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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Rev DEPARTMENT

G.O. No.	36	Press
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Dated	8.4.1873	196 .

Not to be folded or roughly handled

No. 90.

Read the following:—

No. 82.

MEMORANDUM.

It seems to be doubtful whether the local officers of the department have been sufficiently instructed as to the way in which the grouping of Irrigation Works, for the purpose of exhibiting the financial results of such works, as ordered in G. O., 30th April 1872, No. 1,102, is to be carried out. There are also some considerations which have not, I think, been fully taken into account, and I propose therefore to endeavour to place the whole subject on a footing which will ensure, as far as possible, uniformity of practice throughout the Presidency, and secure the object desired by the Home Government in a convenient form.

2. I think that the accounts to be laid before the Secretary of State should be abstract accounts. Paragraph 5 of G. O., 6th November 1869, No. 3,555. the despatch, No. 75, dated 31st August 1869, from the Secretary of State, appears to contemplate the separate exhibition in the return of, at any rate, large individual works, and, I think, two Statements might be prepared, the first to show for districts—

I.—Individually all large systems of works irrigating 50,000 acres and upwards.

II.—In one line all other irrigation from rivers, including the tanks connected with the river channels.

III.—In one line all irrigation from minor streams including the tanks connected with them.

IV.—In one line all irrigation under rain-fed tanks.

V.—In one line all irrigation from spring channels, including the tanks, if any, fed by them.

It may here be noticed that it will be necessary to determine what are the streams to be classed as rivers, and this can without difficulty be done as there are but a few at most, and usually only three or four, in any one district, all the rest will be considered as minor streams. I would have suggested area of drainage basin as a guide, but for the circumstance that local peculiarities make small basins produce what may be properly called a river in one district—the Tambra-poorny in Tinnevely for instance—while in other localities a larger area of basin yields so small a drainage that its out-fall channel is nothing but a minor stream.

Spring channels are, I think, peculiar to a few districts. I believe what is meant by the expression is well understood, but it may be useful to state here that it is to be taken to imply a channel tapping the water stored in a bank of sand, or porous soil, in which rain-fall is stored and subsequently drawn off for either direct irrigation, or for the supply of small tanks.

3. The second and still more abstract statement would show in five lines for the whole Presidency the revenue derived from, and expenditure upon, each class of irrigation as above specified.

4. The next thing to be considered is the way in which the more detailed returns, from which these statements will be compiled, are to be prepared. I do not think it would be advisable to divide the Irrigation Works of a district into

three, four, or more sections, as indicated in paragraph 9 of G. O., No. 1,102, of the 30th April 1872, and here it may be remarked that there are three purposes to be taken into account in arranging the grouping:—

- 1st.—The supply of the information required by the Secretary of State.
- 2nd.—The preparation of the accounts required by the Government of India.
- 3rd.—The management of the Irrigation Works themselves in a reasonable and efficient manner.

5. For the last of these three purposes, which is really of very great importance, it appears to me that the groups in each or most districts will necessarily be far more numerous than has been hitherto contemplated by Government. For the purposes of the accounts required for the information of the Government of India many of these groups may be joined together, but the units or original groups ought to comprise only such works, or such irrigation areas, as form, from their circumstances, a natural group, while other circumstances often make it necessary to divide these. In exemplification of this latter remark I would point out that the physical or geographical limits of a group would often lie in more than one district, and in that case the works within such limits must, if convenience and facility of obtaining information as to revenue and expenditure are to be considered, be divided into two or more initial groups. Again, with regard to rain-fed tanks, it will probably be advisable to restrict the groups to the works situated within taluq limits, lest confusion should arise in bringing the irrigation to account, although from an engineering point of view it would often be very convenient to take all entire chains or connected series of tanks and form them into one group, even if extending not only into more than one taluq, but also more than one district.

6. A plan which is to work well and to be useful for all purposes must, I think, not lose sight of these considerations, or be such as to render the discovery of error difficult.

7. First, premising that I do not desire that my suggestions should be adopted in their entirety as to the way in which the grouping is to be carried out, for, though possessing a fair knowledge of the general circumstances of most of the Presidency, I may well lose sight of some local circumstances, which may properly influence the arrangements, I will proceed to state as fully and clearly as I can what these arrangements should be.

