

Mr. Wilson—continued.

its former source of irrigation having failed, it can be supplied from the anicut. The *usual wet* lands in a Zemindari are entitled to irrigation free of charge if the anicut have superseded their old sources of irrigation.

The "cess for the repair of tanks," that is one of the items of Miscellaneous Revenue in this Presidency, was not originally imposed by the British Government; it is a relic of the administration of former Governments that has survived and been continued to the present day; it is levied only in five districts—Ganjam, Godavari, Bellary, Chingleput, and Tanjore; it has been paid for centuries.

In 1875-76 it produced Rupees 3,771 of which Rupees 2,983, or 79 per cent., was contributed by Chingleput.

	RS.
Ganjam	190
Godavari	311
Bellary	60
Chingleput	2,983
Tanjore	227
Total	3,771

Mr. Stokes.

Q. 12. There are no canals in this district.

Q. 13. There is no water-rate in this district, but when unirrigated lands are irrigated the corresponding wet rates are levied. The average increased rent on irrigated over unirrigated land is Rupees 1-4-2 per acre. Owners of rent-free lands do pay water-rate for new use of Government water, and there is no reason why they should not.

Q. 14. There are no canals.

Q. 24. I think that no irrigation work should ever be executed that is not likely to pay, and that to make people who have not asked for the supposed insurance against famine, and who may or may not benefit by it, pay for it would need very plain reasons, indeed, to make it appear fair.

Q. 25. No claims or rights referred to exist. But I think that legislation is necessary to declare the exclusive right of Government in all flowing water.

Q. 26. There is a great number of small tanks in this district which may with advantage be made over to the ryots for repair, and they may be so made over on the condition of the ryots paying dry assessment for the lands under the tank and the bund and water-spread without remission for failure of crops. This will obviate the necessity of guarding against neglect to repair on their part.

Q. 27. The Zemindars or superior land-holders are obliged to maintain tanks at the risk of losing their rents.

Mr. Crole.

Q. 12. The Madras Irrigation and Canal Company's canal is the only work of this kind in Kurnool. Capital expended to date* is Rupees 1,61,01,982. The yearly interest (guaranteed) is Rupees 4,99,833, while the canal earned in 1875-76† only Rupees 57,633. The annual cost of maintenance is Rupees 1,47,605 on the average of six years ending 1876-77. Irrigated acreage of all kinds was 14,763 acres for 1875-76. The corresponding capital and interest per acre is Rupees 1,090-10-0 and Rupees 33-12-0, respectively. The local value per acre of chief crops irrigated is paddy Rupees 19, raggi Rupees 17, cholum Rupees 12-8-0.

* 30th June 1877.

† This is the latest year for which I have figures for both districts complete. It is besides the latest normal year. The canal revenue increased very much in 1876-77 and 1877-78 on account of dry crop watered during the famine, but during the present season (1878-79) these figures will not be maintained. In point of fact, the revenue will, in all probability, be much the same as in 1875-76.

Paddy cannot be raised without irrigation. Cholum raised without irrigation is a more valuable crop.

The water-rate is Rupees 6 per acre for paddy, Rupees 4 for garden crops, Rupees 2 for crops requiring only occasional floodings, and Rupees 12 for sugar-cane and betel gardens (*vide* enclosed extract from Canal Water-rate Rules). The ryot pays from Annas 4 to Rupees 5 per acre for land-revenue. The ryots (landlords) do now pay half the net produce to Government. Increased value conferred by irrigation works is taken into consideration in the settlement of such holdings as are thus "permanently improved." No further contribution could fairly or in good policy be exacted from the ryot.

Revised Water-rate Rules.

I. Before the 1st day of April in each year the Agent of the Company shall inform the Collectors of districts what portions of each village under the influence of the canal he is prepared to irrigate during the ensuing irrigation season, and the Collectors shall have the above information duly posted up and publicly notified in each village concerned, through the Curnams, before the 1st day of May following. The Canal administration shall, at the same time, send a notice to the Curnam of each village in anticipation of the Collector's order.

II. No canal water shall be used for irrigation purposes unless an application made verbally by the ryot be previously registered by the Village Curnam, or else the ryot must first make written application through the Canal Officers to the Village Curnam. Separate application should be made for water required for first and second crops. The Canal Officers will be at liberty to supply water immediately on the receipt of applications, and these, on transmission to the Curnams, will be completed as regards revenue details by them and transmitted to the Tahsildars.

