of this officer on cross-examination upsets nearly every thing that he wrote in answer to the Circular. In one place, the Engineer Department is to be the executive of the Collector's proposals, but it is shortly after explained that the District Engineer need not object to this position, as after all he would be merely carrying out what he himself had advised. This officer is sincerely desirous that Revenue Officers should take an interest in the Public Works of their districts, but he is puzzled to know how this can be managed, and his suggestions would practically lead to the absence of all responsibility, and to much confusion. His own evidence shows very clearly where there is plenty of room for the Collector to do useful work, at least as regards Irrigation works, and to show an intelligent and very advantageous interest, and this on ground with which he will be familiar. Whether for projected works or for existing works, much more accurate and definite Revenue information is needed. Inaccurate statements prepared by Tahsildars and transmitted through the superior Revenue Officers, without examination and revision, and without the useful comments, which they, when well acquainted with a district, could furnish, are not by any means sufficient. There is much to be done every year in the investigation of the results of the season under Irrigation works, and here the Collector must supply all the information on the one side, and the Engineer on the other. An interest would speedily be developed were definite objects to be striven for, and definite evils or irregularities ascertained and corrected. The Sub-Collector was asked whether the following account of South Arcot, which appears in the evidence of the Superintending Engineer of the 5th Division, was correct:—"When the Department Public Works was organized in 1857, the Irrigation works in South Arcot were in a bad state of repair, though there were then no roads to distract the attention of

the Maramut Department. Since then nearly all the large works have been put into good order, the minor works have been much improved, and the district has been covered with roads." His reply was as follows:—"I think it very likely to be a perfectly accurate description. With a superior and more highly trained Executive establishment, I conceive that the district has progressed enormously, even though less is spent on Irrigation works than before; and it would be most disastrous to attempt any return to the old system and establishment; indeed it is inexplicable how they managed to perform so much as they did. I am, therefore, thoroughly satisfied with the executive and their execution; but I do not know that under the old system, there was any faultiness in the selection of schemes. On the contrary evidence goes to show that the objects selected were invariably the most remunerative ones, and the mere fact that all the money that was available was invested in highly remunerative Irrigation works and not in roads, only bears out, to the full, my own view that Revenue Officers, having the direction of expenditure, instinctively apply it to what is most remunerative and directly productive of Revenue, in preference to non-productive works, such as roads, bridges, ghauts, public buildings, &c." The only remarks I need make on this are, that expenditure on new Irrigation works may have been less than formerly, because there was less need for them, but that nevertheless they have not been neglected, and several works of importance have been carried out successfully; that all the expenditure on roads, &c., has been met from additional funds, and that such works are essential to the prosperity of a district and of the country generally, though they may not directly affect the land revenue.

This officer thinks that, looking to the nature of the majority of works to be performed, the Public Works establishments are needlessly expensive, and the status of the officers too high; and he adds the following N.B.:—"My remarks chiefly apply to Tanjore, where the country is for the most part a dead level, and where, therefore, the majority of works require little or no professional skill." As regards the status of the officers it may be remarked that the almost universal complaint is that, from the paucity of officers of experience and standing, many ranges are in charge of upper subordinates, and that the result has not been satisfactory. Next, as to the requirements of Tanjore, I think I may safely assert that in no part of Southern India is so much professional skill required. Engineers have for many years past been advocating improvements, but apart from the provision of funds, the difficulties to be overcome were so great that a long time had to be spent in careful investigation before anything could be undertaken, and the irrigation of this district still continues to demand most careful attention and consideration: if things are got into order in the course of the next fifteen or twenty years, the Government ought to be well satisfied. The country, of course, is not on a "dead level;" but as it is, it is sufficiently

difficult to manage the supply and drainage of the great area* of wet cultivation, and the problem to be solved in providing effectually for these two requirements is one of the most difficult, I think, that an Hydraulic Engineer could take up. Then there are flood waters to be controlled and distributed, and a vast network of interests, many of them conflicting, to be looked to. This officer advocates the placing of the whole subordinate establishment under the Collector, and indeed contemplates a return to the old maramut system, in which the Revenue Officers were the executives, and their work was examined by a small staff of Engineers. That system was not very favourably reviewed by the Commission of 1852, and if it failed then, when there was so little work to do, the results now could not be doubtful. Throughout a considerable part of the evidence given by this officer, the idea runs that the absence of any Engineering difficulties in Tanjore make the Revenue Officers and the Ryot as capable of forming an opinion, as to how money may best be laid out, as any one, and it is hardly necessary that I should further notice any of the views based upon this supposition, but I will extract one question and its answer Questions 1 and 2-XXV. "Do you think that all that is necessary for the maintenance of the Irrigation works in a district like Tanjore could be planned and executed by maistries?" Certainly (as it has been done heretofore) with the aid of the District Engineer, his assistants, and

Acting Civil and Sessions Judge of Trichinopoly, formerly Collector of Tanjore.

* About 700,000 acres.

"the Surveyors." This is much the same as saying that the Government of Madras might be carried on by a few Clerks with the aid of a Governor in Council and his Secretaries. The original answer to Question 4-VII. "What then would be the advantage of the Revenue authorities taking the place of the Department Public Works in the execution of Works?" was thus: "There is a very great advantage in the Revenue authorities working the available labour of the country in a district like Tanjore, as the interference of a foreign department is likely to disturb the relations between employers and labourers, whereas the Revenue authorities generally command a large amount of labour at the non-cultivating season with the ready consent of the Ryots." The printed answer is somewhat different. Qs. 4—VIII., IX., X., XI., XII., XIII. and XIV. are on the same subject, but one question which was put and answered has not been recorded. It was to this effect: "Is not the real difference between the employment of agricultural labour by Revenue and by Public Works Officers this: that in the former case there is, or would be, a tacit understanding, that so long as the Merassidars or Ryots provided the Revenue Officers with the labour demanded, the latter would not interfere with the relations between the Ryots and their agricultural servants, and that consequently these latter would be entirely at the disposal of their masters, and be obliged to take what they would give, whereas Public Works Officers are ready to pay the fair market rates for all labour coming to them," and the fact that this was, after all, the real difference was admitted.

This Revenue Officer considers that it would be advantageous were the Collector to do more in the way of initiating works of improvement, and the smallness of his personal knowledge of the subject will be seen from his evidence in cross-examination on Question 3 of Circular No. 4. He had stated at the beginning of his evidence that the Public Works Department did not give satisfaction, because, among other things, few new irrigation works were initiated; on being questioned as to what new works were required, he said that in the talook of which he has charge, the Tahsildar constantly represented that he could not get the works advocated by him carried out: again, he shows that a Collector would in practice initiate works by adopting the views of the villagers transmitted through the Tahsildar, and he considers that the village officers are generally pretty well able to judge what is, and what is not wanted; and once more, "I would not initiate a work without first ascertaining its probable results. In fact, the Tahsildar would not recommend it if there were not probabilities of a fair outturn." In short, on this system, the Public Works expenditure would be determined by the Ryots. I have in a former part* of this paper commented upon other parts of this officer's evidence, and space will not admit of a further criticism of his opinions.

* Para. 24 above.

37. Another point which has been dwelt on by Revenue Officers is the affection for them felt by the Ryots, the influence over the latter they possess, and the dislike of the people to any interference by a department which is separate from the Revenue administration. They do not all go as far as the Tahsildar, who said that the people liked being coerced by the Revenue Officers, but some of them go a considerable way in expressing the mutual confidence and esteem which exists between them. One officer, from whose evidence on other matters I have already quoted, says, "The people look up to the Collector and Magistrate for every thing. He knows their wants and speaks their language. The Ryots rush to the Collector and to the Tahsildars in all their troubles, and look to the Revenue Officers for the redress of their grievances and for their general well being." My experience does not confirm the correctness of this picture, as a representation of the relations existing between the Revenue officials and the people. The revelations of the Torture Commission presented a somewhat different aspect of those relations, but I gladly admit that a very marked change for the better has taken place since that time. Nevertheless, I believe that the idea of the mass of the people having any access to the generality of the superior or inferior officers of the Revenue Department is altogether erroneous. I knew a Revenue officer who set apart an hour or two in the morning, and allowed whoever wished to come to him without Peons

Relations of the members of the Revenue and Public Works Departments with the people.

or others to interfere being present, but I think this was an exceptional arrangement. Generally a Revenue Officer cannot know that any one wishes to see him except through Peons, and it is not easy under such circumstances for a poor Ryot to obtain an audience. The men whom Collectors and their subordinates do see are the well-to-do influential Ryots—men who have relations in the Cutcherry, or whose position ensures some attention to their wishes. At the Jummabundy all Puttahdars are for a moment in the presence of the Revenue Officers, but I have witnessed the ceremony of the issue of puttahs several times, and I should say that the poor Ryot who would there obtain a full hearing of a complaint, without first obtaining the support of the subordinate officials, must be of a remarkably persevering and determined character. Five or six seconds may be about the average time allotted to each individual, and the Ryot goes into and out of the “presence” much in the same way that a bar of iron is passed through a rolling mill. He need not be much squeezed, but the machinery is powerful, and through he goes without any hitch. When the Revenue Officers visit a village or walk along a tank bund, the people who have access to him are still the village officials and the leading Ryots. He learns their opinions, or, as I have known to be the case, has his own stated to him by their mouths. He gets perhaps some information which is true, but it is just as likely to be untrue, or at best one sided. He has not the time, if even he had the inclination, to hear the multitude, and probably the most zealous and upright of the minor officials would find their lives a weariness to them if they had to explain the facts connected with all the statements which the multitude would make. Well it is said that members of the Public Works Department are unpopular with the people; that they are without influence; that they do not understand the wants and feelings of the community, with much more of the same kind. There is no doubt a certain amount of truth in these assertions, but I think there is no doubt also that, when their relations with the people are less satisfactory than is desirable, this is in a great measure due to the extreme jealousy which Revenue Officers, from the Collector down to the Village Kurnum, have in many districts shown of any interference, or the exercise of any influence, whatever by the Public Works Department with matters in which the Ryots are concerned. As regards Irrigation works, the tendency of the operations of the department is to effect improvements whereby the distribution of water is made as fair as possible. In doing this the influential Ryots are inevitably offended. They, if water is scarce, get what little there may be, and they naturally dislike any interference with so pleasant an arrangement. If a road is to be constructed these influential men dislike to have it carried through their hands, and, were there no Public Works Department, they would lay it out or get it laid out through the fields of their poorer neighbours, who would have about as much chance of obtaining a favourable hearing at the Talook Cutcherry as of becoming Tahsildars themselves. Public Works Officers are consequently very frequently obliged to do what is disagreeable to the only persons whose complaints can reach the Revenue Officers, and the latter are not, as a rule, slow in hearing and believing. I append to this dissent two letters, one No. 181 of the 22nd April 1868, and the other dated 28th idem, from the Collector of Tinnevely, which show what this officer considers to be a popular way of obtaining labour and carrying out work. With him the people are synonymous with the landholders, and the labouring population is something outside and below the people. This Collector was a member of the Commission, and held strong views as to the want of harmony between the mode of action of the Public Works Department and the manners and customs of the country: this translated means that free labour does not suit the wishes of those who have been accustomed to look upon the labouring population, which was until lately recognized as in a condition of slavery, and is still only nominally absolved from that state, as bound to obey whatever orders it might receive. The Collector adjusts the wages of the labourers according to the funds available, and as they have no option, this is, so far as he is concerned, a very convenient plan. In a letter, dated 6th March 1868, the same officer offers to get work, the value of which he himself puts at 1½ lacs of rupees, done for 30,000 rupees. There is apparently no particular reason why the work should not be done for nothing. It should, however, not be forgotten that this Revenue Officer, who was able to exercise so much influence in his district, was at the same time engaged in revising the Revenue Settlement, and advocated very considerable reductions, although the high value of the irrigated lands

in the market demonstrated tolerably conclusively that the higher assessment was no great burden. It may, therefore, be considered that the State would have made a very bad bargain had this officer's views been adopted throughout. To use compulsory labour is a cheap method of executing work, but, even from the autocratic point of view, it is not economical to pay those who furnish the forced labour far more than the amount which is withheld from the actual labourers. Take again the subject of cattle trespass, interference with and injuries done to Public Works, whether of irrigation or communication and matters of this kind. The Public Works Department has good ground of complaint against Revenue Officers, both superior and talook for the very inadequate support which has been accorded by them, in their Magisterial capacity, in enforcing the law and punishing evil-doers. Very often they do not comprehend how much damage is done, and how much risk is incurred by the acts complained of, and they consequently consider that Public Works Officers are very needlessly severe in noticing them at all. The members of the department are simply desirous that the works in their charge should not sustain wilful and unnecessary injury: they are clearly, I think, the best judges of the effect of the illegal or criminal acts brought to notice, and the law ought to be faithfully administered, so as to put a stop effectually, so far as its provisions will allow, to all such practices. In some parts of India and in other countries also, officers in charge of Irrigation works have summary power to punish all who do anything likely to render such works less efficient, or who interfere improperly with the distribution of the water. In this Presidency the grant of any such power has been consistently refused. I believe that Public Works Officers do not desire to exercise Magisterial functions, and would prefer to see the law properly enforced by the ordinary Magistracy, but if the latter continue to persist in screening offenders, the Irrigation Department will be obliged to ask the Government to provide a remedy. Revenue Officers, whether in that capacity or as Magistrates, seem sometimes to forget that they have no inherent claim to the sole exercise of power and influence, and that these are conferred upon them only in the interests of good Government, and may, if need be, with equal propriety, be conferred on the officers of any other department for the same purpose. I have noticed that Revenue Officers, with all the influence which they assert that they possess, find it necessary or convenient to obtain special powers for themselves and their subordinates, and that sometimes their demands are hardly reasonable. For instance, a member of the Commission, who is also a member of the Board of Revenue, proposed his draft Customary Labour Act, that Collectors should appoint local managers, of whom the head of the village and the Kurnum should be two, and that these managers should be empowered to inflict a penalty not exceeding three times the value of the labour to be contributed by any individual, as also to appoint such establishments for supervision as they might think proper, and to levy the cost from the persons bound to provide labour. It is not difficult to perceive that such powers would be very liable to be abused.

38. As illustrating the great objection which Revenue Officers in this Presidency hold to allowing the Public Works Department to do anything which can possibly be prevented, I may mention the remarkable fact that in, ^{Public Works Officers not allowed to have charge of road avenues.} I believe, all but one or two districts Public Works Officers are not allowed even to keep in order the avenues along the roads of which they have charge. They must not remove a branch which is in the way of the traffic; if a tree is rotten and threatening to fall, they must not touch it, but must report to the Revenue Department, who may or may not take any notice of the representation. I have, when in charge of a range or a district, had my hat knocked off repeatedly when riding, the tops of my baggage carts injured, and, of course, the inconvenience I suffered was but an example of that which the traffic generally had to endure, but I could not do anything to remedy the evils, except by writing to a Collector, who would write after a time to the Tahsildar, who would direct the Village Moonsiff, who would order the Village Vettiens to do something, about which the latter would very likely know nothing, and so, after another road inspection, the same course would be gone over again, unless indeed the whole matter were given up in disgust. Avenues are, I suppose, considered not to be Public Works, though they are so intimately connected with them, and, therefore, no one in the department must be allowed to touch

them. One would have imagined such a system to be an impossibility in the present day, but it is after all nothing but a symptom of a very wide spread feeling.

39. Paragraph 4 of Mr. Sim's Minute runs thus: "It will be seen from the above brief *résumé*, that, for the last fifteen years, the efficiency of the Public Works Department has been almost continuously under consideration in some form or other. This circumstance alone affords a fair presumption that the organization of the department is in some respects defective, or not adapted to the peculiar requirement of the country. It is hardly credible that the department can have been a success, and yet have excited a distrust and dissatisfaction which no modification has served to allay or remove." In the first place, it may be remarked that fifteen years ago there was no Public Works Department, properly so called. There was a Public Works branch of the Revenue Department, and undoubtedly it did not give satisfaction. When a department was formed in 1857, it was started not only without any support from the Revenue Department, but with a somewhat ostentatious intimation that it must rely upon itself for everything. It had to be independent, and this independence very soon gave offence to the Revenue Officers, and then commenced a system of interference and criticism which has gone on more or less ever since. The department has been like a child with a multitude of amateur nurses. Whatever it has done has been condemned by one or other of these nurses. They have all had their nostrums, and very strange some of these are, as the evidence shows. These nurses have been encouraged to interfere in season and out of season, and the child must have possessed a good deal of vitality to have survived such treatment at all. Of all the complaints that the nurses have made, the only one which has been at all substantiated is that this child is not as fond of its nurses as the latter think to be proper and amiable, and that it has failed to be obedient to conflicting instructions. Mr. Sim recommends that the nursing should be made more effective, and that the child should not be allowed to move hand or foot, or perhaps even wink, without specific instructions from one of the many official nurses. I, on the contrary, think that the child would be more healthy, were a good many of the leading strings removed, and the swaddling clothes done away with. No doubt, the members of the Board of Revenue are, in some respects, highly qualified to act as nurses to a child they understand, but this particular child neither they nor their under-nurses, the Collectors, have ever been able to manage, and I am under the impression that the past is a good guide to the future. Dropping metaphor, it may be said that the department has done a great deal in spite of the unnecessary difficulties with which it has had to contend, that very much of that which it has been blamed for not doing was unattainable with the means which the Government were able to provide, and that a considerable part of the rest of the short comings is directly traceable to the absence of that support and encouragement which were essential to success, and to the demand that it should be required to satisfy those whose satisfaction could not be ensured by any intelligible course of action. An attempt has been made to work a department which, to be successful, must be considered and managed as an undivided branch of the Civil Administration, as though there were twenty separate responsible District Governments, with twenty miniature Departments of Public Works, each bound to carry out the policy of the *pro tempore* Collector, or, as some prefer to call him, Proconsul. It is not surprising that the Superintending Engineer system is condemned by those who hold these views, and that they advocate an organization which they think would make it possible to determine locally and for each district what the Public Works Department should do and leave undone, without any reference whatever to what the Presidency, as a whole, requires. Were their wishes carried out, they would be as far as ever from attaining their object, for the simple reason that it is useless to give people means to an end, if they do not possess the qualifications necessary to a right use of those means. The Public Works Department has been freely criticised for twelve, if not for fifteen, years, and now its critics have made a great effort with perhaps somewhat meagre results. *Parturiunt montes, &c.* It may well be doubted whether the results would have been equally satisfactory to the department concerned had the work of the Revenue Officers, and especially of the Sub-Magistracy, been subjected to a like test, and it would have been interesting to learn Mr. Sim's views in that case.

40. I brought before the Commission the subject of the necessity existing in some districts for requiring the Ryots to contribute labour for the annual clearing of channels. I do not find any recommendation for, or against, such an arrangement in the report, and as the subject is of some importance, I must refer to it here. The time during which river channels can be closed for repair is in many districts extremely limited, and the people owning lands under such channels are equally with, or even more than, the Government interested in the re-opening of such channels as soon as possible. It so happens, however, that the Ryots at the lower end of the system of works, or parts of a system, are disinclined to go to work in the upper parts of the channels, which are often many miles in length; and, on the other hand, as the people of the villages near the upper parts get the first draught on the water, they are disinclined to work on the channel at all. The officers in charge of the channels have, as soon as possible, in each year, to ascertain what clearances are necessary, and they have to make a commencement with such labour as they can get: if that labour be insufficient, they must either prolong the closure, or open the channel before its efficiency has been secured: in either case, there must be loss somewhere, although very frequently nothing may be known about it. In the Deltas, and sometimes elsewhere, the whole of the labour, which can, under any circumstances, be obtained to execute repairs, is the same which is employed for the cultivation of the fields, and even if it be collected to the extent required, and this is hardly possible without delays which it would be better to avoid, it is liable to be withdrawn by those who employ it for the greater part of the year, before the repairs have been completed. A fall of rain may make the Ryots wish to commence ploughing, or any one of the preliminary operations of husbandry may be undertaken a week or two sooner than usual, in order to make, as it may be thought, the most or the best of the season. Where the clearance operations are extensive, it is essential too that the most systematic arrangements should be made; otherwise all that may be necessary cannot possibly be done; and it is evident that, unless able to command the requisite labour at the time when it is to be made use of according to the general programme, an officer must be rendered powerless to provide for the requirements of the approaching season of irrigation. It would not be to the interest either of the Government or the people, that on work of this nature the labour should be obtained by an adjustment of the rates to an extent sufficient to command that labour unfailingly. In any case that labour would be, as already pointed out, that at other times engaged in agriculture, and instead of benefiting those who thus employ it, an increase of rates at special times would inevitably make field operations more costly, while it would add to the expense of the repairs of the works, and oblige the Government to levy at least a portion of this excess from the Ryots. Under these circumstances, the fairest arrangement appears to be to require the land owners to provide labour on payment at reasonable rates, which should be settled jointly by the local Public Works and Revenue authorities, and be published in the *District Gazette*, so that all might know what wages they were entitled to receive. The work required to be done having been ascertained, the labour needed can be estimated without difficulty, and then each village, according to its acreage under the channel, should provide its quota of labour under arrangements similar to those proposed to be employed in connection with customary or unpaid labour. An Act would, of course, be necessary to legalize the enforcement of the obligation. It is proposed to make use of the powers conferred by such an Act only when circumstances render it necessary and advantageous to do so. Generally speaking, tank repairs can be carried out without any such difficulty, or need of haste, as is experienced in the Deltas, but cases are not wanting in which villagers have shown themselves indisposed to provide any labour whatever for the repair of the village tanks, and then, if the local officers of the two departments concur in thinking it necessary to bring the Act into force, the Collector should take steps to enforce its provisions. The Collector of the Kistna on special duty at Madras, when contemplating the execution of such repairs by Revenue Officers, says as follows:—"It will be necessary to pass a short enactment making it compulsory in all village communities to provide the labour or get the repairs indicated by the Revenue

"authorities performed. The necessity of a measure of this kind is becoming more felt every year in the districts where irrigation is spreading rapidly, as in the Godavery and Kistna, and the difficulty of procuring labour for the larger works in progress is so great that unless the onus of providing for clearance of minor channels be thrown on the villages, it will soon be found impossible to keep them in order."

Concurrence in certain recommendations of the majority.

41. I concur in the recommendations as shown below, which are contained in the report of the majority :—

Report, Para. 43. That Europeans should not be employed as Overseers.

- „ 44. That it will be advantageous to provide for the employment of natives to a greater extent than at present, in the higher grades of the upper subordinate establishment.
- „ 45. That it will be well to appoint natives to the department occasionally as Supervisors, when high qualification is possessed by them.
- „ 46. That it will be advantageous to have Engineering classes in the Provincial Schools.
- „ 47. That three classes of maistries should be entertained.
- „ 48. That consolidated salaries for all grades of the departmental establishments should be introduced.
- „ 51. That a change in the rules regulating travelling allowance is advisable.

42. The rest of the report is devoted to the consideration of Part III. of Colonel Strachey's report on irrigation works in India, and I agree with the remarks contained in paragraphs 53 to 63 inclusive. I differ to some extent from the views of the majority, as expressed in paragraph 64. It appears to me that propositions for altering the Revenue under irrigation works may properly be made in the Public Works Department, for consideration in the Revenue Department, and that when they emanate from Revenue Officers, they ought to be considered in the Public Works Department before being finally disposed of. With regard to works constructed from Loan Funds, some such arrangement would seem to be essential, and with regard to all it will be advantageous. Revenue Officers are not, I think, competent to advise the Government on all the points involved.

Remarks of majority on Part III. of Colonel Strachey's report concurred in with one exception.

43. Although only paragraphs 97 to 103 of that part of Colonel Strachey's report, which relates to the "system of management of irrigation works most likely to be advantageous," were referred by Government to the Commission, it will perhaps be convenient that I should offer a few remarks on this subject.

Colonel Strachey's views on the management of irrigation works.

Division of the subject discussed under three heads.

44. The duties connected with the management of Irrigation works are classed, in the Memorandum, under three heads :—

First.—Construction and maintenance of works.

Second.—Management and distribution of water-supply.

Third.—Fiscal administration.