8. Although the whole of the irrigation in one district under individual large modern works, such as the Godavery and Kistna Anicuts, may be conveniently formed into one group, it will be well, when the local circumstances point

Sub-groups.

- | | |
|--------------|----------------------|
| † 1. Eastern | } Sections of Delta. |
| 2. Central | |
| 3. Western | |
| † 1. Eastern | } do. do. |
| 2. Western | |

to a sub-division, to allow of sub-groups, thus the—

- † Godavery Delta, 1 group.
† Kistna do., 1 do.

and the irrigation on each side of a river from an anicut, when channels

take off on either side, will naturally form a sub-group.

9. In Tanjore, while the whole irrigation of the delta, so far as it is obtained from the Cauvery, will form one group, it may be convenient to constitute the irrigation of the Cauvery below the Vennaur head into one sub-group, and that of the Vennaur itself into a second; while further each of these sub-groups will probably have to be divided into sections for the several principal branches, such as the Kodamurty, Arasalur, Veerasholen, etc., on the Cauvery side, and the Vettaur, Pamaniyaur, Corayaur, etc., on the other.

10. The Cauvery between its head at the Upper Anicut and the western limits of the Tanjore District has irrigation channels on both sides in Trichinopoly; these should form a group with sub-groups for the irrigation on the right and left banks respectively.

11. Above the Upper Anicut the Agunda Cauvery has, in the Trichinopoly District, several irrigation channels. These may be constituted a group with sub-groups for the right and left bank.

12. Similarly, the irrigation under the Ambravutty in Coimbatore will form a group, and be divided into sub-groups for the portions on the two banks.

13. In Tinnevely it may be most convenient to consider the irrigation under each of the anicuts as a group with two sub-groups, unless the irrigation under two or more of these weirs is connected, when what would otherwise form two or more groups can be made into one.

14. In Nellore the Pennair anicut irrigation will form a group, and the Nellore tank, which has for some years been included with it, should be retained in the connection. There are two or three small tanks surplusing into the Nellore tank, which may be thrown into the group; but others, the surplus of which crosses the supply-channel of the Nellore tank, should be included in the groups of rain-fed tanks, as what little connection there is between them and the Nellore tank is accidental.

15. The irrigation from the left bank of the Pennair from Sungum to the Nellore anicut should form one group.

16. Generally the irrigation from any river in one (each) district, excepting such considerable systems as should be formed into a separate group, will form one group with usually two sub-groups. Occasionally the large system of works may occupy a central position, that is, there may be channels taking off above, and others below, the head works of that system, and then there would be three groups for the irrigation under a river so circumstanced.

17. The irrigation from all the minor streams in a district, which fall into one river on its right bank, might conveniently form a group with a sub-group for each stream and sections for each bank of each stream. Similarly, the streams falling into the same river on the left bank would form another group.

18. As regards rain-fed tanks, all the tanks lying within one major catchment basin, that is a basin having an independent out-fall into a river, should, where this basin lies entirely in one district, form one group, with sub-groups for the tanks in different taluqs, and sections for the several minor basins, if this further sub-division should be found convenient. Where portions of a major basin lie in different districts separate groups for such portions will be necessary.

19. It is, I think, advisable to lay down the rule that tanks, which are ordinarily rain-fed, though in extraordinary seasons they may receive river supplies by inundation, are to be included in the rain-fed and not in the river groups.

20. It will be convenient generally to form the irrigation under the spring channels of each taluq into a distinct group.

21. The Controller of Public Works Accounts in a letter No. 2,604, dated 7th February 1873, has informed me that, under instructions received from the Accountant General, Public Works Department, the Capital and Revenue and other Irrigation Accounts are to be compiled in his office, and that the attention of the District Engineers should be confined, first, to grouping the Irrigation Works, and, secondly, to completing the Irrigation Registers. The Registers however, when complete, will not afford all the required information for, in their present form, they will exhibit details of revenue and expenditure only for 1867-68 and subsequent years, and in all cases the outlay from 1856-57 will have to be ascertained, and compared with the revenue, while for some works these details will have to be obtained for some years prior to 1856-57.