III. Applications will be registered for whole revenue fields, or recorded sub-numbers of survey fields, however small they may be; except for crops classed as double, water will not be supplied for areas less than one acre in fields of larger extent. The Curnam is authorised to sub-divide family holdings or joint holdings of putta amongst the individual owners for the purposes of irrigation, provided none of the family or putta-holders make objection thereto, and will duly report such sub-divisions to the Tahsildars.

IV. If water is taken without application or registration, the cultivator will not be entitled to remission, and he will be charged on the portion irrigated, provided that the charge shall never be for less than an acre except in the case of fields the recorded extent of which is less than an acre, when the charge shall be on the whole field; he will further be required to pay a fine of 8 Annas an acre or fraction of an acre irrigated for the first offence, 1 Rupee an acre or fraction of an acre for the second offence, and thereafter such an addition not exceeding double the rate as may be considered equitable by the settling officers.

The Canal Officers are entitled to inspect fields without damaging the crop; and the holders are bound to permit the inspection and measurement of Canal Officers equally as of Revenue Officers.

In cases of surreptitious irrigation the rate to be levied will be that which is most favorable to the ryot amongst the rules applicable to his case.

V. The Company do not, except under their tanks, guarantee a supply of water beyond the 31st December; but, so far as water may be available in the Toomboodra or other streams feeding the canal, it

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will be supplied to all except first-class single crops at the rate of 1 Rupee a month so long as the supply lasts until the annual closing of the canal, which will be notified not later than the 1st December.

•VI. The full rate per acre charged for water on application shall be as follows:—

Clause 1.—First-class crops requiring continuous supply—

							RS.
First crop	..	..	..	..	..	..	6
Second crop	..	..	..	..	..	..	6

These crops include rice and the following double crops, viz., sugarcane, betel leaves, cocoanuts, plantains, saffron, fruit-trees (various).

NOTE.—The rate for crops classed as double will be on the area of such crop irrigated, whether with or without permission, independent of the area of the field.

Clause 2.—In future years the rate of first-class single crops when raised on fields so levelled and bunded that quiet water will stand at a depth of a finger to a hand breadth over a whole bed will be for the first year of cultivation Rupees 3, for the second year Rupees 4, for the third year Rupees 5 an acre, single rate. After the third year full rate will be charged for crop irrigated on the same fields.

Clause 3.—Second-class crops requiring frequent floodings, Rupees 4.

These crops include garden ragi, onions, chillies, sweet potatoes, tobacco, maize, garden korra, indigo, brinjals, yava (wheat), cumminbariga, mentilu.

Clause 4.—Third-class crops requiring occasional floodings, Rupees 2.

These crops include cholum, field ragi, field korra, field tobacco, field chillies, cotton, gram (various), oil-seeds (various), areca.

Clause 5.—A “crop” includes one, two, or more crops sown together in intermediate rows at the same time. Double crops or those requiring irrigation for more than six months, except indigo, pay double the rates specified for their class, unless supplied after 31st December at the monthly rate.

Clause 6.—For a series of any crops, rice excepted, raised from the beginning of the season up to 31st December, Rupees 6.

Clause 7.—For a series of any crops, rice excepted, raised from 1st of January to the closing of the canal, per month Rupee 1.

Clause 8.—If water is not supplied for the whole time the crop is on the ground, and the crop is matured from other sources, the charge on crops of the first-class shall be at the rate of Rupees 1-8-0 and on crops of the second-class at the rate of Rupee 1 per month of canal irrigation. This clause is intended to apply to crops supplied from the canal after other sources have failed as well as from other sources after the canal irrigation has ceased.

Clause 9.—For water supplied to a tank for storage for the purposes of irrigation, the rate shall be 1 Rupee for 1440 cubic yards, the quantity being measured at the supplying sluice. Water shall be supplied as above on the requisition of the Collector or Tahsildar.

Clause 10.—If water is baled the charge shall be two-thirds of the full rate.

Clause 11.—Land irrigated by canal water springing up in a field and not conveyed over the surface will not be charged. Surface irrigation by canal leakage water conveyed to lands for purposes of irrigation within the limits of the Company's distribution channels, or flowing through cuts or holes in a bund under circumstances within the control of the cultivator, will be charged the same rates as

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are laid down for similar cultivation supplied directly from the canal channels.

Clause 12.—No charge will be made for water passed as surplus into any water-course or natural channel, from which, before the construction of the canal, a first or second-class crop had in time past by any means been irrigated. The position and extent of lands so irrigated and the number of crops thereon irrigated shall be ascertained and recorded, and areas and crops in excess of this shall be liable to the canal water-rate if regularly and intentionally supplied by the Company.