Colonel Strachey's remarks are directed to the consideration of the principles upon which the administration should be conducted, in order to secure efficiency.

45. The leading principle is, as has been properly remarked, the competency of the agency employed to the performance of the duties required from it. Colonel Strachey considers that, to secure this principle, it is necessary that the construction and maintenance of irrigation works, and the management and distribution of the water-supply, should be entirely in the hands of professional officers; the fiscal administration on the other hand, so far as the details of the estimation of the areas irrigated, details of assessment, collection of Revenue, &c., are concerned, he would leave either to the District Revenue Officers, or to Officers separate from those, acting independ-

Paragraph 74.

ently of, but in close communication with, the Engineers in charge of the works and of the distribution of the water.

46. It is further considered necessary that a special Irrigation Department should be organized, to which should be completely and exclusively entrusted the control of all the branches of the administration of Irrigation. Paragraphs 91—93. It is explained that "although such a special department must, for complete efficiency, be in a great measure composed of professional Engineers, and must be mainly directed by officers having technical qualifications, it will by no means follow that it should exclusively consist of such persons. On the contrary, it is most probable that a separate revenue or fiscal branch of the administration should be formed, composed of officers having qualifications similar to those of the ordinary Revenue establishments; and that to those the revenue business of the Irrigation works should be specially entrusted." The superior controlling officers are to be so organized as to secure the harmonious working of the whole machinery, &c., but it is not clearly indicated who these controlling officers are to be, or who is intended to be at the head of the Special Department of Irrigation.

47. Some of the paragraphs of Colonel Strachey's Report were apparently written with reference to arrangements which have never prevailed in this Presidency, such as the performance of purely fiscal duties by canal officers.

48. As Colonel Strachey points out, there is a tolerably general agreement as to the agency by which Irrigation works of any importance should be constructed and maintained, and it is unnecessary, therefore, to make any remarks upon this first class of duty, which is in this Presidency performed by professional officers.

Agency for construction and maintenance of Irrigation works.

49. In the districts where new works of Irrigation, on a large or considerable scale, have been in recent years constructed, the management and distribution are, to a great extent, if not entirely, in the hands of the canal officers, but, as noticed in the Memorandum, such is not the case in Tanjore.

Management and distribution of water-supply.

Paragraph 77.

50. Colonel Strachey has clearly and forcibly pointed out what he terms the positive arguments in favour of a professional management, which are, that it is necessary, 1st, for the economical and certain distribution of water in prescribed proportions to different localities; 2nd, for the determination of the sufficiency, or otherwise, of the water-supply, of the causes of deficiency, where such exist, and the best way of preventing or remedying it; 3rd, for the decision of disputes among consumers of water, regarding shares claimed and actually received. He adds that attention to the details of distribution is requisite to enable the Engineer to understand fully the circumstances on which the success of the works may depend.

51. These arguments carry great weight, and I agree with the view therein stated that professional knowledge is requisite for the proper distribution of water, and that, without this knowledge, it is impossible either to make the most of the water available, or to secure to the Ryots, or to the Government, the benefits which the supply may be capable of affording. It is nevertheless necessary to remember that professional officers are equally with the Revenue Officers, powerless to make an efficient distribution where, as in Tanjore, the works, or the greater part of them, were constructed without any reference to the precise requirements of the area of land under them. The distribution and management of water in Tanjore is virtually free from any Government control what ever, though occasionally the Revenue Officers do interfere to prevent loss of crops by diverting water to those parts of a talook which, from whatever circumstances, may be receiving a totally inadequate supply; and, under very great emergency, the Collector has occasionally intervened to divert water from lands which were not receiving too much water to those which were getting next to none at all. It does not require argument to show that the absence of any administration of the water-supply by the officers of Government, and leaving distribution, practically, to be managed by those who have in most cases cultivation of their own, and who cannot possibly be supposed to study the general interests

of the community, until, at least, their own interests have been fully provided for, must lead to great abuses, as also to a great waste of the water-supply. While considering, however, that the introduction of systematic management would be eminently advantageous, and that the Government are bound to provide a remedy for evils which, owing to particularly favourable circumstances of water-supply, have not prevented Tanjore from being, as a whole, a most prosperous district, but which have checked the growth of its prosperity, and rendered a considerable area far less productive than it might have been, I am nevertheless clearly of opinion that it will be necessary to attempt the introduction of a better system with great caution, and that interference with customs and rights which existed before this district came under British rule, must be carried out with much patience and consideration, and with a very jealous regard to the feelings of those whose interests it is desired to serve, but who will inevitably think that they will suffer injury. These considerations in no way require reformation to be indefinitely postponed, but they demand much careful forethought in making such changes as may be found necessary. The first steps will be the most difficult, and it will be necessary to take more than ordinary pains to convince the people of the real value to themselves of alterations which may be proposed. The works now in progress are for the better regulation of the principal rivers, and it may be anticipated that the results will be such as to show the Ryots of the worst supplied parts of the districts that the changes, which these works will effect, were required, and that they have benefited by them. They will be able to understand too, that, so far as the supply may exceed that formerly enjoyed, the Government has a right to dispose of the additional water in such a way as may be thought most beneficial. I would, therefore, recommend that the introduction of an improvement in the distribution and management of the water-supply should be made first in the Eastern talooks, where the people are badly off for water, where better arrangements are almost universally felt to be required, where, therefore, the beneficial results will be most quickly experienced, and where the opposition to change will necessarily be less difficult to overcome. It would be well also to take up, in the first instance, a comparatively limited area under one of the smaller of these Eastern rivers, the improvement of the supply of which could be completed in one season. Thereafter, in successive seasons, one tract after another might be proceeded with, and I have no doubt that, by working in this way, the people will, in the course of a few years, be brought to acquiesce in the improved arrangements, and to be thankful for them; and thus step by step, first the very badly supplied, and then the uncertainly irrigated tracts, will be improved, and we may be sure then that the people generally will not continue blind to the advantages of a system, the results of which will have been shown to all and felt by many. It would have been easy when the upper anicut was built to have introduced improved regulation throughout the district, but in those days the importance of, or indeed the need for, such improvements was not understood. After the lapse of many years, during which little or nothing was done by the Government, the people gradually acquired the right to dispose, as seemed good to them, of the new supply, just as they had been accustomed to do with the old. Now, again, the advantages resulting from the regulation of the principal rivers will afford a starting point, whence to proceed cautiously, but steadily, in the path of improvement; and, if this opportunity be neglected, it is difficult to foresee when so favourable an opening will again be available.

However tentatively, nevertheless, reforms may be introduced, it will be necessary that interference with existing channels from the rivers, or with the drainages, should not be attempted without the authorization of a Legislative Act; which should set forth the right of the State to interfere for the public good; provide, for compensation wherever individual interests require to be subjected to those of the community, together with the requisite machinery for ascertaining and granting such compensation; and then prohibit recourse to the ordinary Law Courts, either for the purpose of obtaining injunctions, stopping the prosecution of works, or for securing redress of real or supposed injuries. The local professional and Revenue Officers would, in the first instance, be the proper judges, the one of facts, and the other of rights or claims in relation to these facts; and there should be provi-

sion for an appeal to the Board of Revenue, who should act in consultation with the Chief Engineer for Irrigation.

52. The course here advocated appears to provide in a sufficient and proper way for the difficult problem which requires solution. All improvements of the kind indicated would come under the head of new works, and their bearing, and the sufficiency of the contemplated arrangements, would be fully inquired into by both the professional and Revenue Officers of the Government before the sanction of the latter would be given, so that they would be undertaken only upon due proof of their necessity, and of their suitability. It would, therefore, before their commencement have been rendered clear that such works would be of general advantage, and, if so, individuals should not have the power of obstructing their execution, or of instituting vexatious suits in connection with them, but all claims should be fairly and liberally considered, and promptly satisfied to the extent which seemed fair and equitable. Such an arrangement would be as advantageous to the claimants as to all concerned, for they would get their just rights without delay and without expense, both of which would be unavoidable were the action of the Law Courts to be invoked.

53. These recommendations, with regard to Tanjore, must be understood to embrace the management of the supply from the main river down to the end of the channels which are to be maintained by the State. Below this point, no interference will be necessary, and the villagers should be required to manage the distribution in detail for themselves. Whether or no it will be advisable to effect this latter part of the arrangement under rule, and to vest the charge and responsibility in a sort of representative Committee of those interested, I will not now stop to inquire. It will be time, perhaps, to take up that point when the equitable distribution to individuals shall have been made possible, and I think that at present such is not at all universally the case. Then the supply in every regulated channel should be registered daily; and, monthly, the average supply and the average acreage under cultivation should be reported to the Revenue authorities, who would thus be enabled to deal, without delay, with all complaints which they might receive, and who would also be in a much better position than they are at present for judging of the condition and prospects of the irrigated lands.

54. Tanjore has been taken as the example on which to found these remarks, because it is a district mentioned by Colonel Strachey: it presents also an extreme case both of the absence of system and of the difficulties which must be met and overcome in introducing reforms, and the magnitude of the interests involved give it a claim to special consideration. However, in Trichinopoly, Coimbatore, Tinnevely, and other districts, there is room for improvement on a smaller scale; and such reforms should be considered an essential accompaniment to the expenditure of State Funds upon the improvement or increase of the water-supply, as now contemplated over a very considerable portion of the Presidency. If this be not done, the results of outlay will be disappointing, and certainly the benefits conferred on the population will fall short of those which may be secured by a timely attention to the institution of the best management which the knowledge of the wants and requirements of the country, possessed both by the Revenue and professional officers of the Government, may be able to suggest.

55. The general tenor of the above remarks renders it unnecessary to touch upon the more controversial portions of Colonel Strachey's Memorandum. The recommendations made in an earlier part of this Dissent contemplate such an intimate co-operation and mutual assistance between the Public Works and Revenue Officers, that I hope, should the proposals be sanctioned, that the former will be always put into possession of the best information regarding the "laws, rights, and customs," which should influence their proceedings, and which the latter may be able to afford; while those latter will come to know far more than they do now of the care and labour which are required in providing for the proper supply of large tracts of land, and to understand the general features of the proposals, by which it may be intended to overcome difficulties, and to afford satisfaction to as many as possible of those interested.

56. I now come to the fiscal duties connected with Irrigation works, and I hardly know how far my opinions differ from those of Colonel Strachey, because I do not clearly understand, whether, looking to the circumstances of this Presidency, he would advocate any considerable modification of the arrangements now in force, so far as the agency by which the Revenues are annually settled and collected is concerned; whether there be a special water-rate, or a consolidated assessment, it appears to me that no benefit would be derived from removing any part of the Revenue duties out of the hands of the District Revenue Officers, and giving them to special Irrigation Revenue Officers; and Colonel Strachey himself does not contemplate, neither could he recommend, that the professional officers should undertake such duties. It would manifestly be an unnecessary expense to have a double set of Revenue Officers working over the same ground, and such an arrangement would offer no compensating advantages. I have stated that it is necessary that the professional department should be made acquainted with, and should have the opportunity of offering an opinion upon, all Revenue questions affecting the value or efficiency of Irrigation works; and this plan will, as it is intended to do, place the Government in possession of full, instead of partial, information as to the bearing of any proposals that may be brought forward. Any other modification of, or change in, the present system appears to be uncalled for.

57. My opinion then is opposed to the formation of such a department of Irrigation as appears to have been contemplated by Colonel Strachey, which should deal exclusively with all Revenue, as well as professional, questions connected with Irrigation, and determine, I presume, the price to be charged for water, irrespective of the circumstances of the rest of a district, or the opinion of the ordinary land Revenue Officers. Were there no other objection to such a scheme, its expense would probably alone prevent its adoption.

JOHN MULLINS, Major, R.E.,

Member of Commission on Public Works.

MADRAS, 10th February 1870.

APPENDIX No. 1.

MEMORANDUM showing the proposed Arrangement of the Executive Divisions and Sub-Divisions.

Circles.	Districts.	Divisions.	Sub-Divisions.	Talooks.	Overseers.	Maistries.	REMARKS.
First.	Ganjam ...	Ganjam ...	Northern ...	Berhampore	2	4	* These are the only Government Talooks.
			Southern ...	Gumsur	1	2	
				Chicacole			
				Golcondah*			
				Survasiddy*	3	6	
			Southern ...	Veravetty			
				Peddagudi			
				Bimlipatam			
				Sungavapakota			
	Vizagapatam..	Vizagapatam.		Vizianagram			
			Northern ...	Gazapatinagram	3	7	
				Chipurpilly			
				Salur			
				Palconda			
				Parvatipuram	2	4	
		Jeypore ...	None	2	4		
			Ellore	2	4		
Godavery ...	Rajahmundry.	North-West ...	Ernagudiem	2	4		
		North-East ...	Rajahmundry	2	4		
			Peddapore				
			Palnad				
		Western ...	Vinnuconda	4	6		
			Krosur				
Kistna ...	Kistna ...		Rajapett				
			Nundigama				
		North-East ...	Bezwada	4	6		
			Tirvoor				
			Condapilly				
				23	43		
Second.			Eastern Delta ...	Ramchendrapore and Cocanada.	5	6	
			Central Delta ...	Amalapur and part of Nursapore.	3	5	
	Godavery.		Northern ...	Tanaku and part of Undi.	4	6	
		Western Delta.	Southern ...	Part of Undi and part of Nursapore.	4	6	
				Part of Bezwada	4	6	
				Gudivada			
		Eastern Delta.	Northern ...	Part of Sullapully	3	5	
			Southern ...	Part of Sullapully	3	5	
	Kistna ...			Bandar	3	5	
				Part of Guntur	3	5	
				Part of Repalle	3	5	
		Western Delta.	Northern ...	Part of Repalle	3	5	
			Southern ...	Bapetla			
					29	44	
	Third.				N. W. Zemindaries		
				Ongole	4	6	
Nellore ...		Ramiapatam.	Northern ...	Kanigiri			
				Kundukur			
			Kavali				
			Udayagiri	4	6		
			Atmakur				
		Southern ...	Rapur				

MEMORANDUM showing the proposed Arrangement, &c.—(Continued.)

Circles.	Districts.	Divisions.	Sub-Divisions.	Talooks.	Overseers.	Maistries.	REMARKS.
Third. (Contd.)	Nellore. (Contd.)	Nellore (Irrigation.)	Northern ..	Part of Nellore ...	3	5	All the Irrigation East of Sungum and North of Pennair.
			Southern ..	Part of Nellore Gudur and Southern Zemindaries	3	5	
	Cuddapah.	South-West.	Pulivendla ...	Part of Cuddapah Pulivendla	3	3	
			Rayachoti	Cadri Rayachoti Madenapulli	3	3	
			Cuddapah...	Voilpad Jummelamadugu	3	3	
				Pudatore Budwail	3	3	
		Cuddapah...	Northern	Part of Cuddapah	2	2	
			South-Eastern ...	Sidhout	2	3	
			North-Eastern ...	Pallampett Markapur Cumbum	2	3	
			Central ...	Nundicotkoor Nundial Sirwel ...	3	4	
	Kurnool ...	Kurnool ...	Western ...	Eastern part of Koilguntla Ramulkotta Puttikonda	2	3	
	Bellary ...	Bellary ...	Western ...	Rest of Koilguntla Huvinhadigalli Harpenhulli	3	3	
			Northern ...	Kadligi Hospett Bellary Adoni	4	6	
		Anantapore	Central ...	Alur Raidroog Gundacul Tadputri	4	4	
			Southern ...	Anantapore Dharmavaram Penmakonda Hindupur Madaksera	4	4	
					47	60	
					2	6	
	Madras ...	Presidency.	Fort Saint George... Mount ..	..... .....	1	6	
			Northern ...	Trivalore Ponair Sydapett	4	6	
		Madras ...	Southern ...	Chingleput Conjeveram Madranticum	4	6	
			North-West ...	Chittoor Palamanair and the Punganur Zimindary	3	5	
		Northern...	North-East ...	Chandragiri and the Kalastry and Carwait Nugger Zemindaries.	3	3	
			South-East ...	Arcot Wallajah Vandivash Guriattum	3	5	
	North Arcot ...	Southern...	South-West ...	Vellore Polur	3	3	
					3	3	
Fourth.							

APPENDIX No. 1.

MEMORANDUM showing the proposed Arrangement, &c.—(Continued.)

Circles.	Districts.	Divisions.	Sub-Divisions.	Talooks.	Overseers.	Maistries.	REMARKS.
Fourth.—(Continued.)	South Arcot	Cuddalore..	Southern ...	Verdachelum Chellumbrum	4	6	
			Centre ...	Yellavanasur Cuddalore	3	5	
		Northern	Northern ...	Killakurchi Tirunamalli Tindivanam Villapuram	4	6	
		Bangalore....	.....	.....	2	4	
Fifth.	Salem ...	Salem ...	North-West ...	Oosoor Darmapuri Kistnagiri	3	6	
			Eastern ...	Tripatur Uttengirri	2	4	
			Southern ...	Salem Altur Trichingode Namkul	5	10	
			Southern ...	Karur Dharapuram Udamalpetta Coimbatore	3	6	
	Coimbatore	Coimbatore.	Western ...	Pallachi Palladum Sattiamungalum	3	6	
			Centre ...	Bhowani Perandorai Kollegal	4	7	
	Neilgherries...	Neilgherries..	Northern ...	.....	1	3	
			.....	.....	2	4	
	Malabar	Malabar ...	Southern ...	Calicut Ernad Walawanaad Ponany	4	6	
			Northern ...	Cherical Kottiyum Kurumbranad	3	6	
			Wynaad .....	.....	3	6	
			Southern ...	Mangalore Kursargodi Upinandadi Udipi	4	6	
	South Canara.	South Canara.	Northern ...	Kundapur	2	4	
			.....	.....	39	74	
Sixth.	Tanjore ...	Tanjore ...	Tanjore ...	Tanjore	2	6	
			Combaconum ...	Combaconum	2	6	
		Southern...	Manargudi ...	Manargudi	3	6	
			Puttukota ...	Puttukotta	2	6	
		Mayaveram	Nunnilum ...	Nunnilum	2	6	
			North-East ...	Mayaveram Shealli	4	9	
		Negapatam	Negapatam ...	Negapatam	2	4	
			Titrapundi ...	Titrapundi	2	4	
Seventh.	Trichino- poly.	Trichino- poly.	Trichinopoly ...	Kulitalai Trichinopoly	4	6	
				Museri	2	4	
			Eastern ...	Perambalur Wudiarpolliem	2	4	
				.....	17	41	

APPENDIX No. 1.

MEMORANDUM showing the proposed Arrangement, &c.—(Concluded.)

Circles.	Districts.	Divisions.	Sub-Divisions.	Talooks.	Overseers.	Maistries.	REMARKS.	
Seventh. — (Contd.)	Madura ...	Madura ...	Madura ...	Madura Serumangalum Periakolum Palani	4	9		
			Northern ...	Dindigul Melur	3	6		
			South-Eastern ...	Zemindaries	2	5		
			Southern ...	Nanganeri	1	2		
	Tinnevelly.	Southern, (Irriga- tion.)	Palamcottah ...	Tenkarai Tinnevelly	3	6		
			Western ...	Ambasamudrum Tenkasi	2	5		
			Eastern ...	Ollapadaram Satur	2	4		
			Northern ...	Sunkaranainacovil Striviliputur	2	4		
	Western ...							
	Supernumeraries about 10 per cent.					25	51	
	1st Circle...	...	...	2	4	216	368	
	2nd " ...	...	...	3	4			
	3rd " ...	...	...	4	6			
	4th " ...	...	...	3	5			
	5th " ...	...	...	4	7			
	6th " ...	...	...	2	4	20	35	
7th " ...	...	...	2	5				
					236	403		

GENERAL Abstract of Permanent Establishments for each Superintending Engineer's Circle.

Circle.	Executive Engineers.	Assistant Engineers.	Upper Sub-ordinates.	Overseers.	Maistries.	REMARKS.
First ...	4	7	10	25	47	
Second ...	4	8	8	32	48	
Third ...	7	13	13	51	66	
Fourth ...	7	11	11	39	60	
Fifth ...	6	13	14	43	81	
Sixth ...	4	7	6	19	45	
Seventh ...	4	8	8	27	56	
Supernumeraries ...	36	67	70	236	403	*Allotted to Circles separately.
	2	10	12	*	*	
	38	77	82	236	403	

Memorandum of the Grading of Establishments.

		RS.
7 Superintending Engineers ...	3 of the 1st Class, Salary	1,600
	2 " 2nd " "	1,350
	2 " 3rd " "	1,100
	7 " 1st Class	950
38 Executive Engineers ...	10 " 2nd "	800
	10 " 3rd "	650
	11 " 4th "	550
	21 " 1st Grade	450
77 Assistant Engineers ...	20 " 2nd "	350
	20 " 3rd "	275
	16 " 4th "	200
Upper Subordinates.		
28 Sub-Engineers, 54 Supervisors.	236 Overseers	52 1st Grade, Salary 100
28 Sub-Engineers, 7 1st Grade, Salary 400		80 2nd " " 75
7 2nd " " 300		104 3rd " " 50
14 3rd " " 250	403 Maistries	100 1st " " 35
54 Supervisors	20 1st " " 200	130 2nd " " 30
	34 2nd " " 150	173 3rd " " 25

APPENDIX No. 2.

STATEMENT of Secretariat and other Establishments of the Public Works Department.

Particulars.	Salaries.	Amounts.	Monthly.	Annual.	Total.
Secretary to Government and Chief Engineer, 1st Class ...	RS. 2,500	RS.	RS. 2,500	RS. 30,000	RS.
Joint Secretary and Chief Engineer, 2nd Class ...	2,000		2,000	24,000	
Under Secretary ...	900		900	10,800	
Secretariat Establishment...	2,608		...	...	
Do. Contingencies ...	100		...	...	
		2,708	2,708	32,496	
Establishment of 2nd Class Chief Engineer ...	500		500	6,000	
Travelling allowance, Chief Engineer for Irrigation, and Batta ...	...		...	1,500	
Presidency house-rent for Under Secretary ...	60		60	720	
Lithographic Establishment ...	968		968	11,616	
Contingencies do. ...	50		50	600	
					1,17,732
Presidency house-rentsundry Offices	...		250	3,000	
Paumben Establishment ...	...		88	1,056	
Special allowances to Wynaad Establishment ...	...		804	9,648	
General Superintendent, Public Works Stores ...	660		330	3,960	
	2				17,664
Controller of Public Works Accounts and Establishment as at present.	...		...	63,600	
Conservancy Establishments, amount now sanctioned Rupees 86,230 ...	...		...	1,00,000	
					1,00,000
Circle and Divisional Establishments ...	...		...	...	19,31,626
Grand Total of cost of proposed Establishments ...	...	...	...	...	22,30,622

JOHN MULLINS, Major, R.E.

February 1870.

STATEMENT of Cost of proposed Public Works Establishment.