22. Maps of the several districts on a scale of 1 mile = 1 inch are being prepared in this office to enable the grouping of Irrigation Works to be carried out systematically and then clearly exhibited; and, as soon as these are ready, they will be sent to the District Engineers. The latter officers need not wait for the maps before commencing the arrangement of the groups, because these maps will only be an enlargement from the Atlas sheets, and they will not afford any information therefore not contained in the printed maps, but they are simply intended to allow of the exhibition of the groups on a suitable scale and in different colours.

23. As soon as the principles on which the grouping is to be carried out have been approved by Government, District Engineers should take up their districts regularly, commencing at one end and disposing of every Irrigation Work by placing it in a group of the class to which it appertains. When one or more groups have thus been completed, they should be laid down as accurately as possible on the 1 inch map, each work being numbered and the numbers in each group being entered from 1 upwards. Then a list of all the works in each group should be prepared, showing the Group number, and Irrigation Register number, of each work. Next, the arrangements should be submitted to this office with a report explaining them, and noticing any deviations from the rules which may have been found necessary, with the reasons for these, and the orders of Government can then be taken; after which it will be necessary to prepare revised Registers showing all the Irrigation Works in the groups to which they belong, and in the order of their group numbers, with a column in which to enter the number of the work as given in the present Registers, which latter will, on the completion of the new Registers, become obsolete.

24. Every group should have a name as well as a number. The name will generally be obvious; it should identify the locality clearly and succinctly. In the case of a group of rain-fed tanks, the name should be that of the last or lowest tank of the series, or, what is called in Mysore, the stop tank. The number of the group should be indicated by Roman numerals. The numbers of the works in a group

should be expressed by the Arabic numerals, and, for rain-fed tank series, should commence with the stop tank, which will always be No. 1, and proceed regularly up the basin, taking the works in order in the opposite direction to the numbers on a clock dial. For channel or river groups the numbering should commence with the channel highest up the river or stream, and should take up each branch successively with all the tanks connected with each branch, so that in this case the numbers will increase as the works become more distant from the original source of supply. As with regard to this class of works there will often be two or more sub-groups, the numbering of each sub-group may be distinct and distinguished by the letter R for the right bank, L for the left bank, and C for the central or intermediate sub-group. These directions will ensure uniformity and facilitate reference. Every Register will hereafter require a Group Index and a Work Index, both of which should be arranged alphabetically. Lastly, the Revenue and Public Works particulars of each group should be totalled, and the sum of all the group totals for any district must agree with the Revenue and Public Works records for the year; unless this check be applied there will be no certainty of the correctness of the accounts. The works irrigating less than ten acres which, in the present Registers, are shown in one line for each taluq, will require to be similarly entered for each group, and their group numbers should be shown in the column headed "description of nature and condition of works."

25. I have not had time to go through the Registers which have up to date been printed in the District Gazettes, but on looking over some of them I have noticed that the descriptions entered in column 10 must have been furnished in many cases by members of the department who did not understand the meaning of the terms used. The catchment basin of a tank is the country from the drainage of which the tank is supplied; in very many cases the area entered in the Register appears to be that of the tank itself. Again, in the form given by the late Colonel Anderson, a few examples of descriptive entries were shown, but these are not to be blindly applied to all tanks, but should be varied, so as to give as complete a description of the circumstances and condition of the work as may be practicable. I have learnt also that in some districts the particulars of outlay have been entered by Overseers and other subordinates; such details should be obtained from the records of the late District and Superintending Engineer's Offices, and, moreover, it must be ascertained that the totals of the entries against individual works agree with the yearly expenditure of the district under the heads of New Works and Repairs.

26. It will be seen that, to carry out the orders of Government, a vast amount of work has to be done. The grouping cannot be gone on with faster than the District Engineers themselves, and their experienced Range Officers, where there are any, can spare time for the purpose. On the other hand, the subsequent work will need much care, and it will not make satisfactory progress unless in each District Engineer's Office an Accountant be appointed to post up the revised Registers, check the entries, and investigate discrepancies; and I beg to recommend therefore that the Controller be instructed to ascertain, in communication with District Engineers, what special establishment will be needed, and to submit his proposals to Government through this office.