Clause 13.—No charge shall be made on any land cultivated within the preceding five years under tanks the supply or distribution of which is necessarily affected by the canal. Additional cultivation under Government works of irrigation due to the influx of canal water shall, if such extension be within the Company's scheme of irrigation be charged for at the same rates as the other cultivation within the ayacut, the difference between the consolidated wet assessment and the dry assessment being credited to the Company. The ordinary canal rates will be charged beyond that limit.

VII. As a general rule, applicants will be bound to pay for all the land applied for. In special cases, where, from sudden illness or loss of cattle or other causes beyond his control, the ryot is prevented from cultivating the land, he may, at the discretion of the settling officers, be allowed to withdraw his application. If cultivation has been commenced he may be charged only for the water used. Ryots should be permitted to withdraw their applications for water subject to subsequent approval by the settling officers.

VIII. Remission of water-rate, either wholly or in part, will be granted for failure of crops in cases where that failure is caused by excess or deficiency of water due to defect of works and shortcomings on the part of the Canal administration, and not to neglect on the part of the ryots. No remission will be granted for failure of crops due to deficiency of water between the 1st January and the re-opening of the canal after the annual closing.

IX. Remissions will be granted, at the discretion of the settling officers, for rocky ground or land otherwise unfit for wet cultivation.

X. In exceptional cases, such as failure due to "Choudu," excessive rains, or other cause beyond the Company's or ryot's control, a similar indulgence may be granted at the discretion of the settling officers.

XI. No claim to remission for any case of loss or damage of crop shall be admitted unless written timely notice is given to the Village or Taluk Authorities so as to secure examination on the spot before the damaged crop is removed. The Curnam will at the same time give prompt intimation of the claim to the Company's Overseer or the Resident Engineer.

XII. All applications, whether made by the ryots verbally or through the Canal Officers, shall be recorded by the Curnam, if possible, on the same day they are received in a Register (Form B), but applications to cultivate less than the minimum allowed by the rules must be refused. Cultivation, when applications have been refused or not made, will be separately registered by the Curnams.

XIII. The Register of applications shall be closed on the 28th of the month and an extract thereof despatched to the Taluk Cutcherry so as to reach it on the 1st of the following month. All cultivation without application should be shown at the foot of the Register with the necessary remarks.

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XIV. The Tahsildar, or, in his absence, the Taluk Sheristadar, shall prepare an abstract thereof and despatch it so as to reach the Collector on or before the 5th, who will forward it on to the Company's Chief Engineer.

XV. The Curnam shall further keep a book showing the detailed measurement of the area applied for. The Revenue Inspector should examine, during his visit to the village, the accuracy of the measurements thus recorded, and make the necessary corrections in red ink.

XVI. The Register of applications kept by Curnams shall be open for inspection to officers of the Company, who may enter any remarks they think proper or make extracts thereof. Similarly, the Curnams and other Revenue Officers may inspect Registers kept by the Company's Overseers and Surveyors. Where there is a difference of opinion between the Curnams and the Company's Overseers, either in regard to damage or irrigation, the same shall be reported to the Revenue Inspector in view to the necessary inquiry being held on the spot.

XVII. The Curnam and the Reddi shall go along the irrigation channels and inspect the cultivation as often as necessary and at least twice a-month, and enter the extent in the Register (Form C) kept for the purpose with any necessary remarks regarding use of water without previous application, damage to crops, &c.; an immediate report of any damage shall be sent to the nearest Company's Overseer or Engineer and to the Revenue Inspector of the range. On receipt of this report the Revenue Inspector shall at once visit the spot, together with the Company's Overseer if possible, and report the result of his inquiries to the Tahsildar. In more important cases the Tahsildar or Sheristadar shall conduct the investigation in person.

XVIII. The Curnam shall, at the close of the season, prepare an account (Forms D and D-1) showing the total land applied for, the portion irrigated, and any loss of produce from causes indicated in Rules VIII, IX, and X, and submit the same to the Taluk Cutcherry not later than the 1st of April in each year.

XIX. The settling officers shall consist of the Collector of the district and the Manager of the canal, or of an officer deputed by either to act for him. They shall decide all facts pertinent to claims made by ryots for remission of water-rate due to damage done by the canal water or works, or to appeals against the rates or measurements; and shall be competent to decide on the correct amount of water-rate chargeable and on the remission thereon, and also to arbitrate, if so desired by the claimant, on all cases of claims for damage made against the canal. It shall be open to either the Government or the Company, as represented by their local officers, to claim a reference of the question to arbitration, in which case the Collector and the Company's chief local officer shall each nominate one arbitrator, and the two nominees shall elect an umpire. The decision of the arbitrators shall be final. Where settling officers are deputies their proceedings are subject to the confirmation of the Collector and the Manager of the Canal.