Particulars.	Salaries.	Amounts.	Monthly.	Annual.	Totals.
	RS.	RS.	RS.	RS.	RS.
7 Superintending Engineers.					
3 of the 1st Class	1,600	4,800			
2 " 2nd "	1,350	2,700			
2 " 3rd "	1,100	2,200			
			9,700	1,16,400	
Office Establishments as per accompanying Scale, No. 7	580	4,060	4,060	48,720	
Travelling allowances of Superintending Engineers.					
6 months' full allowance	...	...	...	...	
6 do. half do.	...	...	...	...	
Rate 6 Rupees a day	...	...	945	11,340	
Batta for Office Establishments	...	...	100	1,200	
Office Contingencies, 7 X 30	...	...	210	2,520	
Total for Supg. Engineers...	...	...	...	...	1,80,180
Civil Architect	1,200	1,200	1,200	14,400	
Office Establishment. See Scale	270	270	270	3,240	
Do. contingencies	...	...	15	180	
Total Civil Architect...	...	...	...	...	17,820
38 Executive Engineers.					
7 of the 1st Class	950	6,650			
10 " 2nd "	800	8,000			
10 " 3rd "	650	6,500			
11 " 4th "	550	6,050			
			27,200	3,26,400	
Travelling allowances, rate 5 Rs. a day.					
6 months' full allowance	...	...	...	...	
6 do. half	...	...	4,275	51,300	
Office Establishments. { No. 1	466	466			
" 1	252	252			
Vide Scales { " 1	308	308			
" 33	308	10,164			
			11,190	1,34,280	
Do. do. batta	...	...	300	3,600	
Do. Contingencies 36 X 8	...	...	288	3,632	
Total of Executive Engineers...	...	...	...	...	5,19,212
77 Assistant Engineers.					
26 of the 1st grade	450	11,700			
20 " 2nd "	350	7,000			
20 " 3rd "	275	5,500			
16 " 4th "	200	3,200			
			27,400	3,28,800	
Travelling allowance, rate 4 Rs. 6 months' full allowance	...	...	...	...	
6 " half "	...	...	6,930	13,160	
Office Establishments. Vide Scale, No. 67	87	5,829	5,829	69,948	
Batta 67 X $\frac{3}{10}$ X $\frac{1}{2}$ X 32	...	...	...	3,860	
Contingencies 67 X 4	...	...	268	3,216	
Total for Assistant Engineers	...	...	...	...	4,88,984
28 Sub-Engineers.					
7 of the 1st grade	400	2,800			
7 " 2nd "	300	2,100			
14 " 3rd "	250	3,500			
			8,400	1,00,800	

STATEMENT of Cost of proposed Public Works Establishment.—(Continued.)

Particulars.	Salaries.	Amounts.	Monthly.	Annual.	Totals.
	RS.	RS.	RS.	RS.	RS.
Office Establishments. Vide Scale					
No. 24	41	984	984	11,808	
Office batta 24 X 50	...	...	...	1,200	
Do. Contingencies	...	...	50	600	
Travelling allowance, rate 3 Rs. Full for 8 months	...	...	2,100	25,200	
Half " 4 "	...	...	...	...	
54 Supervisors.					
20 of the 1st grade	200	4,000			
34 " 2nd "	150	5,100			
			9,100	1,09,200	
Travelling allowance, rate 2 Rs. Full for 8 months	...	...	2,700	32,400	
Half " 4 "	...	...	...	...	
Office Establishment. Vide Scale	33	1,782	1,782	21,384	
Do. Batta 54 X 50	...	...	...	2,700	
Do. Contingencies	...	...	54	648	
Total for Upper Subordinates...	...	...	...	...	3,05,940
236 Overseers.					
52 of the 1st Grade	100	5,200			
80 " 2nd "	75	6,000			
104 " 3rd "	50	5,200			
			16,400	1,96,800	
Horse allowance for Overseers, No. 236	15	3,540	3,540	42,480	
Office Establishments for Overseers of the 1st and 2nd Grades only as per Scale No. 132	21	2,772	2,772	33,264	
Office batta $\frac{3}{10}$ ths for 9 months on Rupees 15	...	...	...	5,316	
Contingencies	...	...	75	900	
403 Maistries.					
100 of the 1st Grade	35	3,500			
130 " 2nd "	30	3,900			
173 " 3rd "	25	4,325			
			11,725	1,40,700	
Total for Lower Subordinates...	...	...	...	...	4,19,490
Grand Total...	...	...	...	...	19,31,626

ABSTRACT.

	RS.
Superintending Engineers and Establishments	1,80,180
Civil Architect and do.	17,820
Executive Engineers and do.	5,19,212
Assistant do. and do.	4,88,984
Upper Subordinates and do.	3,05,940
Lower Subordinates and do.	4,19,490
Total	19,31,626

Memorandum showing the proposed Office Establishments of the Public Works Department.

Superintending Engineers.

	Salaries.
	RS.
1 Manager	150
1 Head Clerk	75
1 Draughtsman	60
1 Estimate-maker	50
1 Accountant	50
1 Register-keeper and Indexer	40
1 Record-keeper and Clerk	35
2 Copyists at 30 and 25 Rupees	55
1 Moolchey	10
1 Sweeper	5
1 Peon at 8, and 6 at 7 Rupees	50
	580
For 7 Superintending Engineers	4,060

Civil Architect.

1 Draughtsman	65
1 do.	45
1 Estimator	90
1 Clerk	50
2 Peons at 7, and 1 at 6 Rupees	20
	270

Executive Engineer at the Presidency (Garrison Engineer).

1 Accountant	70
1 do.	50
1 Computer	20
1 Estimator	50
1 do.	40
1 Draughtsman	50
1 do.	40
1 Writer	40
1 do.	30
2 do. at 25 Rupees	50
2 Lascars at 7, and 2 at 6 Rupees	26
	466

Executive Engineer, Bangalore.

1 Accountant	60
1 Writer and Accountant	50
1 Writer	40
1 Draughtsman	50
1 Store-keeper	40
2 Lascars	12
	252

Executive Engineer, Neilgherries.

1 Accountant	70
1 do.	50
1 Clerk	45
1 Store-keeper	35
1 Draughtsman	80
4 Lascars	28
	308

Executive Engineers of Divisions.

1 Head Clerk	60
1 Accountant	60
1 Computer	25
1 Draughtsman	50
2 Copyists at 30 and 25 Rupees	55
2 Gumastahs at 15 and 12 Rupees	27
1 Peon at 7, and 4 Lascars at 6 Rupees	31
	308
For 33 Executive Engineers	10,164

Assistant Engineers.

1 Accountant	30
1 Clerk	20
1 Gumastah	12
1 Peon at 7, and 3 at 6 Rupees	25
	87
For 67 Assistant Engineers	5,829

Sub-Engineers.

1 Writer and Accountant	22
1 Lascar at 7, and 2 at 6 Rupees	19
	41
For 24 Sub-Engineers	984

Supervisors.

1 Writer and Accountant	20
1 Lascar at 7, and 1 at 6 Rupees	13
	33
For 54 Supervisors	1,782

Overseers, 1st and 2nd Grades.

1 Writer and Accountant	15
1 Lascar	6
	21
For 132 Overseers	2,772

Grand Total of Establishments Rupees... 26,887

APPENDIX No. 3. *Vide* DISSENT, para. 36, EVIDENCE OF COLLECTOR OF NELLORE.

7. Were your propositions for the management of existing Public Works by a branch of the Revenue Department to be adopted, how would you provide for the proper treatment of such works, as the Pennair anicut and its dependant Irrigation, for the Sungum channels, and the irrigation works belonging to them, when these have been placed on an improved footing?

8. What establishment would you require for the up-keep of all the irrigation works and roads of the Nellore District? Into how many ranges would you divide it? How would you arrange for the control in practice of the operations of all the members of the establishment? How would you exhibit the results of the management of the Revenue Officers?

9. Be so good as to state the "departmental ties and responsibilities" by which the Superintending Engineers are now fettered, and to explain fully how those ties and responsibilities interfere at present with effectual supervision.

Give any instances which may have come under your notice.

10. In paragraph 43 of your letter to the Commissioners to which you refer at the end of your answer 4, you speak of the authority, which those who collect the land Revenue must always exercise, whether in India or elsewhere, being brought to bear more fully on the execution of Public Works. To what authority do you allude, and how would it be exercised?

11. In the same paragraph you say, fourthly, that by legalizing customary labour, a stop is put to a derangement of the conditions between labour and those who maintain it, and an adequate fund provided for the execution of all ordinary repairs. Will you explain your meaning more fully, and state what is your definition of customary labour, what the derangement is which would be stopped, and what fund is expected to be provided by the legalization of customary labour?

12. Do your propositions amount to the enforcement by the authority of the Revenue Officers, by means of an illegal use of their powers of granting and withholding remissions, and as Magistrates, of a contribution of labour much in excess of anything that has been customary; and that, an Act having been passed relating to customary labour, you would leave it to the discretion of the Revenue Officers to define custom according to their own views of expediency?

13. What is the Nunjah Revenue of your district, what the average annual outlay on repairs of irrigation works. Do you contemplate making the Ryots do all the work represented by this sum?

14. What is the relation at present existing between the landholders, and those who labour and do not hold land?

15. Is the major portion of the earth works of irrigation works in your district done by Wudders or by the same people who, during the cultivation season, work in the fields?

16. Could all ordinary earth work repairs be executed, without inconvenience to cultivation, by the field labour?

After 6th Question of Circular 4.

1. Is the time of the Revenue subordinates fully occupied?

2. If so, how would they find time to attend to Public Works duties?

2. a. If not, what objection would there be to a decrease of the Revenue establishments?

After 9th Question of Circular 4.

1. In this case how would the check be any more efficient than it is, or could be made with a separate Public Works Establishment?

1. What is the difference between your view of customary labour and the compulsory labour condemned in 1852? Both would appear to involve making the people do something, without payment, which they are in no way bound to do.

After 10th Question of Circular 4.

1. As you appear to propose that the Revenue branch of the Public Works Department shall maintain all existing or completed works, and that a separate Public Works Department shall construct all new works, how would you avoid the clashing of the arrangements which you deprecate, and how would the latter department get on with work, if the branch department were working with the support of all the authority, legal or otherwise, of the Collector of land Revenue?

(a). The ordinary repairs executed by customary labour comprise the annual clearances of all minor channels, with some river works, partial clearing of river channels, and in some districts minor repairs to tank banks. How would you arrange to provide an Executive Staff (Revenue branch) capable of planning and indicating the trifling work, which is now and always has been executed by the villagers interested, without interference on the part of any Government Officers, Revenue or other?

After 11th Question of Circular 4.

(b). Is not this arrangement precisely similar to that already existing?

(c). You consider the talook and village authorities competent to pass work and bills for work done from State Funds. Would not this lead to the work done being that desired by these authorities personally rather than that required for the general benefit of the community and for the interests of the State? Do you think that village authorities are too upright to do anything in consistent with a high sense of duty, even though their own interests may be intimately concerned?

(d). Do you contemplate the measuring of all work by talook and village authorities, independently of the Executive branch of the Revenue Department; if not, how would the check intended to be secured by your system be obtained?

What is the difference between this system and that followed now in all those cases in which work is paid for by the quantity? Would you in the case of road

After 12th Question of Circular 4.

repairs or other similar work which is, when the amount of work is trifling, done by daily coolies, bring an officer from elsewhere to examine the work executed?

If so, would not this cause a waste of time and power infinitely greater than any which occurs now?

What would be the position of the Executive Engineer in Chief, and what his duties? Is he intended to be an Executive Engineer at all, and if so, in what

After 14th Question of Circular 4.

sense? How would you ensure his knowing anything at all about the works estimated for?

Is it usually advisable to place in the hands of an officer at a distance, and unacquainted with the local works, the responsibility of determining whether estimates are or are not necessary?

Do you intend Superintending Engineers to be simply reporting officers without power to give orders for setting to rights whatever may be wrong; if not, do you contemplate placing the Revenue Officers generally under their orders in all matters connected with Public Works carried out at the expense of the State?

After 15th Question of Circular 4.

A certain or rather uncertain amount of public money will always be misspent. What reason have you for supposing that, under your proposed arrangements, the proportion would not be greatly increased, seeing that you would place much of the control in the hands of those who have never proved their competency to exercise it, and who, being untrained and having, it may be presumed, plenty of work of their own to attend to, cannot without very clear proof be entrusted with a duty so entirely foreign to those duties which they are paid to perform?

This answer may mean an establishment costing either 10 or 100 per cent. on the expenditure, what would you fix as the proper proportion? State what you think the expenditure should be on each class of works, what the cost of establishment should be, and give your scale of establishment accordingly showing numbers, designations, and rates of pay.

After 16th Question of Circular 4. What is the position occupied by the Magistracy at home as regards Public Works?

Have they any control whatever over State expenditure on Public Works?

Is any State Department in any way whatever under the control of the Magistracy?

Do they or do they not act simply as the representatives of those who have to pay the local rates, and do they not themselves pay a considerable portion of the money obtained by those rates?

Is not their connection with Public Works, or, as it is, County works, confined to roads and buildings constructed and maintained from rates and not from State expenditure?

Is there any analogy whatever between State expenditure on Public Works in India and County expenditure in England?

Does the latter appear in the Public accounts?

Is all Government expenditure in England controlled by the Special Department to which it belongs?

After 19th Question of Circular 4. What are the other considerations alluded to in this answer?

What do you mean by management? Could such management be complete and efficient if liable to be interfered with by officers not belonging to the professional staff?

After 20th Question of Circular 4. What is there to prevent all that is here contemplated being carried out by the Public Works Department in the same way that it is done in the North-West Provinces of India? Would it not be far better done by an officer of the Public Works Department holding a position somewhat similar to that of a District Engineer, than it could be by a very subordinate Branch Executive Department under the orders of Revenue Officers?

After 21st Question of Circular 4. What are the disadvantages?

Would they or would they not be likely to disappear were every part of each district in the charge of a Range Officer properly qualified for the management of the works in the range and aided by Subordinates similarly qualified for their respective duties, and were groups of ranges under the supervision of Executive or Divisional Engineers of experience?

Does not your answer indicate that the proper direction in which reform should be looked for is the establishment of a trustworthy Agency, where such does not exist?

After 22nd Question of Circular 4. Do you mean to say that there is not abundant work in the Nellore District for a District Engineer to supervise and control.

How many acres are there under the Nellore anicut, and what will the ultimate acreage be?

How many acres are there under the Sungam channels, and what is the estimated acreage when the irrigation shall have been extended and improved?

How many tanks are there, and what is the acreage under them?

Do you think that all the tanks have been made as fully useful as they might be?

Is there no waste of water in Nellore?

What is the total irrigated area, and what do you think may be taken as the probable per-centage of waste of water?

How many miles of road are there? What is the cost of the Revenue establishments, and what the revenue managed by them? What is the value of salt manufactured, taking its cost to Government as the value?

How many miles of road are there, and how many more miles are required before the district can be considered to be even moderately well provided with communications?

How many rivers are there which might be turned to good account were there an officer, possessing the time and experience necessary for taking them up in succession, and ascertaining how their waters could best be utilized, available?

After 28th Question of Circular 4. Do you suppose that work properly executed would not be paid for by an Executive Engineer, and do you think that, if not properly executed, it should be paid for?

How would you propose to act in the event of the work being improperly done by villagers?

After 29th Question of Circular 4. How would you under this arrangement ensure the money finding its way into the lands of those entitled to receive it?

What guarantee would you give, and under what arrangements?

After 31st Question of Circular 4. On what grounds do you suppose all earth works in villages to be such as should be executed by customary labour? When did this custom exist? How do you know that the work was not paid for? How would you deal with works which have come into existence during the last few years? What custom attaches to them?

You have expressed the opinion that the Public Works Department is not well adapted to the duty of managing the Public Works of your district. Allowing that there is plenty of room for improvement, have you any producible evidence to show that it is not a very much more efficient administration than anything which preceded it, i.e., than any which the Revenue Officers were able to devise.

What was the average Nunjah Revenue of the district prior to 1856?

What is the present Nunjah Revenue on the average of the last five years?

What was the condition of the Irrigation works when they were under the Revenue Officers?

Were there any tanks other than those of Nellore, Alloor, and Gudur, which were in even decent order? Has not the great majority of the tanks been very greatly improved in efficiency?

Was not very much of the large expenditure which has been required to effect this object rendered necessary by the neglect of the Revenue Officers prior to 1855?

How many miles of road were there in 1855?

How many are there now?

What considerable improvements were made in the Public Works of the district prior to 1855?

What charges of inefficient administration can you substantiate against the Public Works Department, which are not directly traceable to the inability of the Government to provide sufficient allotments, and establishments to manage their expenditure?

Are you acquainted with the history of the Public Works Department in the Nellore District?

Do you know its condition in 1857?

What resulted from the breaking out of the mutiny in that year?

What was the effect of the reduction of establishments and expenditure?

What adverse circumstances the department had to contend with in consequence of the cyclones of 1856 and 1857, and the remarkable rain-fall of 1859?

Are you prepared to say, that, taking all these circumstances into consideration, the Revenue Officers could have done more for the district with the same amount of money than has been done, and could they have done so had they been deprived of all Revenue and Magisterial powers, and told that they must make the best arrangements they could, as they were no longer to look to those who, up to that time, had been able to make the villagers do just what they pleased?

Do you think that the Revenue Officers, with almost unlimited powers, did even half as much for the improvement of the district prior to 1855, as has been done by the Public Works Department with no powers in the comparatively short period since that date?

How was it that so long as the progress of the country depended upon the officers of the Civil Service so little was done, and that, directly a separate agency was started all over the country, a great stride was made. Can you deny that this was the case?

Was or was not the importance of Public Works at length and after much opposition recognized by the Government in consequence of the strenuous and persistent efforts of Sir Arthur Cotton, and a few other Engineers?

Have you ever read the correspondence regarding the Tanjore works? Do you think that the Revenue Officers of those days expressed opinions calculated to give the idea that they were competent to understand the value and effect of Public Works.

APPENDIX No. 4.

From R. K. PUCKLE, Esq., Collector, to W. HUDLESTON, Esq., Secretary to Government, Revenue Department, Fort Saint George, dated Tinnevely, 22nd April 1868, No. 181.

In reply to the Proceedings of Government, No. 1,023, dated 17th instant, I have the honour to furnish an explanation of the circumstances that led to complaint being made.

2. The subscribers to the Strivaigundam Anicut applied for permission to cut a channel from the river at their own expense to carry water to the eastward when the freshes come down in June. Permission was granted by Government in Proceedings, No. 2,143, dated 11th September 1867, but labour was so scarce in that neighbourhood that the Ryots who are to benefit by the channel could only muster 700 men. As the work might have lingered on for a year with this number, I called on the Ryots of other villages to furnish their quota also, and I met with a ready response. Many of the principal Ryots attended and supervised the work, and every arrangement was made that the funds would allow of to ensure the health and comfort of the labourers. Shedding was put up for them, and cooking utensils and firewood were provided gratis. Of course they were paid for their labour, though the price of earthwork had to be fixed with reference to the funds in hand, which Mr. Shepherd, who laid out the line, calculated were just sufficient to complete the work at the rate of eight pice per cubic yard for the surface, ten pice for the second, an anna for the third, an anna and a half for the fourth, and two annas for the fifth yard of cutting; but on the Ryots concerned guaranteeing to meet any additional expense, these rates were raised to nine pice for the surface, an anna for the second, an anna and a quarter for the third, an anna and a half for the fourth, and two annas for the fifth yard of cutting rates that the Superintending Engineer now at the work considers high. The only labourers in the irrigated villages are the Pullers, formerly the slaves of the landholders, but now their agricultural servants. These Pullers receive yearly wages which are continued to them though paid over again for their labour. Just now the masters supply the labour. With the men I have now nothing to do beyond seeing to their comfort as stated above, and paying them something extra as batta for coming to the work. At first I tried to pay the men myself to make sure that the money reached them, but I found this had no good effect, so I ordered the money for earthwork to be paid to those who provided the labour. With the exception of those engaged on the head sluice on daily wages, the rest are employed on digging the channel by contract, and all is going on most satisfactorily in a work on so large a scale and of so novel a character, perhaps the first ever projected and carried out by the Ryots themselves, it is too much to expect that there would not be some misconception at first. The labourers doubtless imagined that they were being sent to the work to labour on a mere subsistence allowance; and in collecting men of course petty spite was shown in calling on some who could not conveniently leave home, but all this has long since been got over. The men have been paid full rates for their labour, and the landholders have been told only to send their private servants, and these only in turn as may be most convenient.

3. In some villages there are Christian Pullers, and they take every opportunity of trying to play off the Missionary against their masters. As a general rule the Missionaries exercise a wise discretion, and withhold from interference; but in the neighbourhood of the village, from which the telegram referred to me is dated, there has been much dissension between the landholders and a Missionary who on this very occasion personally interfered and prevented the Christian Pullers from contributing their quota of labour to the Pudugudi channel. Hence in all probability the telegram which seems to have been composed by some Native Schoolmaster or Catechist. It is a misrepresentation throughout. First, the Pullers are not like other Ryots, but are the Ryots labourers; secondly, they are not compelled by

the local authorities to labour as coolies, as the labour is supplied by the Ryots, and not by the local authorities; and thirdly, no one employed on the work as a daily labourer ever received less than two annas, while all alike, whether day labourers or men working by contract at first received half an anna a day as batta over and above what they earned, as an extra inducement to come to the work.

4. In a country like this, where party feeling and malice exist in every village, it can hardly be expected that all will view unmoved the successful completion of a work that is to benefit only a certain community; but this much I am sure of, that party feeling has been very much laid aside, and the better disposed agree that the district is likely to benefit largely by the movement now commenced by the Ryots to help themselves. I am just now beset by applications to assist in carrying out works on a similar system in almost every talook, but I can only take up one at a time, and if successful in completing the work now in hand, I will apply for permission to take up others in the same popular manner.

(True Copy.)

(Signed) R. K. PUCKLE.

Collector.

From R. K. PUCKLE, Esq., Collector, to W. HUDLESTON, Esq., Secretary to Government, Revenue Department, Fort Saint George, dated Tinnevely, 28th April 1868.

In reply to Government Proceedings, No. 1,073, dated 22nd instant, I have the honour to inform you that pressure was undoubtedly put on the Pullers to induce them to work at all, for, as explained in my letter No. 181, dated 22nd instant, the Pullers or agricultural labourers are in receipt of wages from their masters all round the year, and do not care to engage in anything beyond their field work. They are the only labourers, and were till lately hereditary slaves. Some moral pressure must be exerted to get men to work in what they consider holiday time, and each man now employed may probably have been driven to work by argument or abuse of some kind.

2. We have no Wudders here. No Reddies, no Naiks, no Pullers or Padiachies, and no Pariahs. The Brahmins and Pillais decline hard labour, as they do everywhere else. The Maravars laugh at the idea of carrying earth on their heads. The Shanars climb palmira trees, but will not do any earth work, and there are thus none left but the Pullers, and we might wait for ever for labour if we waited till they came of their own accord; for they are only too well pleased to draw their subsistence allowance and live in idleness during the non-cultivating season, or between harvest and ploughing from February to May, the only time in the year when channel work can be done.

3. In the present instance I called on the villagers generally, and they called on their men individually. This is the usual method of getting labour anywhere in the Revenue Department.

4. In Tanjore it is done systematically thus, as without the intervention of the masters the men would not be forthcoming. There is hardly any free labour here. High contract rates might in time attract labour, but must attract it from other districts, and in the meantime we have no alternative but to leave things as they are, or make use of the few labourers there are without consulting them but their masters. If the masters provide the men, and the latter are paid full rates as has been done at Pudukudi, no real injustice is done; but if this is thought retrogressive, and a deviation from the principles of free trade, I can only suggest that the execution of Government works in the Revenue Department be deferred, until an executive establishment is formed, and the funds admit of excessive rates being paid for any emergent works that must be completed within a few weeks at the outside.

MINUTE OF DISSENT BY MAJOR J. SHAW STEWART, R. E.

I am altogether unable to adopt most of the conclusions at which the majority of the Commission have now arrived.

A considerable part of the present Report is diametrically opposed to the bulk of the evidence taken before the Commission, and to the opinions at which the Commission unanimously arrived six months ago, after the fullest discussion, in the light of that evidence, of the questions at issue.

The Report which has been now signed by the majority of the Commission did not reach me until late on the night of the 12th ultimo. I was obliged to leave Madras immediately afterwards on a tour of duty, from which I returned on the 11th instant.

I have not therefore been able to record in full my reasons for dissenting from the Report, and it is not worth while to delay the submission of the papers to Government until I am able to do so. Since my return to Madras I have had an opportunity of going, with Major Mullins, through the whole of his elaborate Minute of dissent, and I desire to state my entire concurrence, both in the objections which he has raised to the proposals brought forward by the majority of the Commission, and in the measures which he has recommended for the approval of Government.

J. SHAW STEWART, Major, R.E.,

Member of Commission on Public Works.

MADRAS, 16th February 1870.

APPENDIX B.

MINUTE BY MR. ROBINSON.