*Proceedings of the Madras Government, Public Works Department,
3rd April 1873.*

27. In order to make a fair start with the Capital and Revenue Accounts, it will have to be determined for each group from what date the Capital Account is to start, and then to settle the net Standard Revenue with which the revenue of subsequent years and the results therefore of Public Works outlay, are to be compared. I would suggest that, for all systems of works forming a separate group, the average revenue for fifteen years, prior to the year from which the Capital Account may start, less the average outlay on up-keep, be taken as the net Standard Revenue, while for other groups the average of ten years should be adopted. This course is in conformity with the usual practice, and all that is necessary is that the same rules should be followed everywhere. The difficulty of working out any rule must not be under-estimated, for it must be remembered that it is only quite recently that any definite and at all reliable information has been obtainable, and that after years of inquiry, regarding either the area irrigated by, or the revenue obtained from, the Godavery Anicut works, and no doubt similar absence of correct information will be found elsewhere. This is no reason for not going thoroughly into the matter, but it will serve to explain what a difficult undertaking the preparation of complete statements for the whole irrigation of the Presidency will necessarily be.

28. I presume that the last column of the form given in the Secretary of State's despatch, printed in G. O., 6th November 1869, No. 3,555, is intended to apply only to increased land revenue derived from unirrigated lands. In the Irrigation Accounts, where the assessment is consolidated, the increased revenue due to irrigation should be simply the difference between the standard net revenue and the revenue of the year. Where a land assessment and a water-rate have been substituted for a consolidated assessment, after the works were brought into operation, or after the date of opening a Capital Account, the data for comparison will be less easily obtainable, but it will be necessary to adopt the somewhat arbitrary plan of deducting from the standard net revenue, obtained from a consolidated assessment, the average land assessment which may have been subsequently made on the introduction of the water-rate, and the difference will be the amount which will be used in comparison with the water-rate levied in successive years. In the Kistna both forms of assessment are still, I believe, in force, and the revenue returns will therefore have to be shown in two parts, or will consist of two items differently calculated.

FORT ST. GEORGE,
10th February 1873.

(Signed) C. J. SMITH, Captain, R.E.,
for Chief Engineer for Irrigation.

No. 91.

ORDER THEREON, 3rd April 1873, No. 1,030.

IRRIGATION, No. 7.

It appears to His Excellency the Governor in Council that it would be quite a mistake to mix up the preparation of Statements of Remunerative Works and of the Capital and Revenue Irrigation Accounts of the Madras Presidency with the separate subject of grouping of Irrigation Works with reference to their more systematic and scientific treatment by the professional Department. The complication would lead to indefinite delay in preparation of the former, which is greatly to be deprecated.

*Proceedings of the Madras Government, Public Works Department,
3rd April 1873.*

2. All information as to revenue returns has to be compiled in Collector's Offices from the Taluq Accounts, and the classification of these accounts under more sub-divisions than are specified in paragraph 9 of G. O., No. 1,102, of 30th April 1872, would give much additional trouble without corresponding results. Another group however, that of spring, as distinguished from river, channels may be added, in districts where they exist, as suggested by the Chief Engineer for Irrigation. To group all rain-fed tanks belonging to the same catchment basin together is not required for Revenue purposes; and for purposes of professional treatment may be easily arranged by District Engineers, in concert with their Range Officers, from the Revenue Register with the help of the large scale maps, which, if not already to be found in Collector's Offices, can be supplied from those of the Chief Engineer and Revenue Survey.

(True Extract.)

G. Walker Colonel, R.E.,
Secretary to Government.

To District Engineers.
To the Controller of Public Works Accounts.
" Board of Revenue.
" Revenue Department.
" Chief Engineer for Irrigation.
" Financial Department.

84-36.

8 Apr 1873

Exd. S. T. Austin.

Revenue *Open*
77-1010

Gobt. of 1873 Madras.
PUBLIC WORKS.

To

DISTRICT ENGINEERS,

&c., &c., &c.

Dated April 3rd.

Recd. *8*

Encl.

G. O., 3rd April 1873, No. 1,030.

To
APRIL

Nos. 90-91

No 96-8 April 1873

Irrigation Works.—Passing orders on memorandum by the Chief Engineer for Irrigation on the subject of grouping of Irrigation Works.

With Mr