XX. Notice of the time and place of settlement of each village shall be tom-tomed through the village at least ten days before the date fixed.

XXI. With a view to facilitate the registration of applications for water and the subsequent transaction of the Company's business, 6 pies in the rupee of the adjusted gross demand will be paid by the Company to the Curnam and Reddi of the village in remuneration for their trouble in such proportions as the Collector may determine.

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XXII. A table of water-rates and remissions in accordance with the above Rules in English and Telugu and a printed copy of Rules II to XI and XX to XXI in Telugu shall be posted by the Company in every village and hamlet whose land is, or will be, affected by irrigation.

Q 14. Canal dues are recovered in precisely the same way as land-revenue under Act II of 1864. No difficulty is experienced. Ryots perhaps are inclined to make too lavish a use of water, though this is not quite a settled point. The correction of this tendency, however, must be left to education and enlightenment. Raising the already too high rates would never do. It would throw nearly all land out of wet cultivation.

Charging for water by quantity is impracticable, owing to the smallness of area of holdings irrigated. The lump-contract system is not possible at the present stage of irrigation under the canal, owing to land irrigated consisting of scattered fragments and forming a mere fraction of the land in villages commanded by the canal, viz., 14,763 acres in 1875-76 out of 321,515 acres, whereof nearly 200,000 are now irrigable.

Q 15. The existing water-rates are too high, as already brought by me to the notice of Government.

Q 17. The records of the Civil Dispensary show that the fever, for which the town of Kurnool has now such a bad reputation, began with the opening of the canal. The health of the Canal staff all along the work is much worse than that of ordinary officers. Mortality has much increased in some of the villages traversed by the canal.

The station of Kurnool lies on a low tongue of land at the junction of the rivers Hindri and Tungabhadra. The soil, which consists of a mixture of lime and black cotton, is only a few inches thick, and rests on rather loosely laminated slate. The canal forms the base of the triangle, within which the town lies, and, as the canal is on a higher level than the town and station, the soil is completely water-logged during the irrigation season of seven or eight months. No drainage works whatever have accompanied canal irrigation as they ought to have done. Drainage is much needed. That damage has been caused to valuable dry lands by the raising of the water-level, leakage, and soakage, is admitted on all hands. Efflorescence has caused no great damage.

Q 19. It is doubtful whether the words "poorer grain" can be properly applied to cholum relatively to paddy. Last year 8700 acres were cultivated with paddy. The irrigated area under cholum has not decreased, but cholum has been displaced by paddy to a certain extent, that is to say, part of the above-mentioned 8700 acres was formerly cholum-producing land. However, it must be remembered, that only 2450 acres have been cultivated with paddy for more than five years, so it is not possible to say to what extent dry grains have been permanently displaced, for nothing is commoner than for lands to be reconverted into "dry" under the operation of the high rates.

There is no evidence that prolonged irrigation damages the land or reduces production. The opposite is the fact.

Qs. 21, 22, and 23. The information required in these questions is contained in the papers attached to this. The only point not touched is the question raised in the latter part of 21. I have given it much attention, and

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having served in Tanjore, Madura, Trichinopoly, Coimbatore, Chingleput, and Nellore, besides Kurnool, in all of which districts this matter is important, I am of opinion that the duties of the Engineer should cease with the technical business of the water-supply; in point of fact, the sluice should be his boundary. The Revenue Authorities should do the rest. This is the cheapest and easiest way. The ryot understands it, and the Revenue Officers are accustomed to deal with the ryot, who for that reason renders prompt obedience to arrangements made. I fail to see any advantage in turning the Engineer on a work of irrigation into an amateur Revenue Officer. He must make a bad one, just as a Tahsildar would make a bad Engineer. There would also be considerable difficulty in re-arranging the revenue administration of the district if the Engineer were to be constituted Tahsildar or Collector of Irrigation Revenue. The strength of the Public Works Department is not so great, nor have its successes in the direct line of its own proper duties been hitherto so conspicuous as to justify the experiment proposed.

Proceedings of the Board of Revenue, dated 25th July 1878, No. 2067.