1. I concur with the report of the majority of the Commission, because I believe that most of the conclusions arrived at in respect to the proper organization of the department—*ex. gr.*, that the Chief Engineer shall again become the responsible head of the department, and be re-associated with the Board of Revenue, and that the District Engineer organization be reverted to—are, sound and indispensable, both on administrative and financial grounds. But I differ most emphatically on the important matter of rejecting the orders of the Secretary of State, now peremptorily re-iterated in his Despatch, dated 27th May 1869, No. 16, *viz.*, that the Collectors and ordinary Land Agency of the country shall again become charged with the conservancy and repair of all minor existing communal and village works of irrigation and communication,—with the aid of such economical establishment as may be required. I consider that the evidence before the Commission clearly establishes the entire fitness of these instructions, and shows the utter and *increasing* inadequacy—as well as the practical evils of the present unduly costly, centralized and exclusively departmental management in respect to minor village works. It further proves that it is not suited to the administrative and other conditions of the country and of the agricultural population, and is distasteful to the people with whose proper duties it interferes, and to the public services, especially native, whose useful interest in these matters is improperly discouraged.
2. Public policy and financial reasons alike demand that full and steadily *increasing* effect be given to this wise measure of decentralization. All future departmental re-organization must, therefore, start from the basis that costly professional establishment and management will not be allowed to intervene where it is possible to secure fair results by leaving things more to the people themselves, and making use of the able and influential officers of the Revenue Department, in organizing labour and supervising the repair and improvement of the ordinary farm and village works of the country, and in the annual maintenance of local roads. The Department of Public Works too needs relief to admit of a moderate professional Agency turning their science and skill to worthy objects; but in no other way can this relief be afforded, except by giving full scope to the Secretary of State's Resolution.
3. Further, I differ with the Commission on the subject of *Finance*, as applied to the maintenance of minor existing village works, and the responsibility of the State respecting them.
4. I wish it to be understood that my remarks throughout apply only to the old communal works of irrigation and distribution—such as village tanks, spring and river channels, and most distribution channels under large works, with their sluices and waste weirs; and to the repair and expenditure of *maintenance allowances* of £5 to £15 a mile, on local roads, and the future development of village communications. The larger question has not been referred to this Commission.
5. A brief sketch of the past Administration of Public Works will not be out of place here. From the earliest times the Collectors and ordinary Land Agency of the country, under the control of the Board of Revenue, had exclusive charge of all works of irrigation and communication on which the revenues and well-being of the country depend; and with their establishments, European and Native, directed the obligatory and customary labour of the country, supervised all ordinary works of conservancy and repair which were executed by

the villagers, and controlled the expenditure of the limited sums which the Government was then able to devote to the maintenance and development of the existing works of the country. Later in the century some gradually increasing aid was afforded to them by a few professional officers, who travelled in the provinces under the orders of an Inspector-General of Civil Estimates at the Presidency. He was the channel of communication between the professional officers in the Provinces and the Board of Revenue, under whose control, as above stated, the executive Establishment worked.

6. In 1825, the wide experience and practical sagacity of Sir Thomas Munro led him to put an end to much confusion which rose out of the separate action of the professional Department, by associating the Inspector-General with the Board of Revenue as a colleague, and placing the whole under the Collectors and a Board of Works so constituted. The grounds of Sir Thomas Munro's Resolution, which may be gathered from his Minute of that year, are based on that thorough knowledge of the constitution and feeling of native agricultural society, and appreciation of the useful influence which is possessed by the European and Native Magistracy and Land Agency in this country, which characterized all the measures of that practical Indian Statesman. The principles which he adopted are, therefore, as sound and capable of development to any required degree of efficiency—more especially in respect to minor communal and village works—at this day, as they were when that Minute was penned.

7. The system of Administration so adjusted was further strengthened and developed in 1836 and 1838 with much resulting benefit. Under it the head of the District Administration had the custody of, and was responsible for the maintenance of all existing Government and communal works of irrigation and local communication,—as an inseparable part of his general responsibility for the revenues and the well-being of the people—and he effectively controlled the public expenditure. He had the aid and advice of a professional Engineer, aided by a small trained establishment. The latter was employed on special works requiring such skill; while the Engineer inspected and checked the work done by the Collector's subordinates, and examined and estimated for projects of a new and larger character. But in practice all minor village works of irrigation and communication which require no more skill than is fully possessed by an intelligent farming population, were executed by those most interested in the results—the Heads of Villages and Ryots—under the general superintendence of the Collectors and local Revenue subordinates, with such aid and guidance as could be given by a few trained maistries or foremen, borne on the Collector's establishment, and entirely under his orders. The whole Administration was under the Board of Revenue, with the Chief Engineer for a colleague, as the controlling authority over both the Executive Departments.

8. The ways and means arose out of special State grants, and the customary labour obligation (*Kudi-maramut* or Tenants-repairs) whereby the ordinary channel clearances and tank conservancy were to a great extent effected, as part of the ordinary agricultural operations of the year. Where more extensive repairs were required, the customary labour was supplemented by such pecuniary aid as the limited means at the disposal of the Board and local Officers admitted of. And in cases beyond the powers of the ordinary Ryots, and not properly within the *Kudi-maramut* obligation, the whole work was paid for on sanctioned estimates. Government Engineers, as a rule, inspected the work done under the local Agency before it was fully paid for. All larger works, anicuts, &c., were reserved for special professional Agency, under the general control of the Board, and backed by the influence and support of the Collector and his establishment.

9. Under the constitution given to it by Sir Thomas Munro, the Department of Public Works worked for thirty years, and maintained in some efficiency the old existing village works of irrigation: and, so far as State funds could be made available, fulfilled their duty with economy and credit—due consideration being given to the great works of this Presidency, most of which were inaugurated and carried out under this system. Administrative defects there were; and development, in keeping with the advancing claims of the country and science,

came slowly, for the funds were wanting. But on the whole, the system worked well; and no names will ever be more deeply grafted in the grateful recollection of the people than those of the Engineers and Collectors, who were associated in maintaining the efficiency of the works which the State had inherited, and in developing the capabilities of the country—with means which appear now almost ridiculous in their narrowness.

10. This system is practically what the Secretary of State desires to revert to in respect to minor village works of irrigation and communication. And I am satisfied that it is the only one under which the ordinary works of the country can be economically maintained, and the requisite interest of the people and of the Revenue Officers in them be revived and secured. To a departure from it in favour of a highly centralized departmental administration, is to be attributed the present costly condition of things, and the unsatisfactory feeling which pervades the country.

11. The system was not, perhaps, so well-suited for Imperial works; and inconveniences arising out of it came prominently forward when the Godavery and other large and scientific Engineering projects began to be undertaken. A Commission was convened to consider the whole matter in 1850-53.

12. The Commission was eminently critical and querulous. They thought that the Board of Revenue had too much to do to give requisite attention to Public Works, and were over-cautious and conservative when perhaps professional genius required to be moderated to financial necessities. They complained that the Chief Engineer gave preference to his other varied duties, over his functions as Member of the Board, and left too much to the professional Secretary to the Board. They found that the number of professional officers in the Provinces was too limited, and their subordinates inadequately instructed and not sufficiently zealous. And they placed on record many minor irregularities—such as dilatoriness in the execution of works, bad accounting, instances of unremunerated labour and undue coercion and of peculation by the Revenue authorities. In short, the Commission brought to light many matters of delay and obstruction which required correction, and called for more efficient supervision. But the faults which they animadverted on were matters of executive detail rather than errors of principle, either of control or general Administration. All the shortcomings indicated by the Commission were such as most branches of Administration in this country—with feeble Agency under inadequate supervision and with straightened means wherewith to meet grave responsibilities—presented at that time. But a vast improvement has since taken place in the general ability and integrity of the Public Services, in the intelligence and independence of the people and in the vigor with which the law is administered. These are sure guarantees against a recurrence of those causes of animadversion. The Government of the time and the experienced officers in the country, did not acquiesce in the indiscriminate strictures passed by the Commission on the then system, in the conclusions they arrived at, or the remedies they proposed. And I do not think that the views of that Commission need cause any hesitation in now carrying out the Secretary of State's Resolution.

13. The Commission recommended a new Board of Public Works, consisting of a Civilian and two professional members, with the Chief Engineer as an *ex-officio* colleague, and an entirely separate (from the Collector's Establishment) departmental Agency for execution of all Public Works, including the small farm and village works to which this Commission's attention has been directed. In the final disposal of the matter, the joint Civil and Professional Board were disallowed: for it was easy to see that the Civil member, apart from the Board of Revenue, could not have been useful in keeping alive the co-operation of the Revenue Department over which he had no control, or in maintaining the requisite fusion between the branches of the Administration. While professional and departmental work could perhaps be as well done by the Chief Engineer, as by two professional members of a Board. But the Chief Engineer has since been separated from the Board of Revenue, and placed alone. All measures of organization and administration have been departmental and exclusive; and now for all practical purposes, projects, estimates, and

expenditure are subject only to departmental control and scrutiny. I find that a feeling is general and well founded, that departmental expenditure, both on Establishments and works, has ever since been characterized by absence of economy. The system adopted by the department has failed to utilize existing agencies or enlist the co-operation of the people; and wide-spread independent territorial Establishments have been organized to do what the ordinary Land Agency of the country and the people are ready and willing to perform sufficiently well, under the more numerous and efficient supervision of their European Revenue Officers. The system is ill-adapted to the condition of the country, and is not in favour with the people, so far as their communal and village works are concerned. Further, administration in the provinces has, I think, been weakened and disturbed by ill-suppressed antagonism; the administrative and executive duties of the constituted Land Agency have been encroached on, if not usurped, in some Districts, and the useful interest of Collectors and Revenue Establishments generally, in the condition of their works of irrigation and communication, has been repressed and discouraged. And finally, two Chief Engineers have passed into the Government, ostensibly as Ministerial Officers, but practically, perhaps, as Government Managing Directors; and thus the relations of this Department, and its responsibilities to the Government, have been placed on a different footing from that which answers well and economically in respect to all others in the Presidency.

14. This matter may be examined by the evidence before the Commission as respects: first, the customary communal unpaid conservancy and repair of minor village works by *Kudi-maramut* (Tenant-repairs), and the effect of the present system thereon, as well as on the prospects of its revival and future efficiency; and secondly, as respects the *Circar-maramut*, or repairs and conservancy paid for by State outlay, and the manner in which this obligation is being fulfilled under present conditions.

15. *Kudi-maramut* or *Tenant-repairs*.—There can be no doubt that, anterior to the British rule, all repairs of communal village works were entirely provided for by *Kudi-maramut*, executed by the *Mirassidars* and Villagers under the management of the renters of revenue. And even in earlier times under English administration, a large proportion of the ordinary conservancy and repair of existing minor village works of irrigation and communication, depended on the unpaid communal labour of those whose cultivation and well-being depended on their efficiency. The obligation was fully recognized by the cultivators as part of the ordinary agricultural operations of the year; and the labour was organized, apportioned, and directed by the Head of Villages and landed proprietors (*Mirassidars*, &c.), who were mainly interested in the results. The whole was, of course, under the general control and check of the Collectors and their subordinate Land Agency (*Tahsildars* and others.) Thus effect was given to a customary law of the land, and the *modus operandi* was in accordance with the communal constitution of agricultural interests in the country. It is obvious that the fair annual conservancy and repair of ordinary farm works can be expected under such conditions *only*. And it is shown that conservancy was fairly maintained by the fact that for half a century ordinary dilapidation was met at very small cost to the State.

16. Certain practical irregularities and occasional over-straining of such an undefined obligation were probably unavoidable in the early and poorer stages of agricultural life in a country like this. Under Native rulers those objectionable practices were undoubtedly very serious; under British rule also they have—in the absence of other ways and means of keeping the works efficient and serving the interests of both the cultivator and the revenue—no doubt been considerable at times. But a steady course of mitigation and amelioration was pursued from year to year, as greater liberality became possible; and latterly most of the objectionable features of coercion had been given up, as more liberal grants enabled Collectors to supplement the *Kudi-maramut* and add to its efficiency, and to undertake the more laborious repairs required at public cost.

17. The evidence before this Commission—more especially of influential farmers and of Native Magistracy and Land Agents, who are themselves very generally interested in agriculture, and therefore will be affected by any measure of revival—leaves no doubt that

this communal obligation has been a very valuable auxiliary to the agricultural and financial well-being of the country, and is so still, wherever it is maintained. The general bearing of the testimony is expressive of readiness to revive the obligation every where on the same conditions, and under the same management as had been customary up to the date of the transfer of all minor village works to the Department of Public Works. The Commission has recommended Legislative action in this matter, and I join in this recommendation, on the condition that the Secretary of State's Resolution is carried out. Under no other condition do I consider it either politic or practicable.

18. *The effect of the present system on Kudi-maramut or Tenant-repairs.*—In 1856, the conservancy of all irrigation work—including the numberless small communal village works—was transferred to the Executive Engineers' Department. The Collectors' management, and the conduct of *Tahsildars* and Revenue Officers and of Heads of Villages were—by implication if not more forcibly—impugned as oppressive, bungling, and ignorant. Divisional Officers were set aside for Range Officers; and European Talook Overseers and other subordinates of the Department of Public Works took the place of *Tahsildars*. While their casual maistries, and petty contractors supplanted Heads of Villages and *Mirassidars* in the conservancy of their own communal farm works. The evidence recorded before the Commission is unanimous, that from this time, customary, communal village labour has, in a great measure, ceased to be performed. Annual deterioration has not been arrested by *Kudi-maramut*; and there is ample testimony that, instead of turning out at once to do the petty repairs which would keep up and often save their works, the villagers now evince a determination to look to departmental officers for everything, and deliberately allow deterioration to go on until dilapidation of the work in which they are interested, becomes sufficiently extensive to endanger its stability and the revenue dependent thereon; when they hope that the Public Works Department will undertake to repair it at public cost.

19. There are of course very important exceptions to this condition of things. Many channel clearances and works of distribution in Tanjore, Trichinopoly, North Arcot and probably in other districts, are still—so far as the year's cultivation is dependent on them—effected by the combined labour of those interested, without that State aid which they might claim. And high prices have stimulated and kept alive a good deal of *Kudi-maramut* in other parts of the country, so far as the cultivators can manage it for themselves. But here too these self-helpful exertions have lost general administrative direction and systematic guidance by the Land Agency Officers, and much of their efficiency is gone. As a rule, however, it is clear that the customary *Kudi-maramut* on tank banks and supply and distribution channels, has almost entirely died out under the present system. It is equally obvious that no State Department or outlay has or can supply its place; and its commutation into a cess would prove practically useless; and most burdensome to the State.

20. Collectors have occasionally refused remissions for loss of crop consequent on neglect of *Kudi-maramut*; and Engineer Officers have sought to resist this apathy or stimulate the old spirit of communal action by, 1st, refusing to estimate or allow State expenditure on any work, the repair of which will cost less than Rupees 25; and, 2nd, by similar refusal in case the expenditure should exceed the highest amount of revenue realized in any one of the five years immediately preceding. But by both these rules the department has traversed the principle of the *Kudi-maramut* obligation and denied a right to some State aid, which belongs to small village works which pay wet Revenue, as well as to large ones.

21. This decadence of valuable communal action is much to be regretted in the interest of the people; and "demoralization" is scarcely too strong a term to apply to a listless dependence on Government Officers for the ordinary ditching and banking which is required by the small works of a populous Indian Farm (an average Village consists of 200 to 400 acres), and for deliberately allowing progressive dilapidation in the hope that danger to the farm work and revenue dependent on it, will ultimately force much more costly repairs on the State. The cause lies in the attempt to centralize down to the management of a village pond, and the transfer of the conservancy of the ordinary communal farm works—together with the funds which

should supplement the Tenant-repairs (*Kudi-maramut*) and comfort at times the unpaid labourer—to a highly centralized, and, in respect to village farm works, ill-supervised State Department; with which the people have little sympathy, and which works more or less antagonism, as respects its lower grades, with the ordinary Talook and Village Administration and the traditional feelings and instincts of the people. It is simply impossible for a Superintendent Engineer to keep alive a popular institution which depends on the good will and administrative allegiance of a vast population of small agriculturalists to their own Village Heads and landlords, and the land Agency of the country. Such a change will not throw down ancestral traditions or transfer this allegiance to a newly created Agency: it merely kills it: What has occurred is the inevitable consequence of a false step, which the Secretary of State's wise Resolution will at once retrieve, by restoring the ancient and well balanced conditions and ensuring the revival of its useful action and influential support.

22. The question naturally arises, Why have Collectors and Talook and Village authorities not kept alive and systematically enforced the *Kudi-maramut* obligation? In theory they ought to have done so; possibly by coercive measures some might have done so partially. That this has not been the case, is the natural consequence of removing from them executive responsibility for the efficiency of the works and interest in their maintenance, and more or less practically denying them a potential voice in the administration of any funds at the disposal of the Government. It is only natural that the Magistracy of all classes, from the Divisional Officer to the Head of the Village, should fail to fulfil the part of a coercive Agency, while a more or less antagonistic department judges how far it will supply State funds, in other words, judges where obligatory labour—and if necessary magisterial coercion—shall cease and where departmental liberality shall commence. In short the two things stand and fall together. It is, and must ever, I believe, prove to be, impossible in practice to separate the general administration of communal village works from that of *Kudi-maramut*.

23. At the same time the Government will find in the evidence before the Commission, the fullest assurance as to what may still be done by the people by *Kudi-maramut*, in furtherance of the common well-being, under the encouragement and with the co-operation of earnest Revenue Officers. It is shown by such facts as are brought to light in the evidence from Tanjore, Coimbatore, and Trichinopoly, and other districts. We have the fact that the people—when their works are so much out of repair that heavy and continued loss is entailed—still occasionally seek the aid of the Revenue Officers to organize their voluntary labour, and with it execute channel and river clearances, and repairs which would cost the State thousands; and even voluntarily contribute large sums of money for conservancy.

24. When the Secretary of State's Resolution is carried out, the Ryots will, it may be hoped, return to their duty; and the interest of Revenue Officers in the conservancy of their agricultural works will revive, with much contingent benefit to the country. The Revenue Officers will then have at their disposal the moderate agency required to direct this useful action, and at the same time guide the larger repairs which *Kudi-maramut* should supplement.

25. *Circar-maramut or repairs of minor works made at cost of the State.*—I now pass to the evidence in respect to the present management of minor works of irrigation, so far as to the evidence in respect to the present management of minor works of irrigation, so far as Government outlay on them is concerned. I do so in no critical spirit; but merely to show that the true solution of our difficulties lies in carrying out the Secretary of State's Resolution, and that there is nothing in present conditions which can justify the continuance of a costly centralized system which is unsuited to the state of the country. If I state the case strongly, it is because I desire that both sides of the question should be before Government in coming to a decision on so important a matter.

26. The Department of Public Works has been in charge of all the minor irrigation works for twelve or thirteen years. The Commission has anxiously sought for accurate information on their actual condition; but have been unable to procure from the responsible officers, (professional or revenue,) of any district, a classified statement of their number, capacity or condition, or of the amount required to put them in thorough order. No doubt much has

been done (but at great cost), and cultivation is advancing. But the general verdict in regard to minor village works seems to be that the bulk were inefficient when the department was organized, and are so still. Tank banks and waste weirs are out of order, sluices are wanted, supply and distribution channels silted up, and so on.

27. The Commission has been assured, in general terms, that in the opinion of Departmental Officers, many rain-fed village tanks and irrigation channels have become permanently inefficient from natural causes, such as want of supply, silting up, and the like, and are not worth repairing at public cost. They are, therefore, never touched—although the Revenue demand is enforced—and their up-keep is recommended to be abandoned, and State expenditure withdrawn. The statement is no doubt true to a certain extent. But the fact that even in their neglected state many still water the registered irrigable area (*Ayacut*), are profitable to the cultivators and yield a fair Revenue, suggests exaggeration in this respect. And there is reason, I think, to believe, that under more economical arrangements between the Ryots and Collectors, the public money really required to keep up or restore some of these works may prove quite reasonable; for the evidence before the Commission shows that the estimates framed by the Department Public Works are meant to cover profits of casual contractors of sorts and cost of temporary maistries, and are on a scale of expenditure which exceeds in amount what the villagers consider necessary, or would perhaps require were the work left to them. Further, even where it may not be worth while to spend the full amount of a Government Engineer's estimate on a minor village work, a reasonable grant-in-aid, supplemented by the *Kudi-maramut*, which the cultivators would contribute, may suffice to keep up and restore some works for the joint purposes of the State and cultivators at no great cost. In this way, and under the more reasonable rates at which Ryots would undertake to execute their own works with their field hands, I entertain little doubt that many works which Range Officers now condemn and refuse (unreasonably, for they pay wet Revenue) to repair, may be maintained in fair efficiency for many years, and be improved. Such arrangements, however, can be made by the Collectors and *Tahsildars* only. Engineers are perhaps too ready to urge abandonment of what have proved an irksome burden since they assumed charge, but were not found so under the system which the Secretary of State desires to revive. They are apt to estimate the worth of a village irrigation work by its revenue return only, losing sight of the fact that it is worth as much more at least to the villagers. Great care will be required to prevent waste of revenue, now easily paid, under this pressure for abandonment of small tanks.

28. The Commission inquired carefully into the practice of the department in respect to the repair of minor village works. Apparently no uniform system is followed. In some few districts *Tahsildars* send in lists of works out of repair to the Collector, by whom they are communicated to the Superintending Engineer or Range Officers for such notice as they may take of the information. But in most districts Departmental Talook Overseers and Maistries—on whom, under the present system necessarily devolve all duties in connection with minor irrigation works within their charges—are, generally the promoters of repairs to which Government money is to be applied. They send their estimates to the Range Officer, by whom they are submitted to the Collector direct for countersignature. The Collector countersigns them, generally without communication with his Divisional Officers, and frequently, it may be inferred from the evidence, in the perfunctory way which absence of direct control and perhaps assumed relief from immediate responsibility, are apt to engender. The estimates are then passed on to the Superintending Engineer, at whose hands they obtain a place in the Budget of some subsequent year, according to his judgment of their urgency. Appropriations for minor repairs are finally made, without communication with the Board of Revenue, by the Chief Engineer—generally in the lump—and left for local distribution by the Superintending Engineer. This is frequently done without further communication with the Collector; and subsequent transfers of funds do not require his authorization. The estimate is then transmitted to the local officer for execution; which, in the case of repair of minor village works, necessarily devolves on the Talook Overseers and their casual Maistries. The evidence before the Commission shows that in by far the majority

of instances, the work is made over by these to one of the small jobbing contractors who hang more or less permanently about the local officers of the department, and pass from the execution of one petty work to another, as suits convenience or as funds are available. The work is thus often delayed or undertaken at unseasonable times. The Talook Overseer, who generally has made the estimate, supervises the work of the temporary maistries and contractors, measures it up from time to time and obtains funds for them while the work is in hand. The Range Officer finally inspects the work and grants a completion certificate, and submits the accounts direct to the Controller, by whom they are passed without further scrutiny or challenge. In some districts the Range Officer apparently need not inspect a completed work, unless the estimate exceed fifty rupees. As a rule, the Heads of Villages and Ryots are very rarely entrusted with the repair, &c., of works in their own villages. They are so employed in South Arcot, and partially in North Arcot and elsewhere, but the practice is not general, and is unpopular with the subordinates of the department. Transfers of allotments are as above noticed, frequently made by the Superintending Engineer without communication with the Collectors, to meet financial adjustments; and the grants for agricultural repairs are not always expended, even in such backward districts as Kurnool and Vizagapatam.

29. The evidence as to how this system works, is very conflicting. Departmental Officers are generally satisfied with the manner in which petty contractors execute repairs of minor village works of irrigation. They do not consider the estimates unduly high, nor the profits realized by contractors excessive; and few cases of partnership between the departmental subordinates and contractors have been established by evidence. They consider the general supervision of the Range Officer, and his final completion certificate sufficient guarantees against irregularities which might arise from the Talook Subordinates negotiating with the villagers in respect to estimates which they eventually submit, and then supervising, measuring up and finally reporting on the work of the contractor. Several officers ascribe the prevalent practice of passing over the villagers in the execution of sanctioned repairs of minor works in their own villages, to unwillingness on their part to come forward and undertake them. On the other hand, there is testimony which may lead to the inference that the system does not work well, where reliable supervision is so deficient as at present; and it certainly causes dissatisfaction amongst the people. It is alleged that departmental subordinates and needy contractors wax rich, while the works are starved; that the offers of the villagers to execute their own village works, are discarded or repressed in favour of men of straw who are in partnership with the official subordinates; that larger sums are passed—and consequently spent—under estimates than there is any need for, but the actual work done is less than is reasonably required; that bad work has frequently to be done over again; that the works of favoured villages are repaired with undue frequency at public cost, and that irregularities occur in consequence of every step—from the negotiation to estimate to the final measurement—being sometimes left to Talook subordinates. The truth probably lies between the two. The supervision of the Superintending Engineer in respect to these minor village works, is necessarily *nil*; and the widest difference exists in the condition and character of Range Officers and in the integrity of their subordinates. Under a fair majority of the former, all work, though expensive, is doubtless well done. Under others much cause for dissatisfaction occurs; for the subordinates of the department are not above the average in any respect, and require much closer and more trustworthy supervision, than can be exercised by the existing staff of superintending officers. This supervision will be easily provided by the Covenanted Revenue Establishment when the Secretary of State's Resolution is carried out. It is trustworthy supervision rather than professional skill that is so much needed in respect to minor works. The latter can easily be procured; the former must be availed of wherever it is present.

30. The Report of the Commission has noticed the want of method which has obtained in respect to the apportionment of repair allotments to different districts. This too the Revenue Officers and Board of Revenue, if again entrusted with the duty, will rectify.

31. The same remarks apply to the expenditure of annual maintenance allowances on local roads. The Reports in respect to the expenditure of these current grants, are very

unsatisfactory. But if left to the Magistracy and local authorities, these petty annual repairs will be effected out of hand, and be more thoroughly supervised, than is possible under the present circumstances of the department. Construction must of course be undertaken by Engineers; but when completed, the road should be resigned to the local officers.

32. On the whole it is impossible, I think, on the evidence before the Commission, to avoid the conclusion that under the existing conditions a vastly increased expenditure on Establishments and works fails to realize expectation in respect to the conservancy and repair of minor works of irrigation and communication; that the practice is faulty and ill-suited to the condition of the country and wanting in method; that the system fails to inspire confidence, and that dissatisfaction and alienation exist, which are not confined to officers of Government, but are more or less general amongst the Ryots who, as a rule, are anxious that the re-transfer ordered by the Secretary of State should take effect. I think too that it may be fairly inferred that public money is neither better, nor so timely and suitably spent as it will be under the Collectors and their numerous Covenanted Officers, who have the aid of highly intelligent Native Deputy Collectors, *Tahsildars*, and Heads of villages ready as a body to undertake the responsibility again. These will employ the persons who are most interested in the effective and *economical* outlay of money on their minor works of irrigation and the maintenance of local roads. I think, therefore, that there exists no ground for hesitating to carry out the Resolution of the Secretary of State to its fullest extent with steadily *increasing* completeness, to the relief of the department and of the finances. The employment of a costly scientific profession must be confined to executive work which cannot otherwise be performed; decentralization must take place in respect of ordinary farm work and parish roads; local administration must be fostered, and the peoples' co-operation enlisted; for this policy the Secretary of State's Resolution paves the way with certainty.

33. The objections raised to the re-transfer of minor works of irrigation and maintenance of local roads to the Revenue Department are: (1) the contingent necessity of employing a double Establishment; (2) competition for labour between two departments; (3) probable inefficiency of the work done, unless superintended by professional officers; and lastly (4) that Revenue Officers have other more urgent duties which fully employ their time.

34. *First.* There need be no double Establishment. The fact is that the requisite superintendence already exists abundantly in the Revenue Department in every Division, Talook and Village; and only requires to be slightly aided by a few professional Talook Maistries, as directed by the Secretary of State. It is objectionable under such circumstances, to thrust in a costly centralized, professional establishment to do what an existing influential and intelligent agency may, with a little practice and guidance, be entrusted to do in an efficient manner with the co-operation of the Ryots. In re-organizing the department, care must be taken not to provide an establishment of professional officers to do what the Revenue Officers can do. It is, I think, much to be regretted that the Report of the Commission has not been accompanied by an estimate of the future establishment required by the department in each district. I have personally endeavoured to cast one, and have examined our late colleague, Mr. Sim's estimate; and I am satisfied that if the Secretary of State's Resolution be adopted, the cost of the professional establishment may possibly be kept within the limit assigned by the Supreme Government, say, twelve to thirteen lacs of rupees. Whereas under the present system, expenditure on establishment has grown up to about twenty lacs—irrespective of the three to five per cent. of every estimate which is now expended on casual and temporary supervision. Some Departmental Officers seek still further increase of establishment. It seems to me that unless the Secretary of State's Resolution be adopted as a basis of future administration, and the Land Agency be utilized and the people brought to bear their share of the burden, it is impossible to say to what proportions the Public Works Establishment may grow; for more attention to minor village works and local communications is obviously indispensable, and it is affirmed that this cannot be given without considerable numerical increase. I do not submit an estimate of the small Local Service which will be

required to give effect to the Secretary of State's Resolution in each District; because this will need to be arranged severally for each District with reference to the work to be done, between the Collector and the Engineer, under the control of the Board of Revenue constituted as I trust it may, in future, be with the Chief Engineer as a colleague. But the opinions of Revenue Officers of experience show that it will be moderate.

Secondly.—The evidence before the Commission disposes in a great measure of the second objection. It appears that the *Mirassidars* and Villagers will employ on their village works a class of labour which is not and cannot—without serious inconvenience to the landholders and agriculture—be available to contractors and employés of the Department of Public Works, *viz.*, their own field hands and permanent farm servants, whom they will employ on repairs, &c., when field work is slack. With these they will do out-of-hand what is now executed slowly and at unseasonable times for want of coolly labour in the open market. Departmental Officers allege that they find it difficult to get labour; some even ask for compulsory powers to enable them to effect ordinary repairs. Let the landed proprietors again become responsible for their own village works under the Collector, and they will find the village and field labour, of which they have a better command than any casual Contractor or Talook Overseer, to execute their repairs.

Thirdly.—There is no reason for fear in regard to the efficiency of work done by those most interested in its permanence and sufficiency, under the guidance of the State establishment which is responsible for the revenue,—aided as ordered by the Secretary of State. The small works of the country were called into existence, and long maintained by the people to whom the Collector will entrust their repair and conservancy, and the Revenue Establishment was long accustomed to supervise and guide them. The agriculturalists of Southern India have not yet lost their skill in tank and channel work; and it is obviously expedient to keep up and improve this aptitude—instead of impairing it, as the present centralized system threatens to do. It is time that the State Services should cease to undertake the ordinary duties of a farming population.

Fourthly.—While it is true that the superior Revenue Establishment have much to do, it is likewise true that the supervision which they must again exercise under the Secretary of State's Resolution, is the proper duty of Land Agents, and in this case falls in with their regular tours of duty through their villages and with their ordinary occupations. It can, therefore, be efficiently performed, with the aid which the Secretary of State is prepared to sanction. Further, the efficiency of these works will relieve Revenue Officers in some measure in respect to their fiscal responsibilities. The actual work will be performed by those who have both time (during the slack season) and inclination for it.

35. The Secretary of State has resolved not to discredit the intelligence of the able officers of the Revenue Department, and their ability to judge of ordinary earth work and minor sluices. It is unnecessary, therefore, to notice the somewhat pedantic character of the departmental evidence on these points. The Government may be assured that their intelligent and zealous officers of all grades can and will readily acquire any knowledge and skill required for the trust reposed in them; and Government will doubtless give no weight to unworthy disparagement of a willing and skilful peasantry in respect to the up-keep and repair of their own works. Imperfectly informed fears in regard to the accounts to be rendered, may be brought to the same indifference. Men who account with accuracy for millions can be brought to render accounts with punctuality, in any form which the Controller may require. The delays now occasionally animadverted on, arise from Revenue Officers having no Establishment at their disposal. This the Secretary of State has foreseen. It will not, I believe, be found difficult to determine where costly professional science is *indispensable*—either permanently or temporarily—and to provide it amply for the unrivalled body of Engineers at the disposal of Government; together with the Executive Agency required for their more concentrated labours and narrowed duties. Every thing else (more especially matters of administration into which departmental officers have perhaps already entered too far) must be left to the ordinary Land Agency,—aided as directed by the Secretary of State—by whom the local works which now

devolve on the subordinates of the Department and their casual employes and petty contractors, will be much better and more suitably arranged than at present, and less expensively—but not less honestly, supervised. On this measure of decentralization, which common sense dictates, depends, I believe, the co-operation and good-will of a skilful and willing people.

36. *Finance as applied to minor irrigation works.*—The Commission has recommended that eight per cent. of the gross Wet Revenue of the Presidency be set aside as a first charge for the repair and conservancy of the irrigation works under which it accrues. They have done so, however, without proposing any provision for a communal contribution by the cultivators under each works; or for localizing the expenditure in such a manner that each work shall certainly have a share in the sum so allotted. And the Commission further accept, by implication at least, the more than questionable obligation of the State to maintain these communal works *single-handed*, in consideration a *special* Wet-demand on irrigated land, made on the ground that water is supplied by the State.

37. I am satisfied that any proposal to repair and maintain—much more improve as they require—these expensive and dilapidated works on this assignment of Revenue at the sole charge to the State, must prove as futile of realization as it is, I believe, erroneous in principle. A considerably larger per-centage of the Wet Revenue of the Presidency than is proposed has, in fact, been devoted of late years to the repair of agricultural works. But minor village works have had but a meagre share of it, or none at all; although their claim is strong, and the Ryot's loss considerable. The existing condition of a very large number of these works, taken with avowed inability to overtake their restoration with even the present costly Agency and the State grant as now distributed, seems to afford convincing proof that the financial bearing of this matter requires reconsideration. The State must aid; but the people must, I venture to think, likewise contribute to the maintenance of communal works of irrigation from which they now derive profits which far exceed the revenue claim of the State. But at the same time, any assignment of State Revenues towards their conservancy and improvement must be so apportioned that it shall benefit the individual work the Ryots of which are required to contribute; and not be subject to diversion for general purposes, in the manner which the Government will observe from the evidence before the Commission, has caused so much popular dissatisfaction with the management of Local Road Cess, or be frittered away as the Coimbatore, Salem, and Trichinopoly repair cesses appear to have been.

38. With regard to the hopelessness of meeting the requirements of the country from the assignment of Revenue proposed, I admit that estimates and work are on an unduly costly scale at present; that the maintenance of Imperial works may have absorbed an undue proportion of the allotments for agricultural repairs, to the detriment of old existing village works; that incomplete works may perhaps have been occasionally transferred from construction to repair account; and that certain districts have received an undue share of the grant. And it is obvious that an unreasonable proportion of the general assignment is inevitably absorbed by charges for permanent and temporary establishments—for the cost of executing and superintending the repair of hundreds of minor farm and village works, scattered at a distance from each other over an enormous area, by a highly paid and centralized Engineer Establishment, is of necessity most extravagant. But notwithstanding, a considerable per-centage of the Wet Revenue has, on the whole, been spent on the repair of agricultural village works, which will still require to be maintained, in addition to those which now receive too little notice. The evidence before the Commission shows that a large number of minor works are still out of repair, that there are some thousands of tanks and channels yielding a large revenue in the aggregate, on which nothing is ever spent, and that in some districts the Ryots are forced in self-defence to make costly clearances, &c., without that pecuniary State aid, which they may fairly claim. The conviction is thus forced on me that, however faithfully the proposed assignment may in future be apportioned amongst the works needing repair and maintenance, an assignment of eight per cent., or even a much larger proportion of the gross Wet Revenue, if spent on the extravagant system now followed, must fail to meet the

urgent demands of the country within any reasonable period. At the same time, I am satisfied that the cultivators are not entitled to a larger share of the present State Wet, rent roll, for ordinary repair and conservancy of communal and village works which pay a *consolidated* wet-demand.

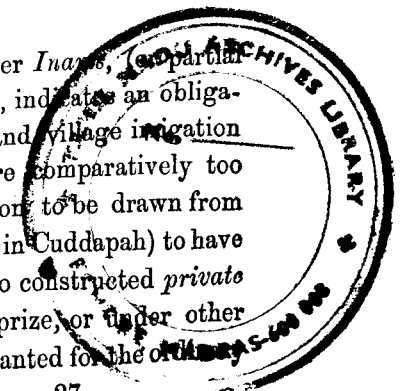
39. An error of principle has, I venture to think, underlain the management of these matters, which should be got rid of in the interests both of the State and people. For it is not the interest of the latter that their works should continue out of repair and unimproved, when they can, as now, afford to contribute to bring them into a state of efficiency which the State is not bound to keep up and cannot maintain Establishments to effect.

40. The Commission gave much attention to the examination of the following points:—(1) whether the State is by any ancient usage really bound to maintain *single-handed* the old existing communal agricultural works; and (2) whether the *consolidated* Wet Revenue demand is a *special* charge conditional on the supply of State water. The conclusion I arrive at is that there is no evidence of such an obligation or condition in the early agricultural or revenue conditions and practice of this country. The inference to be drawn from these is, I think, directly opposed to such contention.

41. The great majority, if not the whole of the ordinary communal and village farm works of the country, were probably constructed by the agricultural population themselves, or by private individuals who invested their means in the creation of tanks, channels, and wells. There are of course many large anicuts, tanks, and channels which were formed by the ancient rulers and their Dewans, to which *quasi* State funds may have been partially devoted in aid of communal labour; but the minor communal village works, which have fallen under the consideration of this Commission, doubtless owe their existence, as above stated, to labour and expenditure other than public outlay properly so called. All have been, as a whole, treated in respect to the State claim against their wet crops, on much the same principle; and what can be claimed at the hands of the State, is a contribution towards their conservation and improvement, in proportion to any interest the State may have in their efficiency, and no more. This leads to a consideration of the old revenue systems of Southern India, so far as they can now be traced to their principles.

42. The Revenue Settlements of most districts in Southern India, under the rulers who immediately preceded the British conquest, were, as respects irrigated land under communal and village works in general, based on a Metayer division of the crop between the State or its renters, and the Ryots. The Sircar's one-half share was taken in grain or commuted at the then current prices into money. And occasionally additional cesses were imposed, which raised the Metayer State demand considerably above the half-crop. This normal demand was, it appears to me, irrespective of any obligation to supply water. They simply divided what was on the ground. And so completely has this principle prevailed that wet crops under *private* tanks, channels and wells fell, as a rule, under the same normal demand. It is indeed but very recently that the full ancient demand was relaxed by the British Government in respect to wet land irrigated by *private* works; and to this day no compensation is claimed by the Ryot on account of loss of his share of a wet crop, from failure of the State to supply water. If no crop can be raised, remission necessarily accrues, and each suffers a respective share of the common loss, without however establishing any claim against the State for neglect of an obligation.

43. It has been argued that the existence of *Dasabandam* and other *Inams*, (a partial remission of the normal wet demand,) under certain tanks and channels, indicates an obligation on the part of the State to maintain *single-handed* the communal and village irrigation works. It is not now easy to trace the origin of these *Inams*, which are comparatively too few in number and too irregularly distributed, for any reliable conclusion to be drawn from their existence. But they appear, where their origin can be traced (as in Cuddapah) to have been partial remissions of the normal demand, granted to individuals who constructed *private* tanks and wells, and were made with a view to encourage private enterprise, or under other special circumstances. There is no evidence that they were generally granted for the ordinary



conservancy of communal village works. As a means for securing the maintenance of even private irrigation works, these remissions have failed utterly. No tanks have, as a rule, been in worse order than *Dasabandam Inam* tanks.

44. Be this as it may; minor village works were doubtless maintained and improved by *Kudi-mamut* or Tenant-repairs, under the Renters of Revenue and Land owners (*Mirassidars*.) The State or the Renters, however, contributed in most parts equitably to their conservancy. This contribution very generally—took the form of an equal share in the joint assignment of a certain small portion of the gross yield of grain, which was set aside in kind before the Metayer division, for the repair of the tank or channel irrigating the land of which the crop was divided—under the name of *Merah* or other local appellation. The quasi-remission of demand remained in the hands of the land-owners and cultivators, who were throughout held fully responsible for the efficiency of the work under which the assignment accrued, and maintained it without further State aid. The *Merah* was in fact the mutual and equal contribution, in proportion to the respective interests of the cultivator and the State in the maintenance of a work. To this grant-in-aid—neither more nor less—towards the maintenance of irrigation work, the cultivator of communal irrigated land in Southern India was entitled under the ancient customary agricultural law of most parts of the country. No evidence seems to exist of other State aid.

45. It is not now possible to trace what became of the *Merah* or other contribution, under various subsequent settlements—nor even to trace everywhere the existence of such acknowledgment of mutual obligation on the part of the State. In some Districts the contribution was no doubt withdrawn and incorporated with the Revenue demand—which was perhaps in some cases raised to include also the cultivator's share of the *Merah*—because the system was found to work unsatisfactorily, and it was thought that the Government could better perform the duty of conservancy. It is obvious to remark that the State has hitherto failed in any self-assumed duty of the kind in respect to a large majority of minor Village works. In other Districts probably the whole *Merah* (if admitted by the ancient settlement) remained untouched in the cultivator's hands; but the obligation attaching to it has also in this possible case fallen in some degree into abeyance. The general principle, however, I think, remains, that no special obligation attaches to the wet consolidated demand on irrigated land under old Village works, and that the duty of providing funds and (more especially on the part of the villagers) labour for their conservancy is a joint, not exclusively a State obligation. To this principle of financial administration, the Government should, I venture to think, revert in respect to all minor farm and Village works of irrigation, the care of which will, in future, vest in the Revenue authorities, under the Secretary of State's Resolution. Under no other conditions can the mass of these works be restored and maintained in efficiency. Modification to meet altered conditions, will be requisite, for the *Dasabandam* and *Merah* systems have proved failures.

46. What I would advise is that the Tanks, channels and the like so transferred, should be classed as Grant-in-aid works; that a fixed per-centage of their revenues—say six and a quarter per cent. or six pies in the rupee—should be assigned as a Local Fund in the District, to meet grants-in-aid—not exceeding one-half the estimated cost—for the repair or improvement of any work, included in the class, requiring either. The cultivators under the work must pay the rest and find the labour as occasion requires. With such a Fund at their disposal, Collectors will take care to improve their income in the interest of the Fund as well as of the people, and the aid thus conceded will stimulate the Ryots, who are, as it is, urgent.

47. The altered conditions of agricultural interests justify, I think, the clear recognition of the principle which I venture to advocate. A true Metayer demand is, under all circumstances, a very heavy charge, and it proved to be so while population was sparse, agriculture low, and current prices rarely exceeded, often fell short of the commutation rates adopted in the early Settlements. But this condition has very generally changed. Reductions of assessment have been carried out in most Districts, and the *Ulunqu* division of crops has also been abandoned in Tanjore, Tinnevely and every where else, at a large sacrifice of

the State demand. Private works of irrigation no longer contribute to the wet revenue, and other fiscal relief has been conceded under the new Revenue Settlements. In the meantime, the prices of all agricultural produce have advanced in a two to threefold ratio, without enhancement of the old demand on irrigated land. The State has therefore no longer an equal interest in the profits of agriculture derived under any communal irrigation work. And the Ryots now enjoy from two rupees to five and upwards, for every rupee which the State derives in revenue from them. Agricultural poverty, which was perhaps the first origin of the quasi-acceptance of the sole obligation to maintain irrigation works, no longer exists; and it is bad policy to encourage the people still to look to the State alone for the conservancy of communal tanks and minor distribution channels in the country. Sooner or later relief of this kind must be given to the financial condition of the country; and the opportunity of the eminently suitable and acceptable charge in the mode of Administration, directed by the Secretary of State, should not be lost for introducing the beneficial measure.

48. The minor details of such a measure, if the principle be adopted, may be easily arranged as experience is gained. In general, the Fund would be administered on the same principles as the ordinary Local Funds, of which the Board of Revenue is the Trustee, under the orders of Government. And those Ryots who first come forward with their contribution, should have the first claim on the Fund. But I would recommend that Local Committees of the principal owners of wet land under this class of works, be formed to each District (or Talook if the number or extent of works therein be great) to advise the Collector in disposing the annual Budget. As regards the repair or improvement of works, which need either, an Estimate—with accurate specifications of the work to be done—should be framed and sanctioned under the Local Budget, with a grant which in no case should exceed, as above stated, one-half of the estimated cost. The execution of the work should then, as a rule, I think, be entrusted to the Ryots, who should carry out the work according to the specifications; security being taken for its completion. Or if they preferred, or it proved otherwise desirable, the work should be carried out under the orders of the Collector, and the communal contribution would be levied rateably in such manner as those interested prefer. It appears from the evidence that the Ryots rarely assess themselves to such contributions on the basis of the Revenue demand, which is probably not a sufficiently accurate relative valuation. I feel assured that the Ryots would soon be brought to see their interest in having the power of readily repairing and improving their agricultural works with Government aid; and would be found in many instances ready to contribute the required sum. Each Village work in a Talook, might thus be thoroughly over-hauled once in ten or fifteen years, or even at shorter periods, at a moderate and equitable cost to the State and people interested. *Kudi-mamut* would do the rest. But I think that these minor Village works and the Ryots contribution, cannot fairly be saddled with the extravagant cost of a highly centralized and expensive State Engineer Establishment, such as that now in existence. The arrangement proposed is dependent on the Secretary of State's Resolution being carried out.

49. Legislation will be necessary, and some such provision might be introduced into the Act proposed by the Commission. Provision should also be made to enable the people to raise funds amongst themselves, under the general control of Government, for the improvement of their communal and Village irrigation works, without resort to State aid or departmental interference. It is expedient to give the people the power of helping and emancipating themselves. Their works show that they are apt, and they will rapidly learn to do their own work as well, probably better than it is at present attempted to be done for them, and at much less cost. It is desirable too to open a field for private enterprise as respects ordinary Village works. Railways and Public Works have already given an increasing impetus in this direction, both in Districts and Villages, and trained bodies of *Waddars* (Indian Navvies) are to be found everywhere, with whom the Villagers can make their own terms.

50. The testimony before the Commission is absolutely conclusive against levying a general irrigation cess for the repair and conservancy of minor irrigation works; and the facts elicited in respect to the administration of Local Funds—as respects Village interests,—

and quasi-irrigation cesses in Trichinopoly and Coimbatore, justify, I think, the very strong and unanimous feeling against such a measure, which was expressed by native witnesses.

• 51. I also consider the evidence conclusive against withdrawing in any large degree from the proper functions of an equitable Landlord—to use a term which though not strictly correct is expressive of the position held by the Revenue Department in this country—in respect to the general control over irrigation works in which bodies of cultivators have common interests. This withdrawal is, practically, what is meant by “abandoning” some irrigation works, which is now insisted on. The Local Revenue Officers have other functions in respect to agricultural works besides their repair; and these must not be abrogated. The concern and position of the parties interested in such communal works is too varied, and their mutual forbearance too uncertain, to admit of their being entirely left to themselves by their landlord, without danger of oppression and selfishness.

51. As regards giving up the whole or any portion of the current wet demand in hope that a communal work under which it accrues, will be maintained by the people interested in it, without intervention of authority, I consider that the evidence clearly shows that such a measure will practically condemn any work to which it applies, to progressive deterioration and final ruin—besides proving a costly arrangement in itself to the State. Such a plan would, in fact, be reverting (at a costly figure) to the old and abandoned *Merah* or *Dasabandam Inam* systems, the failure of which admits of no question. These small annual remissions of revenue become mixed up with the private income of the Ryots; and the obligation to repair or improve the work for which they are made, being ill-defined as respects both time and extent, is certain to be lost sight of. Dilapidation is not met, and when a breach finally sweeps away the work, the large sum suddenly required for its restoration is not forthcoming, or its exaction ruins those who are responsible. Further, enforcing or seeing that the obligation is not neglected, will entail greater labour and vexation than now occurs; and resumptions which have frequently to be resorted to in the case of *Dasabandam* tanks, are impolitic, if not unfair, under the circumstances of the grant. Repairing leases rarely answer for long. Under the circumstances of Indian communal works, arrangements of the same character must inevitably disappoint. There may be some works whose extinction would be immaterial. But if the maintenance of any work be desirable, either in the interest of the State or of agriculture in general, the only assurance of their being kept up, lies in maintaining the position to which the Revenue Officers will be restored in regard to all communal works by the Secretary of State's Resolution. No expense is involved, and loss of revenue is avoided thereby. The occasional trouble entailed is no more than what the Revenue officials now take in the interest of the cultivation in general, and such as will not be materially reduced by abandonment, either entire or partial.