Read the following letter from C. S. CROLE, Esq., Acting Collector of Kurnool, to the Acting Secretary to the Board of Revenue, dated 11th July 1878, No. 270:—

I have the honor to enclose a report from the Special Sub-Collector regarding the proposition to appoint so-called Assistant Curnams to transact business connected with the Irrigation Canal Company's operations during the unavoidable absences of the regular Curnams from their villages.

2. The duties of the Curnam of a canal village are, first, to receive, register, and forward the verbal applications of ryots for water or written applications forwarded by Canal Officers; and, secondly, to enter the area in each revenue field irrigated monthly when the crop is cut, to measure these pieces up and enter them in an irrigation chitta, and to make certain returns.

3. If care be taken to guard against unnecessary elaboration of accounts, all the above duties fall within the every-day work of any Curnam. Were the canal a Government work no one would dream of giving him any assistance to perform them, for whether he be temporarily absent or present not a single foot of soil is either irrigated or cultivated without his knowledge. In point of fact, as every Revenue Officer can see for himself at a Jammabandi, the Curnam has always an unrecognised assistant, often a relative, who keeps things going in the village during the absence or sickness of his principal.

4. But we are entangled with a Company which seeks in every direction but the true one for the causes of its failure. I had arrived independently at much the same conclusions as those expressed* by the Chief Engineer for Irrigation, but I cannot admit with him that, in this matter, the Company have reasonable cause of complaint against Government.

5. It was seen at the commencement of the Company's career that it could not get on without the Village Curnam any more than Government can. Mr. Latham, however, knows better, and he did not cease to agitate until he was allowed to substitute his own officers.

Vide Board's Proceedings, dated 4th August 1878, No. 3654, on G.O., dated 11th July 1877, No. 153-I. Paragraph 3 of G.O., dated 19th March 1878, No. 423.

* *Vide G.O., dated 27th November 1877, No. 3311.*

Having got what he wanted, with a result easily foreseen, he harked back to the sheltering arms of the Curnam *cum* the Canal Officer, and now he proposes to go still further in the same direction by appointing a Canal Curnam for each village. It will thus be seen that he is responsible to no small extent for the evils of which he complains.

6. If the canal were a Government work, no remuneration would be required for the Curnam. The sanctioned *per-centage* under the Canal Rules is six pies in each rupee of water-rate. It is proposed now to increase this to one anna; that is to say, Government are asked to forego $6\frac{1}{4}$ per cent. of the inconsiderable revenue yielded by the work, in order to secure the performance of a duty for which the Curnam is really paid already.

7. It being assumed, however, that this measure has already been decided on, the only feasible method of working it will be to do as the Special Sub-Collector proposes, *i.e.*, to make each Curnam nominate a Deputy to take his place during his absence for whom he should be responsible. I agree that the object being to render revenue canal administration part of a homogeneous whole, this end would be defeated if an Assistant Curnam were appointed for canal work alone. He must be the regular Curnam's recognised Deputy in the performance of *all* duties requiring attention during the temporary absences of the former officer.

8. I do not, however, concur in recommending the introduction of this system in large villages merely. This would never check the evil.

9. It would be idle to deny that the chief advantage of the costly scheme placed before Government consists in depriving the Company's officers for the future of one of those "causes of complaint," which, as Colonel Mullins observes, "it may be much to their future interest that they should remain." It is quite plain that, if the arrangement is not carried out universally, the opportunity for vague complaints, couched in the excited language which has too frequently been adopted, will remain, and will not fail to be taken full advantage of as long as a single village is unprovided.

10. Excluding Nandial, Kottapalle, and Chakirajavemala, for which regular Assistant Curnams are required and must be appointed, there are 130 villages under canal irrigation in this district. For each of these I would insist on the nomination and registration of a deputy. As I have stated above, this course will entail no hardship on the regular Curnam. Moreover, I learn from Mr. Lister that he has actually already procured the assent of all the Curnams to the arrangement. In every village there is a considerable extent of land admittedly likely to come under irrigation shortly, and one of the first results of the arrangement would be to throw the weight of the Curnam's influence into the scale of the extension of legitimate irrigation.

11. At the same time, if it is finally decided to adopt the one-anna rate, I have the honor to recommend that it should be limited to a maximum of Rupees 5 *per* month, which is ample for any one village.

12. I now turn to the second of Mr. Lister's proposals. This is embodied in his letter, No. 105, dated 14th May 1878.

13. He requests sanction for the appointment of eight Revenue Inspectors who are to be employed on canal work only. Their duties are to be the supervision and instruction of Curnams, the checking of accounts, the inspection of irrigation, the measuring up of the

Mr. Crole—continued.

bits of fields, the plotting out of sub-divisions of fields on the village maps, and the examination of withered crops.