W. ROBINSON,

Member of Commission on Public Works.

MADRAS, 20th March 1870.

APPENDIX C.

MINUTE BY MR. J. D. SIM.

As I shall have left India before the labours of the Commission are closed, I wish to place my views on record, in case the Government should desire to have them.

2. I will first touch on the important question of the organization of the department, prefacing my remarks by a brief relation of its past history, and of the chief modifications which it has from time to time undergone.

3. Originally, the charge of irrigation work devolved on Collectors without professional aid of any kind. After awhile some assistance of this nature was afforded, Engineer Officers being appointed under the designation of Superintendent of Tank Repairs, to assist them in this part of their duty. In 1819 the Presidency (exclusive of Canara and Malabar) was formed into three divisions, each with a Civil Engineer, the whole being under the control of an Engineer Officer at the Presidency, styled the “Inspector-General of Civil Estimates.” In 1825 the whole department was placed under the Board of Revenue. In 1836 the Chief Engineer received a seat at the Board in the Public Works Department, the office of Inspector-General was abolished, and that of Secretary in that department created. In 1838 the Presidency was formed into eight divisions, each having a Civil Engineer. The department continued very much in this condition till 1850, when, under instructions from the Honourable Court of Directors, Government appointed a Commission to inquire into, and report on the system of Public Works. In the elaborate report of these gentlemen will be found a complete account of the system in its minutest details. It is sufficient here to remark that its main feature of distinction from the present system consisted in this, that the execution of work generally rested with the Revenue Officers, the duty of the professional department being projecting, estimating, directing, and inspecting.

At the time when the Commission wrote, the entire cost of the Public Works Department of the Presidency was Rupees 5,79,474 per annum, and the expenditure on works was Rupees 24,50,000. The Commissioner proposed to vest the general control of the Department of Public Works in a Board, consisting of a Member of the Civil Service, and two Engineer Officers (the Chief Engineer being also *ex-officio* a Member), to have thirteen “Inspecting Engineers,” and to give each province a District Engineer, with a staff of assistants and subordinates. The execution of work they proposed to leave generally to the Revenue Department, under closer supervision and control. The establishment they recommended was to cost Rupees 14,69,000 annually, and the expenditure they proposed was forty-eight lacs per annum. The Home Government disapproved of the proposal to place the control of the department in the hands of a Board, and decided that it should be vested in a Chief Engineer aided by three Deputies, with a geographical division of duty. The Government hereupon appointed a Chief Engineer, and directed him to prepare a scale of establishment adapted to the requirements of the country, and capable of undertaking all the duties, including execution of the department. The first scale submitted by the Chief Engineer amounted to Rupees 27,62,422; this was revised under the instructions of Government, and reduced to Rupees 17,01,814. After considerable discussion with the Supreme Government, the establishment was finally sanctioned in 1858, at a cost of Rupees 13,06,614.

In 1860 the efficiency of the new organization and the expediency of reverting, more or less, to the former system were considered by Government, and, pending further measures, the Chief Engineer was appointed Secretary to Government in the Public Works Department.

ment, the two offices being united. The Deputy Chief Engineers were temporarily vested with the powers of the Chief Engineer in their respective circles, and the question of transferring the charge of minor works of irrigation and district roads to the Revenue Officers was referred to the Board of Revenue, and eventually to the Chief Engineer and a Committee of Engineer Officers. In 1863 the subject was remitted to another Committee appointed by Government, who were instructed to report whether the control of the department should be vested in one Chief Engineer, or in a number of Superintending Engineers residing in their divisions, how the cost of the Public Works Establishment could be reduced to the limit assigned by the Supreme Government, viz., Rupees 12,00,000, or at the utmost Rupees 12,80,000, and in what way and to what extent minor works and repairs should be transferred to the Revenue Department. The Committee reported that, in their judgment, the arrangements best adapted for reducing the expense and promoting the efficiency of the department were :—

1st.—To abolish the grades of Deputy Chief Engineer and District Engineer, and substitute for these officers eight Superintending Engineers, each with the full powers of a Chief Engineer in his division.

2nd.—To divest the Secretary to Government of all the duties performed by him as Chief Engineer, excepting the allotment of funds, the preparation of the Budget, the promotion of subordinate officers of the department, and the collection of information on general questions.

3rd.—To divide each district into a suitable number of executive ranges, under the direct control of the Superintending Engineer.

The Commission proposed an establishment costing Rupees 12,97,000, and deprecated any general re-transfer of minor public works to the Revenue Department; urging, however, such a modification of the law relating to customary labour, as would ensure the due enforcement of the obligation, and enable Government to make the maintenance of petty works devolve on those interested in them, in consideration of a partial remission of revenue. The Government adopted the conclusions of the Commission, but called for the opinion of the Board of Revenue and certain selected officers on the proposed modification of the Labour Law; and finally the present Commission was appointed, and charged with the duty of inquiring into and reporting on all the points so long discussed.

4. It will be seen from the above brief *résumé*, that, for the last fifteen years, the efficiency of the Public Works Department has been almost continuously under consideration in some form or other. This circumstance alone affords a fair presumption that the organization of the department is in some respects defective, or not adapted to the peculiar requirements of the country. It is hardly credible that the department can have been a success, and yet have excited a distrust and dissatisfaction which no modification has served to allay or remove.

5. The cause of this is, in my opinion, due in a very material degree to the constitution of the department as a separate and independent one. This has naturally fostered a spirit of isolation, and a tendency on the part of its members to ignore the essentially executive character of their branch of the administration. This effect is exemplified in a variety of ways—notably in a disposition to regard any criticism from officers not in the department, as an encroachment on their independence. The department, in fact, practically claims to be both arbiter of what shall be done, and sole judge of how it performs its work. The old bond of union between the Revenue and Public Works Departments has been snapped, and though the two departments are working side by side, and are engaged in work in which both have a common interest, there is no longer the same harmony and spirit of co-operation. It may be that this is sometimes owing to the personal peculiarities of individuals, but undoubtedly the natural tendency of the present system is to engender this divergence of feeling.

6. The results of this separation of the Public Works from the Revenue Department have certainly been adverse to the interests of the State. The powerful influence which the

Collector has over the people, his special sources of information, and the aid of his extensive establishments are all, in a great measure, lost to the department. The extent of this loss may be inferred from the nature of a Collector's influence. As chief Revenue Officer of a district, the whole agricultural population are brought into direct relation with him. Besides his covenanted subordinates and Deputy Collectors, in every talook he has an influential Tahsildar with an efficient establishment—in every village he is represented by the ancient village municipality. His importance is further enhanced by his being the chief Magistrate of his district; by his being the head of the District Police; and by the numerous miscellaneous duties affecting the welfare and interests of the people with which he is charged. As the most recent illustration of a Collector's influence over the people of his province, I would refer to the subscription of £4,000 raised in Tinnevely towards the prosecution of the Streerivoontum Irrigation Works. The bridges of Tinnevely, and the roads of Salem, are further instances of what a Collector can do in this way. On the other hand, as an exemplification of the consequences which the loss of this influence entails, I would cite the general admission that the decay of Kudi-maramut dates from the organization of the Public Works Department in its present form.

7. There has also been a very large increase in the cost of all work since the establishment of the department on its present footing.

The first step in the way of reform must, in my judgment, be a re-union of the two departments in such a manner that the professional ability of the Engineer shall be backed by the influence of the Collector.

8. Another defect in the present system is in the present division of the Presidency into a number of independent ranges, under the control of a few Superintending Engineers. I was myself a member of the Committee which proposed this arrangement, as the best under then existing circumstances, and restrictions as to expenditure. I am satisfied now that the measure was a mistake.

The divisions of the Superintending Engineers are too large, and their duties as Chief Engineers of their circles too onerous, to admit of their exercising a thoroughly effective control over their Range Officers. The universal complaint of the Collectors, is that they see so little of the local head of the department. On the other hand, the parcelling out of a district into a number of ranges, each independent of the rest, is destructive of all unity of action; while the ranges themselves are frequently too large for the Range Officer to be an executive.

9. The establishment of the department also appears to me faulty, in possessing too much of the scientific in proportion to the merely constructive element, and in not taking advantage of native agency more fully. The department now comprises 107 members of the grades of Sub-Engineer, upwards on salaries ranging from 150 to 1,200; while the Overseers number 167, and receive uniformly but Rupees 60 monthly. The great mass of the work in the Presidency is certainly not of a character requiring engineering talent of the highest order: the chief want is skilful, trained, and honest executives. The small salaries allowed to Overseers, and the wide gap between their grade and the next, must have a most injurious effect on this subordinate agency, and must close it to the classes whom it is most desirable to introduce.

The employment of natives of the country would seem to be especially desirable in a department where there is necessarily so much exposure to the sun, and where an intimate knowledge of the language and people is so useful.

Yet the department has but one native on Rupees 300, four on 200, and seven on Rupees 150 per mensem. In the lower grade of Overseers there are 109 natives according to the lists of 1868. No other department that I am acquainted with shows so small a proportion of natives in high employ. It can hardly be that the people of the country have no aptitude for engineering, for some of our most lucrative works are legacies from the native rulers of the country; and there is no reason why natives of ability and position

should not enter this department as freely as they enter other departments of the public service.

Office.	Pay.	Total Number of Officers.	Natives.
Ex. Engr., 1st grade. ...	900	10	None.
2nd do. ...	750	6	do.
3rd do. ...	600	8	do.
4th do. ...	500	9	do.
Acting do. ...	500	2	do.
Asst. Engr., 1st grade ...	400	9	do.
2nd do. ...	300	21	do.
3rd do. ...	200	4	do.
Acting do. ...	200	2	do.
Sub-Engr., 1st grade. ...	400	3	do.
2nd do. ...	300	3	1
3rd do. ...	250	6	None.
Supervisor, 1st grade. ...	300	15	4
2ndd. ...	150	26	7
Overseers. ...	60	183	109

10. These three are, in my opinion, the main respects in which the department requires reform.

11. It is impossible now to revert to the state of affairs prior to 1854, so far as a transfer of the execution of work to the Revenue Department is concerned. That department can still give material aid, especially in such work as channel clearances; but any such measure as a general re-transfer is, I believe, impracticable. In the recent revision of the Revenue establishment, the size of the talooks was greatly increased (most of the new talooks, indeed, comprise two of the old talooks), and the numerical strength of the establishment was greatly reduced. This alone has greatly augmented the revenue duties and responsibilities of Tahsildars. At the same time their magisterial duties have been greatly enhanced since the introduction of the present criminal laws and the organization of an efficient Police; and business of all kinds has to be transacted more promptly and effectively now than in olden times. Without a large additional establishment, the Revenue Department could not now attempt the execution of public works generally, and Tahsildars have not the time or the professional knowledge requisite to supervise properly the proceedings of any professional establishment placed at their disposal. Even the transfer of petty works seems to me impolitic; and it is certainly not conducive to economy to have two distinct establishments for performing work of a like nature. I am still therefore of the opinion expressed on this point by the Committee, of which I was a member in 1863.

12. But there is another way in which I think the desired union may be effected, without involving the execution of professional work by unprofessional agency. The plan I advocate is that suggested in 1836 by the then Governor (the Marquis of Tweeddale), and in 1860 by the Honourable Mr. Maltby, with the addition, however, of having professional agency

Minute of the Marquis of Tweeddale, dated 25th August 1846.

"My proposal would be, therefore, that the duties which the Collector now performs in the large expenditure of public funds, with no assistance, except that of his native servants, he should hereafter invariably discharge by the assistance of an Engineer Officer. I would propose that each Collector should have an Engineer Officer attached to his district as an

to execute the work. I would give each Collector the necessary professional aid by attaching to each district a Civil Engineer (with one or two assistants), who should stand in the same relation to the Collector as the Sub-Collector now does. On purely professional questions the dictum of the Civil Engineer should prevail, subject to reference to higher authority; but, in other respects, the Civil Engineer would act under the authority and direction of the Collector. An arrangement of this nature would, in my judgment, secure to the department all the influence which the Collector possesses; would ensure the co-operation and aid of the Collector's extensive establishments; and would improve the relation of the department with the people. I am satisfied that in a very brief period the Civil Engineer would become

Executive Maramut Engineer, who should undertake on his behalf, and under his orders, all the outlay now made by the Collector in the Department of Public Works."

so identified with the Revenue Department in the eyes of the public servants and people, that he would be regarded with the same feelings of respect, and acquire the same influence and authority in the district as its covenanted civil officers. The example of the new police, which owes very much of its success to its having at the outset been placed, and ever since been persistently kept in this relation to the Collector and Magistrate, is at least encouraging.

I would give every Civil Engineer an assistant, and in the larger districts two, merging, however, Trichinopoly in Tanjore, and the Neilgherries in Coimbatore, for obvious reasons. Under the Civil Engineer I would have a properly graduated executive establishment, abolishing "ranges" altogether.

The Civil Engineer and his assistants, like the old District and Civil Engineers, would not be executive. They would design, estimate, inspect, and check expenditure. They would supply the scientific element, while the subordinate agency would be restricted to construction. And so far as the Revenue Department is concerned, the plan I propose has obvious advantages. Every district will have an officer who will be in a position to take a comprehensive view of its general requirements, and who will be as much interested as the Collector himself in advancing its prosperity. The Collector will have at his side an assistant, whose professional skill will be always available in the many questions regarding the distribution of water, claims to water, privileges, carrying out of village labour, &c., which constantly arise. I am confident that in no other way is it possible to secure the combined action of the two departments which is so necessary for the interests of the State and the people. So long as the department continues as it now is, a separate body, there must in the nature of things be want of unity of purpose and absence of combined action.

The appointment of Civil Engineers would admit of a reduction in the number of Superintending Engineers, as their duties would be chiefly inspection. There are now eight officers of this grade, and the numbers might, I think, be safely reduced to five. I would constitute them mainly Inspecting Officers; their attention would, of course, be principally directed to the more important works, but in their tours they would also see much of the minor works, and be able to judge how far the Civil Engineer was doing justice to his charge. I would not require any estimate to be submitted to these officers, save those for new works exceeding, say, Rupees 20,000.

Further, I would transfer the Chief Engineer for Irrigation to the Revenue Board. The office is a newly created one, and involves the anomaly of the incumbent being Chief Engineer and Joint Secretary to Government. The duties of such an officer must necessarily be deliberative rather than directorial, as otherwise he would clash with the functions of the Superintending Engineers, who are also Chief Engineers in their circles, and his most fitting place is in the Board, where he would have the counsel and assistance of his Revenue colleagues in considering the revenue aspects of all great undertakings. I would, therefore, give him a seat in the Board of Revenue, with a suitable Secretariat. His inspecting duties would be discharged by the five Superintending Engineers of my scheme. It would, however, be absolutely necessary to add another Revenue Member—the work in the Board's Office is now so heavy and incessant, that the members could undertake no more. The Chief Engineer's decision on all professional questions would, of course, over-ride the opinions of his civil colleagues, and to complete the union of the two departments, I would again re-unite the Revenue and Public Works Secretariat in the Government Office.

A department thus organized seems to me especially adapted to the peculiarities of this Presidency, where the great bulk of the expenditure is on irrigation works and roads, both of which are so intimately connected with the revenue. At present, indeed, there is a large outlay on military buildings, jails, cutcherries, and civil buildings; but in the course of a very few years this will cease, and the expenditure on these works will be mainly for repairs and unimportant improvements.

The association of the Chief Engineer with the Board would, I am confident, add very

greatly to the prestige of the department, and induce a thoroughly harmonious co-operation on the district officers and their subordinates.

It is remarkable that, in 1825, when the Engineer Department was placed under the Board of Revenue, one of the reasons assigned by Sir T. Munro for the measure was,—

“The present system under which the repairs of tanks are conducted leads to much unnecessary correspondence and to inconvenient delays, in commencing upon the works which I think might be remedied by adopting the following alterations :—

1. The whole of the tank department, including the Inspector-General and his office at the Presidency, to be placed under the immediate directions of the Board of Revenue.

2. All communications on the subject of tank repairs, roads, and choultries, to be addressed by Collectors and Civil Engineers, as at present to the Inspector, who will conduct the duties of the department in communication with, and under the orders of, the Board of Revenue, corresponding by order of the Board direct with Government, the Collectors, and Civil Engineers.

3. As it is proper, however, that Government should have the advantage of receiving the individual opinion of the Inspector in cases where it might differ from that of the Board, he should be at liberty to record it whenever he might think his doing so would be for the good of the service.

4. The chief advantages which would result from this change would be—

1st.—Greater celerity in the dispatch of business, which in the tank department is of the first importance;

2nd.—The rendering unnecessary the frequent correspondence and references between the Board of Revenue and the Inspector-General, which now occupy much of the time of both officers;

3rd.—The settling at once of all questions involving revenue by personal communication with the Board;

4th.—The superior weight which the directions and suggestions of the Inspector-General would have with Collectors and Civil Engineers, when issued under the orders and known to be the sentiments of the Board; and,

5th.—The benefit of a ready reference to the records of both offices.

5. The present system has, perhaps, too much the effect of removing responsibility from the Collector, and of making him take less interest than before its introduction in watching over the due repairs of his tanks. It has also a tendency, by the length and minute detail of the estimate forms, to cause the proper season of repair to be lost in waiting for the preparation of the estimate, and it gives allowances to the native surveyors educated at the expense of the company, far beyond what persons in that class of life seem entitled to. The Board of Revenue, in communication with the Inspector-General, should be directed to revise the existing rules, and to suggest such alterations as would, in their opinion, remedy the defects which have been noticed, and at the same time secure the efficiency of the system.”

The Board of Revenue, on its part, would derive much valuable assistance from their professional colleague in many revenue questions with which they have to deal, and especially in the management of local funds which are yearly increasing in magnitude and importance.

The subordinate agency I would restrict exclusively to executive work, giving this portion of the establishment a graduated scale of salaries, ranging from the present minimum of Rupees 60 to 250, so that a reasonable prospect of promotion would be held out to every member, as an inducement to good service.

I would strongly advocate the establishment of Engineering classes in the Provincial Schools. The Engineering College at Madras, though well adapted, no doubt, for giving an excellent and professional education for the higher grades, does not fulfil the requirements of the service in the way of training up a subordinate native agency. Its position at Madras

alone precludes the people of a considerable portion of the country from resorting to it, and little encouragement seems to be given even to those who are willing to come to the Presidency—for while there are thirty stipendiary studentships of Rupees 10 monthly for Military students, who besides receive their Military pay with rations and quarters. Civilians, including natives, have to pay fees and support themselves.

The tests for subordinates is also manifestly too high. One great advantage of having

The test for Talook Overseers, who receive Rupees 60 per mensem, includes Geometry, Euclid, Books I., II., III., IV. Algebra as far as Quadratic Equations, with the Binomial Theorem, Permutations, Combinations, and Progressions. Plane Trigonometry, with the nature and use of Logarithms.

The Elements of Statics, Dynamics, and Hydrostatics, with practical applications to Engineering.

Theory and practice of Steam, &c., &c.—vide Rules of Civil Engineering College, Madras, page 16.

Engineering classes in the provinces would be, that the service in each district might be largely recruited from residents in it. Experience has shown that the administration of a district is invariably unsatisfactory and unpopular when entrusted to strangers, and to localize the service I would make promotions in the sub-grade run in the district, transfers being made only at the request of those concerned, as is the case in the Revenue Department. There is nothing a native dislikes more than the liability to be moved from home and friends to distant districts, and I would respect the feeling, for the more popular we render the service, the more surely shall we attract more of respectability and social status to it. Another advantage of employing native agency is its greater economy. It is simply impossible for an European to live in decent comfort on the present pay of an Overseer, Rupees 60 per mensem, and the position of an European in this country on such

a pittance, unable to associate with the people, rarely having European society, and without the means of procuring more than the absolute necessities of existence, is lamentable. A native, however, can live comfortably on such a salary; he finds accommodation in every village, and everywhere has the society of his compatriots. A superior man can therefore be procured for the same money, and there is no reason why good men should not be drawn to the Public Works Department, as they are to the other branches of the administration. The Government is incurring considerable expense in educating the people of the country, and affording them the stimulus of more extended employment in the public service; and it is an anomaly that one important department should practically be closed to them, except in its lowest grades.

Under the class of Overseer, there appears to be no permanent recognized grade. Talook maistries are of course employed, and must continue to be employed; but they seem to have no acknowledged status in the department. A grant is made in the Annual Budget for “Petty Establishment”—and out of this and the estimates these indispensable servants are paid. This arrangement is not conducive to efficiency—uncertainty in the tenure of office at once debar good men from entering, and leads such men as do enter the department to make the most of present opportunities. The employment of an efficient and trustworthy class of maistries would also lessen the amount of supervision necessary to secure good work. I would therefore urge the employment of a permanent grade of maistries, regulated according to the average permanent requirements of each district, with benefit of pensions according to the rules. Temporary agency must, of course, be employed when extra work temporarily devolves on the establishment.

I think an efficient establishment might be organized on the system I advocate for about eighteen lacs, which, according to the Budget of 1869-70, would leave (after deducting Military allowances) about one lac for special officers for special works, improvement of the position of talook maistries, &c.

The establishment as it stands, and as I would remodel it, is certainly expensive in the sense of costing a large sum of money; but it is not fair to estimate the cost of a department like that of Public Works, merely by a per-centage on the money expended by it. Such a mode of calculation ignores altogether the vast amount of money is small; the time and thought and labour applied to planning new projects, and the fact that the more efficient the department is, the smaller will be the outlay. The salaries of the different grades are certainly

lower than the same attainments command in other branches of the public service, save perhaps the Medical. The numerical strength of the establishment is governed by the scattered nature of the works which the department has to deal with; in this department there can be no worse economy than the employment of an inefficient establishment: whatever may be gained in its cost is lost by unprofitable expenditure. The changes I advocate are sweeping, I admit, but the present system—itsself as sweeping and radical a change—has been tried for fifteen years, and certainly has not given general satisfaction.

The re-organization of the department in the manner proposed by me will remove all difficulties as to the execution of minor irrigation repairs and the maintenance of district roads. Both these duties will devolve on the department, the assistance of the Revenue Officers and the co-operation of the people being secured by the relation in which it will stand to the Collector.

The only remaining question on which the opinion of the Committee is desired, is “the source from which the requisite money or labour is to be provided” for irrigation repairs. As one means of supplying funds for the purpose, the Board of Revenue, in their proceedings on the revised settlement of the Salem District, suggested that a cess should be imposed in commutation of “Kudi-maramut” or the gratuitous labour, which, by the prescriptive usage of the country, the holders of irrigated land are bound to furnish for certain descriptions of work. The Board’s recommendation was limited to the Salem District, by far the largest portion of which is irrigated from tanks. The obligation of Kudi-maramut in respect of such works is generally neglected, and, as a rule, the repairs needed from year to year are trifling, and do not require the presence and the labour of large numbers of people at the same time. In the case of channel clearances, necessity has prevented Kudi-maramut from falling generally into desuetude. These clearances must be effected, or the supply of water fails, and self-interest leads the Ryots still to do the work. These are all-important works, and a commutation of “Kudi-maramut” would be a ruinous and unpopular policy. It would be simply impossible for Government to relieve the people of the duty of furnishing the requisite labour, for it never could command the necessary amount at the critical period. The landowner can do this, and does it. The unpopularity of the measure would consist in its greater expense. At present the landowner sends his labourers when their labour is not required for agricultural purposes, and when he can spare them without loss or inconvenience. The same amount of labour would, at market rates, cost a large sum of money, and the landowner would, in fact, be heavily taxed for labour, which, under the present system, he can and does furnish at a very trifling cost. The landholders are also very jealous of their labourers being drawn away to labour for hire on Government works, and the whole weight of their influence, which is enormous, as they, in fact, retain their labourers throughout the year, would be used to prevent the process of the measure. I would not, therefore, commute Kudi-maramut generally, nor would I, on the other hand, seek to extend it. In 1847 the nature and extent of “Kudi-maramut” was investigated, and a Circular, then issued by the Board of Revenue, gives what we may now fairly consider a correct description of the obligation as then understood. I do not see how Government could now justify any addition to this obligation, which rests solely on custom. If this limit is to be set aside, the people lose all security. The system of forced labour is essentially vicious, and has its justification solely in necessity; to go beyond this, and to resort to forced labour merely to supplement deficient funds, would, I think, be a serious mistake. All therefore that I would suggest is such a modification of the existing law as would enable Collectors to carry out Kudi-maramut in its integrity with facility and promptitude. I would at the same time take power in the new Act to commute the obligation, wherever Government saw fit to do it, as in many cases this is practicable and desirable. The requisite funds for repairs, which the people are no-bound to execute by Kudi-maramut, must be provided by the State out of its irrigation revenue, and should form a first charge on that revenue. I am of opinion that, if the *bonâ fide* cost of keeping irrigation works in effective repair has so largely increased, that the charge for water no longer represents a fair return, the State would be justified in raising that charge. The charge for water, whether consolidated or separate, stands on quite a

different footing from the land tax, and I can see no reason why Government should not raise it, when, from such causes as the increased cost of labour and materials, the sum originally expended in repairs, which was of course an element in fixing it, proves inadequate. The power is one which obviously should be exercised with caution, and after very careful investigation, in a just spirit. There are hundreds of works scattered throughout the country, on which for years Government has never incurred any expenditure. It would be manifestly unjust to take past expenditure alone as a guide in determining whether the charge of water should be enhanced or not. The original compact included the maintenance of the work, and the obligation rests on Government to show that there has been a fair outlay, and that the sum no longer suffices. There ought, in my opinion, to be a fixed per-centage of the irrigation revenue, certainly not less than 15 per cent., assigned exclusively for this purpose, with a special grant for making good the neglect of past years. Such a per-centage is certainly moderate, and might with care and economy be made to suffice. I am decidedly of opinion that until such an outlay is incurred by the State, we should not be justified in calling upon landholders for any further contribution.

MADRAS, April 1869.

APPENDIX.

	Rs.	Rs.
Chief Engineer and Member of the Board of Revenue	3,500	42,000
Secretary to Board of Revenue, Department Public Works.....	1,800	21,600
Office.....	2,000	24,000
Contingencies.....		2,000
		89,600
Five Superintending Engineers, at 1,500 Rs.....	7,500	90,000
Five Establishments for do. at 550 Rs. each.....	2,750	33,000
		8,400
Travelling allowances, at Rs. 7 per diem, for 8 months.....		3,000
Batta to Establishments.....		1,800
Contingencies, at Rs. 30 per mensem.....		1,36,200
		71,544
Secretariat as in Budget of 1869-70.....		
Present charge Budget of 1869-70.....	Rs. 3,25,316	
Three First class Civil Engineers for Godavery, Kistna, and Tanjore (cum Trichinopoly) at 900 Rs. each.....	2,700	32,40
Nine Second class do. for Bellary, Cuddapah, Nellore, North Arcot, South Arcot, Coimbatore (cum Neilgherries), Malabar, Madura, and Tinnevely, at 800 Rs. each.....	7,200	86,400
Six Third class do. for Ganjam, Vizagapatam, Kurnool, Madras, Canara, and Salem, at 700 Rs. each.....	4,200	50,400
Fifteen First Assistants for all districts, except Ganjam, Vizagapatam, Kurnool, Madras, Salem, Canara; two for Godavery, Kistna, and Tanjore, at 500 Rs. each.....	7,500	90,000
Twelve Second Assistants for Ganjam, Vizagapatam, Godavery, Kistna, Bellary, Coimbatore, Malabar, Kurnool, Salem, Tanjore, Madras, and Canara, at 400 Rs. each.....	4,800	57,600
Eighteen Office Establishments for Civil Engineers, at an average of Rs. 400 each.....	7,200	86,400
Fifteen do. for First Assistants, at Rs. 300 each.....	4,500	54,000
Twelve do. for Second Assistants, at Rs. 250 each.....	3,000	36,000
		30

Travelling allowance for Civil Engineers, at Rs. 4, for Assistants, at Rs. 3 per diem, for 8 months yearly.....	36,720
Batta to Establishments.....	30,000
Contingencies at 15 Rs. for Civil, and 10 Rs. for Assistant Engineers.....	6,480
	<u>5,66,400</u>

275 Overseers, viz. :—

20 at 250 = 5,000		
20 „ 200 = 4,000		
40 „ 150 = 6,000		
60 „ 100 = 6,000		
80 „ 80 = 6,400		
55 „ 60 = 3,300.....	30,700	3,68,400
Establishment, at 27 Rs.....	7,425	89,100
Travelling allowance, at 20 Rs.....	5,500	66,000
Batta		12,000
		<u>11,01,900</u>
Lithographic Department, as per Budget.....		12,216
Store Department do.		14,136
Engineering College do.		41,820
Accounts do.		69,610
Petty Establishment do.		1,93,000
Temporary do. do.		50,000
Wynaad allowances do.		2,220
Barrack Master do.		8,400
Mechanical Engineers do.		11,400
		<u>18,02,046</u>
Budget of 1869-70.....	20,07,600	
Deduct Military allowances ...	1,03,140	
	<u>19,04,460</u>	
Proposed Establishment	18,02,046	
	<u>1,02,414</u>	
Surplus available for special officers, talook maistries, &c	1,02,414	

APPENDIX D.

CIRCULAR No. 1.

KUDI-MARAMUT.

One of the subjects referred to the Commission is the source from which the money or labour required for the repair of *minor* irrigation works should be provided.

2. It is necessary to premise that there is no intention of commuting or lessening the obligation to furnish labour under Sections I. to IV. of Act I. of 1858.

3. This being understood, the first question for consideration is, whether the customary gratuitous labour of the landholders, usually termed “Kudi-maramut,” should be commuted into a money payment or not.

4. The main objections to exacting the assistance given by the people in the form of gratuitous labour are—the difficulty of ascertaining what amount of labour is “customary;” the localities in which it has been customary; of apportioning it when ascertained; and of preventing abuses. It is alleged also that of late years (especially since the organization of the Public Works Department as a separate department), the custom has not been strictly enforced, and in some parts of the country has fallen into desuetude, and that, where this is not the case, the incidence of the obligation is very unequal.

5. A money cess is free from these difficulties; the wealthier class of Ryots would be exempt from personal labour, and the chance of being vexatiously impressed through malevolence, the poorer Ryot and the ordinary labourer would contribute labour, and be paid for it out of the general fund, thus recouping themselves, and the incidence of the impost would be more even. On the other hand, in some localities commutation might be attended with the difficulty of obtaining labour at all, or in a sufficient quantity at particular times—or the commutation might prove excessive, when the value of the work rendered is taken in money instead of in labour, given at convenient seasons.

6. The Commissioners request to be favoured with your opinion, and the opinions of your Divisional Officers and of such Tahsildars and private individuals as you see fit to consult on this preliminary question, whether it is advisable or not to commute into a money cess the “Kudi-maramut” obligation, or even to add a cess in addition to “Kudi-maramut.”

7. The Commissioners are aware that opinions have been already expressed on the subject-matter of many of the following queries; but as searching the records to ascertain exactly what have, and what have not been replied to, would involve great delay, the queries are circulated in full, with the request that the subject may receive prompt attention:—

1. Is it customary to exact unpaid labour in your district; if so, in what localities and under what circumstances?
2. To what extent is it now exacted in ryotwari villages, and for what description of work?
3. Is it exacted for the conservancy of all tank banks, as well as for all channel clearances?
4. Has there been any tendency to neglect the Kudi-maramut conservancy of tank banks, in consequence of the Ryots feeling less interest in keeping the banks in order, than in keeping the channels clear?

5. Is unpaid labour exacted from Inam and Zemindari, as well as from Government Ryots?
6. Do Inamdars and Zemindars exact unpaid labour from their Ryots; and how, and for what description of work?
7. By what Agency is unpaid labour exacted in ryotwari villages, and how is the quota of labour required apportioned and regulated?
8. How far does this Agency interfere to enforce repairs by unpaid labour?
9. Has this Agency now sufficient authority to make all the parties concerned combine to work for the common good in equitable proportions?
10. If Kudi-maramut has fallen into desuetude in your district, would there be any material difficulty in reviving it?
11. Where Kudi-maramut exists, is there any locally recognized understanding of each individual's share in the obligation; for instance, is a landholder required to supply so many days' labour for each acre of land he holds, or according to the amount of his puttah, or do the Ryots arrange among themselves simply to get the work done as best they can?
12. Are the Ryots required to execute all repairs within a certain limit; if so, what is the limit?
13. Are the Ryots required to contribute labour or money for any new works or extensive repairs?
14. Do you consider it necessary to have an Act passed for regulating Kudi-maramut? If so, mention the leading provisions of the Act you would propose. If you consider it unnecessary what would you substitute for an Act?
15. Would you prefer commuting Kudi-maramut into a money cess, rather than legislate for its enforcement?
16. If you prefer a cess, would you expend it on the conservancy of tank banks, as well as on channel clearances?
17. Would the commutation of "Kudi-maramut" be acceptable to the landholders generally?
18. If commuted, should the cess be charged at a uniform or varying rate?
19. Should it be charged on area or assessment, or would you have the Ryots to assess themselves under your general control?
20. If you are in favour of a uniform rate, what rate would you propose?
21. If you are in favour of a varying rate, what should be its maximum and minimum?
22. How far would your rates suffice to keep the works in proper condition?
23. How far would your rates represent the real value of Kudi-maramut?
24. If a cess is instituted, should the money collected from the area under any particular work, or system of works, be expended on that work, or system of works only?
25. Would you associate the principal Ryots with the officials to manage the fund, or to apportion the allotments; if so, what practical arrangements would you suggest?
26. Would you advocate the management of Kudi-maramut, or the commuted cess, being entrusted to the Department of Public Works, or to the Collector?
27. Have the provisions of Section VI., Act I. of 1858, ever been enforced in your district to your own personal knowledge?
28. Do the talook subordinates enforce labour strictly in accordance with the procedure laid down in that Act?
29. Do you remember any case in which magisterial inquiry has resulted from the enforcement of labour by unlawful means?
30. Do you remember any case in which remission of assessment has been refused for failure to furnish unpaid labour?—*Vide* Board's Standing Circular Order, No. 53.

31. What may be the approximate value of the work now performed by unpaid labour in your district annually?
32. How is the contribution of unpaid labour regarded by the people, as a grievance or as a necessary duty?
33. Do the people furnish their labour with promptitude, or do they let works fall into decay before they commence repairs?
34. If the latter is the case, what remedy do you propose?
35. Should it be determined to systematise Kudi-maramut, how would you regulate the amount of labour to be contributed?
36. Is there anything on record determining the amount of unpaid labour required periodically for any particular works?
37. What do you consider to have been the ancient usages of your district regarding the enforcement of unpaid labour?
38. Are the ancient usages in this respect kept up in the Zemindari villages?
39. In forming the existing settlement of your district, was any deduction or allowance made in consideration of the obligation to furnish unpaid labour?

R. K. PUCKLE,
Collector on Special duty,
for the Commissioners.

CIRCULAR No. 2.

IRRIGATION CESS.

It has been suggested to the Commission that an irrigation cess (similar in character to the existing road cess) might be levied, for the maintenance and repair of the great body of minor irrigation works. Such a cess to be wholly distinct from, and additional to, the wet assessment, and the commutation or enforcement of Kudi-maramut, which latter provides for the conservancy of only very small tanks, branch channels, &c.

2. The levy of a cess is intimately connected with the 3rd question before the Commission, viz., "the source from which the requisite labour or money is to be provided;" and as the subject is one of importance, and has not yet been discussed as distinct from, and additional to, Kudi-maramut, the Commissioners request that you will lose no time in favouring them with your views on the subject, so that, if possible, your replies may reach the Board's office before the end of the current month. Should your replies not embody the whole of your views on the subject, the Commissioners will be glad to receive an expression of opinion at greater length, in a separate communication.

1. Among other proposals made, one is, to divide all irrigation works, as roads are divided, into three classes—Imperial, local, and village. The first to be maintained wholly by the State; the second either in the same way, or jointly by the State and the occupants of irrigated land; and the third entirely by the villagers. Are you in favour of such a system or not?

2. If not, can you suggest any better classification of irrigation works, and how would you provide the requisite labour or funds for their maintenance?

3. Taking the question of local irrigation works only into consideration, do you advocate the imposition of a cess, [over and above the present wet assessment, and any commutation or enforcement of Kudi-maramut,] for the maintenance and repair of this class of works?

4. If so, how would you impose it, on the wet assessment or on the area, at a uniform or a varying rate?
5. State the money rates you would propose, and the probable amount of receipts?
6. How would the imposition of a cess be regarded by the people?
7. Would you advocate a contribution from Government in aid of such a cess; if so, what rate of contribution would you propose, relatively to the amount contributed by the people?
8. Do you think that the Government ought thus to contribute a share of the expenses of the up-keep of minor irrigation works; if so, why, and what share?
9. On what grounds do you consider that the obligation rests?
10. Is there any trace of the Government having contributed a share in former times in your district?
11. Would a contribution from Government reconcile the people to the imposition or an additional cess?
12. Would you associate the principal ryots with the officials to manage the cess; if so, what practical arrangements would you suggest?
13. If a cess is instituted, should the money collected from the area affected by any particular work, or system of works, be expended on that work, or system of works only?
14. Or would you advise only a certain per-centage of the cess being expended on the works from which it is collected, the remainder being merged in a general fund, for the extension and improvement of any other local irrigation works, paying cess, within a certain range; and would you limit this range to the entire district, or to a talook, or to a sub-division of a talook, or to what?
15. Would you charge the cost of *extension of irrigation* to such a general fund, or would you meet the charge merely from the cess collected under the particular work to be extended?
16. Would you appropriate any portion of the cess for extension or new works, or would you provide funds for such purposes from other sources?
17. If any extension of irrigation is made by the aid of the cess, should the profits arising therefrom be carried to the credit of Government, or of the cess?
18. Should the expenditure on any particular work, in any one year, be allowed to exceed the amount of that year's cess collected from the area affected by it?
19. Do you think that the incidence of taxation has been lightened, directly or indirectly, of late years, owing to the rise of prices or other causes, and to what extent?
20. Is the wet assessment of your district now sufficiently light to admit of an additional cess being imposed on irrigated lands; or have the additional cesses, lately imposed virtually counterbalanced any reduction of land revenue that may have been made?
21. Do you consider it necessary to have an Act passed for regulating the collection and expenditure of the cess? if so, mention the leading provisions of the Act you would propose. If you consider it unnecessary, what would you substitute for an Act?
22. If you object to a cess *in toto*, how do you propose to raise funds, or provide labour for the maintenance and repair of (local) irrigation works in your district?
23. Were the tank *merahs* of your district allotted from the gross produce of the land, or from the net before division? By whom are they now enjoyed, and are the purposes for which they were allotted fulfilled?
24. Were any Inams granted for repairs in your district; if so, was that a recognition of the Government obligation to contribute towards repairs?
25. Is the obligation on the part of the Inamdars to keep up repairs enforced?

26. Have you any records to show the conditions on which such Inams were originally granted?
27. Should an irrigation cess be determined on, would you entrust its management to the Department of Public Works, or to the Collector?
28. In either case, what additional establishment would be required in your district?

R. K. PUCKLE,

*Collector on Special duty,
for the Commissioners.*

CIRCULAR No. 3.

ABANDONMENT OF SMALL TANKS TO THE RYOTS.

Amongst other matters under consideration is the management of small tanks, the cost of their repair, and whether the Government should continue their management, or resign it to those interested, and on what terms.

2. References in view to the definitive abandonment of certain small tanks to the Ryots were answered some time back, and a precis of replies received is circulated with some questions, to which we beg you will reply. We also request that you will favour us with any further suggestions you may wish to make, as to the general policy of retaining or relinquishing these small tanks, and the probable consequences of either measure to the villagers and to the Government; and whether these probable consequences are of sufficient importance to influence the decision one way or the other.

3. It is obvious that the policy of relinquishing or retaining any or all of these tanks, and their value to the people and Government, cannot be determined absolutely by ayacut, or by cultivated area, or even by revenue; there may be tanks, large and small, in outlying parts of the country, far from supervision, and difficult of access, that would cost much to put in repair, or which, on the other hand, if left entirely to the management of a scanty population, might soon revert to jungle: in other localities the soil may be light and friable, and hardly fit to form an embankment; the water may be brackish, or the ayacut area so much mixed with soda or limestone as to be hardly worth cultivating as *nunjai*, thus rendering the tank wholly unremunerative as a Government work; on the other hand, the numerous interests concerned may be so complicated as to leave little hope that the tank will be managed by the efforts of the Ryots themselves. In such cases, it is clearly advisable that the mode of treatment should be determined more by the unanimity of the interests to be affected, the willingness of the Ryots to take over the tanks, and their ability to keep them in repair, than by any fixed standard of *acreage* or *revenue*. The state of repair of the works should also be borne in mind, and the existence, or otherwise, of *revetments*, *calingulahs*, *sluices*, &c.

4. There is nothing in the following questions requiring deep research. The Commissioners merely seek for the opinions of those best qualified to give them advice, and the series of questions now circulated is intended more to indicate the nature of the information required, than to elicit answers to every question put:—

1. As an alternative to the maintenance of minor irrigation works, by the commutation or enforcement of *Kudi-maramut*, or by the imposition of a new irrigation cess, what do you think of the transfer to the Ryots of a certain class of minor irrigation works?

2. If you are in favour of this, what class of minor irrigation works would you transfer?

3. What general limit of area and assessment would you fix on, and what exceptions would you make?

4. On what principles, and on what terms would you make the transfer, and how would you ensure the enforcement of the terms?
5. Would the Ryots, as a general rule, be glad to take over these minor works on a reduced assessment, subject to the contingency of executing future repairs themselves?
6. Would it be necessary to put these minor works into thorough repair, before handing them over to the Ryots; and what precautions would you adopt for maintaining them in thorough repair?
7. Would it be necessary to take a written agreement from all the parties interested, before any work is made over to them; and how could the provisions of such an agreement be enforced?
8. If all the parties interested do not agree, would you hand over the work to one or more individuals, subject to their distributing water to all the cultivators according to custom; and how would you enforce such an arrangement being acted up to?
9. Do you think that the Ryots would keep up such tanks, or is gradual deterioration and final destruction to be apprehended; for instance, should breaches occur, would the Ryots be likely to close them?
10. If so, what interests would be endangered by making over the tanks to the Ryots? Would the supply of drinking water, in certain cases, be likely to be interfered with, or cut off?
11. Would it be safe to give up small tanks in jungly parts of the country, where there are but few wells, and perhaps no flowing water?
12. Would you merely regard the question in a financial point of view, or are the foregoing contingencies worthy of consideration?
13. How would you re-assess the ayacut of any works that might thus be transferred?
14. Could water be headed up in sufficient quantity to ensure the production of garden crops, even if nunjai crops could not be raised?
15. Would the Ryots dig wells, and so improve the ayacut area permanently, were it granted to them on easy terms?
16. Is the ayacut area under small tanks, generally as fit for garden cultivation, as the punjai lands in which the Ryots now dig new wells?
17. Would you allow of cultivation in the beds of the tanks handed over; if so, how would you assess it, and how would you prevent cultivation interfering with heading up water?
18. Are there any tanks in your district which it would be better to breach, and so allow of punjai cultivation in the bed, instead of nunjai cultivation below them?
19. Are there any tanks in your district so silted up, as to have become practically useless; and if so, how would you treat them?
20. How would you compensate Inamdars and Ryots who might suffer loss by any change of the existing system?
21. Do the Ryots now keep up any tanks which the Government has practically abandoned?
22. If so, do you know of any cases in which these tanks have been allowed to go to ruin from neglect on the part of the Ryots?
23. Many ruined tanks have of late years been made over to the Ryots to do what they like with—have such tanks been usually repaired or neglected?
24. Taking all the advantages and disadvantages of retaining or abandoning small tanks into consideration, would you prefer maintaining them as at present, or from any local fund, or would you hand them over to the Ryots to maintain?

25. Would it be necessary to legislate on the subject, and what provisions would you suggest for an Act?

26. Do the figures given in your former report on this subject include all the tanks that, in your opinion, might be advantageously made over to the Ryots?

R. K. PUCKLE,

*Collector on Special duty
for the Commissioners.*

CIRCULAR No. 4.

ORGANIZATION OF THE DEPARTMENT OF PUBLIC WORKS.

This important question requires the most careful consideration. It is easy to point out defects in the existing organization, but it is not so easy to devise the means for entirely removing them. Though the present organization may have failed to answer expectation in every respect, yet in theory it is an undoubted improvement on the system that preceded it. When comparing the past and present organizations, it is often urged that, under the former, the Revenue and Engineer Departments were more thoroughly blended together, and that having an Engineer to each district, with a charge coterminous with that of the Collector, enabled both officers to work in unison in developing the resources of their district, and gave the Engineer a local interest which a Superintending Engineer in charge of two or three districts can hardly be expected to feel: but the practical objections to this system were, that it was difficult to find a sufficient number of duly qualified officers; and that District Engineers were not executive, but were tied to office by a mass of accounts which hindered the projection of new works and a thorough control over the operations of subordinates.

2. By re-organization, the Executive branch has been numerically strengthened; there are Range Officers within easy reach of the people in every part of the country, while the Superintending Engineer corresponds direct with Government, and, being freed from the labour of audit, has more leisure, than the District Engineer ever had, to move about the country on tours of inspection.

3. Against this it is urged that the relations between the Engineer and Collector are altered; that the aggregate area of the ranges comprised in a Superintending Engineer's charge is so large, that had the supervising and controlling officer nothing else to do, he could not travel about and inspect all the ranges sufficiently; while the system of placing Range Officers in independent charges fails to utilize to the full the services of the most competent and deserving officers, while it gives too much power to others who would be better employed in a more subordinate capacity.

4. These are the leading arguments for and against the present organization that have been suggested to the Commissioners; and as the latter wish to be entirely guided by evidence in forming an opinion as to the necessity or otherwise of recommending any further change, the following queries are issued to all Engineer and Revenue Officers with the request that the subject may receive prompt attention, and that written replies may be furnished by those who cannot attend in person at the earliest possible date:—

1. Do you consider the present organization of the Department of Public Works to be sufficiently well adapted to the requirements of the country and the service to be performed?

2. If not, in what respects do you consider it defective, and what alterations would you suggest?

3. Do you consider it well to leave the initiation and execution of all Public Works in the hands of one department, or do you advocate the transfer of any portion of the service to the Collector's Department?

4. If you advocate the latter course, state fully the probable advantages of the change.
5. Are you of opinion that in the present state of the country, Collectors with their Divisional Officers, Tahsildars, and Deputy Tahsildars have or have not the means of effectively controlling the execution of minor works, such as petty roads, tank repairs, and the like?
6. Are the time and attention of Revenue subordinates less occupied now than they were formerly; or would minor works be likely to receive a proper share of attention at their hand?
7. Could the maintenance and repair of any particular class of works be advantageously transferred to the Collector?
8. Supposing any particular class of works were thus transferred, what establishment would the Collector require?
9. In the event of its being decided that the execution of any particular class of works should be transferred to the Collector, would you advocate an entire transfer, that is, a transfer of execution, measuring, and accounting to that department, or a return to the system which prevailed prior to 1856?
10. If you recommend the latter course, do you think that the evils pertaining to it, as described in the report of the Commissioners on Public Works, could now be avoided?
11. Supposing these evils could be avoided, and the Collectors were to perform a portion of the duties now performed by the Department of Public Works, to what extent would you require the intervention of the Department of Public Works as regards the work transferred?
 - (a.) Would you require the Department of Public Works to plan or indicate the work to be done, the Collector furnishing the executive?
 - (b.) Would you require the Department of Public Works to inspect the work during progress or after completion, to decide whether it has been properly done?
 - (c.) Would you require the Department of Public Works to pass the bills?
 - (d.) Would you restrict the intervention of the Department of Public Works to any particular grade of officer, or would you have work checked by all grades from an Overseer upwards?
 - (e.) Or would you merely require the Department of Public Works to advise and aid when requested?
12. Supposing the intervention of the Department of Public Works restricted to giving advice when sought for, how would you ensure the proper execution of work, the audit of bills, &c.
13. Supposing a portion of the Public Works to be transferred to the Collector, how would you assign funds, by a fixed annual allotment, calculated approximately on the supposed requirements of the district, or on regularly framed estimates submitted year by year?
14. Would you assign any, and if so, what limit to the power of the Collectors to sanction works on their own authority?
15. Supposing minor irrigation works to be transferred to the Collector, would you advocate the entertainment of an establishment to be employed jointly on these and on local road fund works, both being entrusted solely to the Collector; and what check could be afforded by the Department of Public Works?
16. In this case how would you apportion the expense of establishment?
17. Would the Collector require any, and if so, what establishment of a professional character?
18. How would you provide for the training of the Revenue Officers sufficiently to allow of their controlling the operations of the maistries that may be employed under them?
19. Do you consider that there is a greater probability of the supervision of Public Works Officers being more complete than that of the Revenue Officers?

20. Do you think that it would be advantageous to transfer the construction and maintenance of district roads to the Department of Public Works, where such are now carried out under the Collector's orders?
21. Do you think it well to separate the supervision of irrigation from that of other Engineering works?
22. Has your experience shown that the present system of dividing the Presidency into a limited number of divisions, presided over by Superintending Engineers; the divisions again being sub-divided into a number of executive ranges independent of each other, is attended with any disadvantages?
23. If so, what are they, and how far, in your opinion, are they counterbalanced by the advantages of the system?
24. Would you in preference advocate the appointment of a District Engineer to each district with a staff of Assistants, or Range Officers, subordinate to him?
25. If so, would you dispense altogether with Superintending Engineers, or retain a smaller number of them solely as inspecting and auditing officers?
26. If District Engineers are appointed, would you still divide each district into ranges, presided over by officers directly appointed thereto by Government, or would you merely give each District Engineer a staff of Assistants of different grades, leaving their employment to the Engineer's judgment?
27. Would you make the District Engineer himself in any way an Executive Officer, or would you retain him in the position of a controlling and supervising authority?
28. It has been suggested that the system which prohibits advances being made prevents the villagers taking up works, as they do not feel disposed to invest capital in the payment of labour subject to recovery when the work is partly or wholly completed; is this the case or not?
29. If the execution of work was entrusted to the Collector, would he hesitate to make advances, and would he experience any difficulty in recovering balances due to him?
30. Did the villagers formerly usually execute earth work in their own villages?
31. Do you think it desirable that they should execute earth work in their own villages; if so, how would you enforce their doing so?
32. Have you any suggestions to make on the general subject of the execution of work under contract by the villagers?

R. K. PUCKLE,
Collector on Special duty,
for the Commissioners.

CIRCULAR No. 5.

The alleged deterioration of minor irrigation works has been a cause of serious anxiety to the Government, and it is therefore of much importance that the nature and extent of the deterioration, where such has taken place, should be ascertained, with a view to provide remedies and prevent similar results in future. The answers to the following questions, whether given *viva voce* or in writing, will require considerable care. What is wanted is reliable information supported, where possible, by detailed statements, or references to correspondence or other records. Such statements or references should accompany written replies to the Circular, and those officers who are to give their evidence before the Commission are requested to bring the documentary evidence with them, and to supply any additional statements, which may be referred to in the *viva voce* evidence, at as early a date as possible.

DETERIORATION OF MINOR IRRIGATION WORKS.

1. What classes of works do you include under the name of minor irrigation works?
2. Are these minor irrigation works of the district of which you have charge, or in which you are employed, in an inefficient state?
3. If you think they are so, on what grounds is your opinion based? Are you personally acquainted with many of these works, or do you judge from the reports made to you?
4. Have the minor channels as well as the small tanks deteriorated, and have the former done so, because they have not been looked after by the people, or because the officers of the Department P. W. have not bestowed upon them that attention which they formerly received?
5. If the tanks have deteriorated, what is the nature and extent of the deterioration?
6. If they have deteriorated, is the deterioration owing to neglect of customary labour, or to neglect of the obligation of Government to keep these works in efficient repair? In replying to this, give full particulars, so as to show the grounds for your opinion.
7. Do the rules which determine the outlay on repairs interfere with the proper maintenance of these minor works?
8. Have you made any investigations into the state of any of these minor works, with a view to ascertain whether less has been done to them during the last thirteen years than in a similar preceding period?
9. Do you think that the frequent complaints concerning the condition of the minor irrigation works have been based in any degree on the impression, that a want of water for the crops dependent on them is an indication of the works being in a more or less inefficient state.
10. Has the rain-fall in your district for a number of years past been either unfavourably distributed or below the average; that is, below what may be considered the normal supply?
11. Are there any cases in which works which may have been in a really good state of repair, have failed to irrigate the usual area, in consequence of a failure of the rains?
12. Have there been any such cases, even where the supply of water may have been drawn from rivers, and when anicuts and regulating works have furnished the means of intercepting the flood-water?
13. Is it the case, that, during the scarcity which has prevailed in various parts of the Presidency, within the last two or three years, the necessity or importance of improving the condition of the minor irrigation works, to prevent a recurrence of such scarcity, has been strongly insisted on?
14. Has the tendency of reports to the above effect been to spread the impression that the Public Works Department have not done their duty?
15. On full consideration of all the circumstances, are you prepared to modify any reports which you may have made to the effect, that a want of water for the crops is necessarily the consequence of the inefficient state of the tanks?
16. Have many of the tanks in your district silted up to such an extent as to impair their efficiency? Have you ever made any suggestion for the restoration of such tanks to their original condition?
17. Would the raising of the banks, with a view to increasing the storage of the tanks, be in any case economically impracticable, owing to the land which would be submerged, being more valuable than the additional land which would be irrigated, the cost of the works being also taken into consideration?
18. Have the villagers neglected to take of late years the same care of the small tanks belonging to their villages which they evinced in former years; if so, who is responsible for the difference?

20. Have you ascertained whether any of the tanks, regarding the inefficient state of which you have received complaints, are incapable of being made efficient at any reasonable outlay?
21. Has the revenue under the small tanks in your district fallen off; if so, is any of the decrease due to reduction of assessment?
22. Has the area of cultivation under these works diminished?
23. Have you had before you any statement showing the extent to which cultivation has diminished during the last ten years under the several classes of tanks which may be considered as minor works?
24. In speaking of the inefficient state of such works, to what standard do you refer? Are they incapable of holding now as much water as they used to do? Are breaches more frequent, and cultivation therefore in some years impracticable?
25. Can you name any instances of tanks so circumstanced?
26. With regard to those tanks which you have not yourself seen, are you sure that none have been reported inefficient or incapable of holding a full supply, when the fact has been that, owing to a short rain-fall, they have received much less water than they were capable of safely holding?
27. Do you, in speaking of the inefficient state of small tanks, include an idea that their supply has not been improved, as much as you think it might have been?
28. Can you furnish a statement showing the revenue derived from a few of these works during a series of years, and the sums expended on them for repairs, with a statement, if possible, of remissions granted to lands irrigated by them? It is desirable, if possible, that this statement should be given for each of the minor works as well as an Abstract Statement for all.

R. K. PUCKLE,

*Collector on Special duty,
for the Commissioners.*

CIRCULAR No. 6.

The following questions are forwarded to Superintending Engineers and Collectors, with the view of eliciting comment on the relative positions of the Revenue and Public Works Departments, and of inviting opinions on those points of organization that should be discussed only by superior officers:—

1. Taking the department as it stands, do you consider that (without any violent change,) improvement might be effected, by simply increasing the number of officers of the rank of Executive Engineer, by placing an Assistant Engineer, or upper subordinate, in charge of most of the ranges now held by Executive Engineers, and by giving the latter charge of two, three, or more ranges, according to their importance? If you do not approve of this, what do you suggest?
2. Has the work of the department much increased of late years, and is there any prospect of its continuing to increase?
3. Give a statement of one year's expenditure in each talook, on new works and repairs, under each of the Budget heads and on local fund works.
4. To supervise the whole of the works in one talook, what establishment (permanent) have you?
5. How are the execution of roads, Magistrate's Cutcherries, Jails, or other works within Zemindary limits, arranged for?

6. Supposing the Overseers fully efficient, do you consider them capable of properly conducting the duties of their charge, or do you consider an increase in their number to be indispensable? if so, state the grounds of your opinion.
7. Do you consider that the Overseers in your district, in general, are in every respect capable of being entrusted to the extent to which they are?
8. What do you consider the best mode of training for this branch of the establishment?
9. Do you advocate a training in the first place of apprentices, and do you consider that a better class of men could be obtained, if prospects of employment and of advancement were held out to them in the vicinity of their homes, than by the present system by which an Overseer is liable to be moved to any part of the Presidency?
10. Would it be possible to procure duly qualified subordinates from amongst the natives of the country, and how could professional education be diffused in the country?
11. Do you consider that the promotion of Overseers to the rank of Supervisor is a sufficient inducement to outweigh a native's repugnance to be moved to a distance from his home, as for example, from a Tamil to a Telooogo District, or *vice versa*?
12. Do you consider that Overseers are at present moved too frequently from one part of the Presidency to another, the result being that their local knowledge and influence are not utilized as they might be?
13. Do you consider that the present system, by which all Overseers are placed upon the same footing, as regards salary, is advantageous to the interests of State? Do you think that a graduated scale of salaries would be preferable; if so, what scale would you propose?
14. Do you consider the class of men who now enter the department as Overseers, Supervisors, &c., inferior, on the whole, to those who were formerly Overseers, by selection from the grade of Sub-Overseer?
15. To what extent do you obtain Overseers from the Military Department, and state if the loss of the Non-Commissioned Officers of Sappers, who were recruited by the late East India Company, specially for service in the Public Works Department, is an important one, or the contrary?
16. Do you approve of the class of men who are passed out of the Civil Engineering College? if not, state your objections to them.
17. Have they generally a good colloquial knowledge of the Vernaculars, and are they sent to the districts where the language they know is spoken?
18. If you have objections to the College training, do you disapprove of the College course, or of various points connected with the training of students, which may be capable of improvement, or are your objections of a radical nature, and founded on the belief that a purely College training cannot properly qualify men for the practical duties of an Overseer?
19. Can you suggest any improvements on the present system? Would you put a limit on the number of College trained Overseers, or would you prefer obtaining Overseers entirely by training up lads as apprentices in your own districts?
20. Do you think that, under the present system, the interest of the people in the works of the country is less lively than it could be made; why is it so, and how could it be stimulated?
21. Is the interest of the people in the works of the country less lively than it was formerly, and why? State how that interest was formerly exhibited, and what were the arrangements under which it was developed?
22. Was that interest genuine and voluntary, or was it the result of pressure exercised by the Revenue officials?
23. What is the proportion of natives of the country, in the higher ranks of the subordinate grades of the D. P. W. in your district? Do you think that the better classes of

- natives are sufficiently represented amongst the subordinate grades of the establishment? Are they so in the same proportion as in the Revenue, Magisterial, Police, Educational, and other Departments of the public service? To what do you attribute any difference? Are natives of the country, in your opinion, well fitted for the kind of work to be done?
24. Is there anything to prevent or discourage natives from qualifying for, and becoming members of, the subordinate establishment of the Public Works Department?
 25. Do you consider that there is any objection to the appointment of natives, who may be duly qualified, to the charge of ranges?
 26. Has any instance of the rejection of a duly qualified native, on the ground of his nationality, ever come under your notice? if so, state particulars.
 27. How does the contract system practically work in your district, and of what further checks is it capable? (Be particular in defining what you mean by the contract system, as the phrase is often used in very different senses, and it is necessary that the degree and extent of responsibility devolving upon a contractor should be stated).
 28. What is the number of works under Rupees 1,000, which were executed during the last two years on contract, and for how many were the contracts entered into directly by the villagers or their Monegars?
 29. What descriptions of work are usually given out in your district, or division on—1st, Petty contract, which may be taken to include the supply of materials, the execution of simple work, of a kind which, after it has been properly laid out, can be carried out by the ordinary labour of the country, under Wadder and Tank-digger maistries, or other head men; 2ndly, on lump contract, which would require a complete work for a fixed sum?
 30. What descriptions of work (if any) are usually performed by daily paid labour under the superintendence of a subordinate of the P. W. D., or of an employé paid from the estimate?
 31. Do you consider that the Revenue Department is sufficiently associated in, and its means of knowing the requirements of the country sufficiently brought to bear on, the initiation, examination, and execution of projects in a sufficiently direct manner, and at the right stage of their discussion?
 32. Does the present system of execution of work by the Department of Public Works ever lead to one and the same subordinate officer or Overseer having the selection, estimating, management, and measuring of, and accounting for a work, practically left to him?
 33. How have the annual allotments for irrigation works of your district been made? Have they sufficiently met, if not in amount, your views in respect to the *relative* importance and urgency of the works? What voice have you in the final allotment?
 34. Do you think that the operations of the subordinates of the Executive Department are sufficiently under the observation of the Collector, to enable him to afford to the Superintending Engineer material help in checking the expenditure incurred?
 35. What do you consider to be the proper duties of the Revenue Department in connection with that of Public Works?
 36. Do you look on the P. W. Department as a branch of the civil administration of the country, charged with duties and responsibilities of its own, and for the way in which it performs them, accountable only to Government, or do you regard it as in some way subordinate to the Revenue Department, and therefore properly open to the criticism of the officers of the Revenue Department?
 37. What relative position should the local officers of the Revenue and Public Works Department hold to one another?
 38. Should they, while co-operating in every possible way for the interests of the State, be upon a footing of equality and complete independence, or shall one department be in any measure subordinate to the other?
 39. If the latter is your opinion, mention precisely the degree of subordination on the

one hand, and of control on the other, which you think should exist. Whatever opinion you hold, state it fully and clearly, and give the grounds on which it is based.

40. Was, or was not, the Department of Public Works established to provide for the progress of the country in those respects in which that progress is dependent upon Public Works?

41. Is it, or is it not, the case that greater progress has been made in Public Works, since the control of these works was made over to a separate department?

42. Supposing the Engineer and Collector to be equally interested in the irrigation works of the country, do you prefer the distribution of grants for repairs and maintenance being made by the Superintending Engineer or by the Collector?

43. Is the co-operation between Superintending Engineer and Collector now as complete as it might be; if not, to what is the failure attributable?

44. Has the power of initiating works now vested in the Collector ever led, to your knowledge, to a greater waste of time and labour of the Engineer Officers deputed to investigate new works or projects brought forward by the Collector, than would have resulted from the Engineer Officers making all needful inquiries on their own account, as to the feasibility of such projects?

45. In case of complaint made by an officer of the Revenue Department against the Department of Public Works, in any particular instance, would you recommend such complaint being first thoroughly investigated on the spot by the Collector or Superintending Engineer, or by both, before being transmitted to higher authority; or would you advocate its being transmitted direct through the Board of Revenue, for the disposal of Government?

46. Supposing Kudi-maramut or customary labour obligations to be properly defined for each locality, should Public Works Officers have the power of enforcing such obligations in respect of all works for which they are responsible? Give your reasons.

47. It has been suggested to the Commission that the practice of closing channels for repairs and clearances requires regulation. State what the practice is in the district under your charge.

48. Are the date from which each channel may be closed the time during which it may continue closed for repair or clearance, and the date after which it must be opened duly and precisely fixed?

49. When were they fixed, how long has the system been in operation, and how has it worked? Have the goodness to submit a statement of your principal irrigation works, with the dates so fixed.

50. Have these points been fixed by mutual arrangement between the Revenue and Engineer Department, or by the Collector, or by the Engineer?

51. Have the body of cultivators been duly consulted by either the Collector or Superintending Engineer in person, in fixing the most convenient dates between which the channels may remain closed?

52. If precise regulation in respect of these matters has not been adopted in your division or district, would there be any difficulty or objection to fixing, in communication with those dependent on the work, the dates for closing and re-opening each work? If so, state it fully, and also mention what will be requisite, in order to overcome each difficulty and objection.

53. What would be the advantages of reducing these matters to strict regulation, duly arranged and communicated to the cultivators?

54. Have any instances occurred within your district or division, in which well-founded complaints of inconvenience or ascertained losses to the Ryots or the State have occurred in consequence of any channel being closed or kept closed for repair, &c., when the water was required for cultivation?

55. Who practically arranges the times at which channels are closed? Has any subordinate in the Revenue or Public Works Department anything to do with it?

56. Have you any reason to believe that unauthorized payments are exacted from the Ryots by the threat of keeping the channel closed when water is urgently needed, or of flooding the crops, or otherwise? Mention any cases in which, to your own knowledge, such mal-practices have been proved by judicial inquiry.

57. Is it considered a matter of paramount importance, that channel clearances should be commenced and completed at periods when water is not required for irrigation, or the preparation of the soil for cultivation?

58. What are the periods when labour is most abundant and cheap, and can be most conveniently spared by the agriculturists?

59. Would the saving by conducting these clearances, when labour is most abundant and cheap, compensate for any inconvenience or expense otherwise caused by conducting them at such periods?

60. When the Ryots complain that clearances have been insufficiently effected, is any local investigation promptly made; if so, is it made usually by an independent officer, or by the officer who effected the clearance?

61. Looking over the condition of things during the last five years, are you satisfied that, so far as it has come under your personal observation, the work done, and the progress made in the Public Works of communication and irrigation, fairly represent the value of the money spent on work and establishments?

62. What is the feeling of the agricultural population at large in respect to the D. P. W., and how has that feeling been engendered? State also upon what information your opinion is based, and from what class of persons has that information been derived.

63. If complaints are made of the condition of any of the irrigation works in your district or division, do you find that the returns of cultivation, and the claims for, or grants of remission, at all bear out these complaints, or is the opposite the case, and what steps have you or your predecessors taken to remedy the state of things complained of?

64. Have the Public Works Officers been consulted as to the remedies required, and what proposals have been made in that department?

65. Have such proposals been submitted to Government or not, and are they now being carried out, or what has been done with them?

66. Can you furnish statements of the remissions made for nunjah land from 1845 to 1868, and the average annual rain-fall in tank and rain-irrigated talooks, and the annual average depth of water in the rivers during that period?

67. Have the officers of the D. P. W. been consulted regarding remissions of revenue made on wet lands? if so, give the number and date of their letters, and of any reports referring to the works, or cultivation on which remissions were granted.

68. Is the rise in wages of labour and prices of materials, as paid by the D. P. W., a natural rise, or is it in any way artificial? Give a statement showing the wages of labour and prices of materials for any period prior to 1856, and for a similar period now, and give the corresponding prices of food grains in your district. If you include bricks in your statement, give the sizes of the bricks then and now used. Are these wages and prices the same generally as paid by private individuals?

69. What means have the superior officers of the D. P. W. of checking the rates in the estimates prepared by the subordinate officers of the D. P. W., and what means do the latter possess, or employ, of ascertaining the real rates of labour and prices of materials in the localities where they are working?

70. Would the preparation of data tables by the D. P. W. Officers, in communication with the Collector, showing the wages of labour and prices of materials in various localities from

time to time, serve any purpose of useful check, and have the suggestions of the Commissioners on Public Works in 1852, in this respect, been anywhere generally attended to?

71. Give the total amount provided for superintendence in the estimates actually carried out during the last year, also the cost of the permanent establishment, and the aggregate of these two items, with their per-centage on the total expenditure. State what the revenue of irrigated land is, what number of miles of road have to be maintained, and what other description of Public Works there are in your district or division?

72. Do you consider the check measurements and examinations conducted by the officers of the D. P. W. to be sufficient, and to answer their purpose?

73. How far do you consider the daily accounts kept by the subordinates of the D. P. W., and the returns and accounts rendered by them to their superiors to be trustworthy?

R. K. PUCKLE,
Collector on Special duty,
for the Commissioners.

APPENDIX E.

A BILL FOR THE ENFORCEMENT OF KUDI-MARAMUT IN THE PRESIDENCY OF FORT SAINT GEORGE.

Whereas it is expedient to make better provision for the enforcement of the obligation of Kudi-maramut, which, by local custom, is incumbent on village communities; It is enacted as follows:—

I. Section VI. of Act I. of 1858 is hereby repealed.

II. The Board of Revenue shall authorize Collectors to ascertain for each village, by careful local investigation, the description and extent of work, which, under the designation of Kudi-maramut or Umji-Sá'ha or other name, it is incumbent on Ryots or village communities, by recognized local custom, to perform, in the case of irrigation and drainage works, and how the required labour for the purpose is apportioned and fixed.

III. The result of such investigation shall be recorded for each village in a form to be prescribed by the Board of Revenue, and under the signature of the Monigar and Kurnum, and two of the chief Ryots of the village, and of the Tahsildar and Collector or other Divisional Officer. Such record shall be denominated the Kudi-maramut Dittum.

IV. The Kudi-maramut Dittum of each village shall form part of the village, talook and huzur records, and shall form an authoritative guide in all cases of doubt or dispute.

V. Where, in any locality, the obligation of Kudi-maramut may be found to have once existed, but to have fallen into disuse from whatever cause, it shall be lawful for the Collector to revive it, and enforce it, in the manner herein-after directed, to the extent ascertained to have formerly prevailed in that locality, or now ascertained to prevail in adjoining or neighbouring villages similarly circumstanced.

VI. The actual cultivator or tenant of the land, where the owner or proprietor of that land is not forthcoming, shall be bound to contribute the quota of labour to which such land or such owner or proprietor is liable according to the Kudi-maramut Dittum; and it shall be lawful for such cultivator or tenant to deduct the value of such labour, at the current rate of wages, in the village from the rent or warum payable to such owner or proprietor.

VII. The head of each village, and the Tahsildar of the talook in which such village is situate, shall be responsible for the due performance of Kudi-maramut as laid down in the Kudi-maramut Dittum.

VIII. Where the labour required for such purpose, according to the Dittum is withheld, without reasonable cause, by the Ryot bound to contribute the same, it shall be lawful for the head of the village to cause the immediate execution of the work by hiring such labour at the prevailing rate of wages. The hire shall be paid in the first instance as an advance from the Government Treasury, under arrangements sanctioned by the Collector, acting under the orders of the Board of Revenue, and such advance shall be afterwards re-paid from the local Kudi-maramut Fund to be created under this Act.

IX. It shall be the duty of the head of the village to report his proceedings, under the last preceding Section, to the Tahsildar of the talook, who shall thereupon hold such summary inquiry as he may deem necessary, and adjudge the reculant Ryot to a penalty not exceeding four times the value of the labour withheld.

X. Every decision, act, or order of a Tahsildar under this Act, an appeal shall lie to the Collector, provided that such appeal be made within two months from the date of decision, act, or order.

XI. The decision of the Collector on all appeals under the last preceding Section shall be final and conclusive.

XII. Any penalty imposed under this Act shall, in case of non-payment, be realized in the manner provided for the recovery of arrears of Land Revenue in the Madras Presidency.

XIII. The head of a village shall be liable to fine and dismissal from office in case of proved neglect in enforcing, in the manner provided by this Act, the obligation in respect to Kudi-maramut, as laid down in the Kudi-maramut Dittum of the village.

XIV. All fines and penalties levied under this Act shall be carried to a Fund, to be called the Local Kudi-maramut Fund, to be applied to Kudi-maramut purposes.

XV. When the persons who are bound to furnish labour under this Act prefer to compound for the whole or any part of such obligation by an annual money payment, it shall be lawful for the Collector, under the orders of the Board of Revenue, to admit such composition for a period not exceeding three years, at such rates as shall be fully equivalent to the labour, and to undertake the execution of the work so compounded for. Provided that the whole of the sum so raised shall be spent on the work in respect of which it is collected.