14. One Inspector is wanted for each of the taluks of Ramallakota and Koilkuntla, and two for each of the taluks of Nandial, Sirvail, and Nandikotkur. Their pay is to be Rupees 30 per mensem each. Eight peons on Rupees 6 are required for them. This proposal entails a further annual charge of Rupees 3,456, equal to 2·8 per cent. of the estimated irrigation revenue this year in Kurnool (Rupees 1,20,000).

15. Including the proposed remuneration to Curnams and the cost of four additional Revenue Inspectors whom I understand Mr. Lister has recommended for Cuddapah, 9·4 per cent. of the estimated earnings of the canal will be absorbed by these arrangements.

	Revenue.	Salaries of Staff.
	RS.	RS.
Kurnool ..	1,20,000	
Cuddapah ..	10,000	
Total ..	1,30,000	1,41,138
Deficit ..	..	= 11,138

16. Superior authority must decide whether it is prepared to relinquish this amount in addition to 18·8 *per cent.* for the Special Sub-Collector's establishment and in face of the fact that, according to the Canal Budget, the estimated revenue, even if realised, will not cover the cost of the Company's salaried staff for 1878-79.

17. All revenue officers are at one with Mr. Lister in advocating a large increase to the Revenue Inspectorate of districts, but it is at the same time undeniable that irrigation revenue far larger, and interests incomparably greater than any involved in the Kurnool Canal are not seriously jeopardised owing to the alleged weakness of the inspecting establishment.

18. As was stated above regarding the Curnams, the sole defence of the proposed expenditure lies in the necessity for putting an end to the systematic complaints against the revenue system. The Irrigation Canal will have establishments as strong and perfect as it is possible to make them—far more so than are thought or found necessary for the protection of the Government revenue. If there is any soundness in the management of the concern, therefore it must now at once show itself.

ENCLOSURE No. 1.

From A. L. LISTER, Esq., Special Sub-Collector in charge of Irrigation, Kurnool and Cuddapah, to the Acting Collector of Kurnool, dated Dhoor, 14th May 1878, No. 104.

I have the honor to submit my views about the appointment of Assistant Curnams.

2. Until last month I was under the impression that the question was an open one, but in G.O., No. 423, of the 19th March, reference is made to a Government Order in the Public Works Department in which the appointment of Assistant Curnams is approved. If it has been settled that Assistant Curnams, which I understand to mean salaried officials holding their appointments independently of the Curnam, are to be appointed, adequate remuneration must be given to ensure efficiency, and no Curnams should receive less than 6 Rupees a month and 1 Anna for each Rupee of irrigation revenue; if an Assistant Curnam were appointed to each village with an irrigation beriz of 1,000 Rupees, twenty-seven Curnams would be required at a monthly cost of Rupees 162.

3. But I wish very respectfully to submit my opinion that the appointment of salaried Assistant Curnams to look after irrigation matters would have a most prejudicial effect, and would from the very commencement of work tend to increase the separation of canal administration from the ordinary revenue

administration of the district, which has in my view been one of the principal causes of the difficulties and failure of the Company.

4. I am anxious in a preliminary report on the special subject of Curnams not to touch upon the general question of pure revenue administration in some of the taluks traversed by the canal, but I must give an instance—a sample case of the action taken last season by the Deputy Collector with regard to his Curnams.

5. The Curnam of Chundookur tells me that he with the other Curnams followed the Deputy Collector's Cutcherry from the 4th July to the 8th August to Velpanoor, Pagadial, Nandikotkur, Gadinemala, and Kurnool, and on the 10th August he returned to his village; from the 27th February to the end of March he was detained in the Taluk Cutcherry for the preparation of jamabandi accounts.

6. If Divisional Officers and Tahsildars attach no importance to Curnams remaining in their villages, they cannot be expected to stay there; it is inconceivable how a Divisional Officer could keep the Curnams trailing after him through two other taluks at the very time when they ought to have been registering applications for water; a more injurious and detrimental proceeding for the Company it were hard to imagine.

7. If this sort of administration is to be continued, then no doubt two men are wanted to do the work of one; but, in my humble opinion, it would be far better to alter the style of administration and to leave Curnams in their villages to do their own work.

8. I do not think the opinion, that the work in irrigated villages is too much for the Village Curnam, is well-grounded; the more I look into the subject the less the work seems for a Curnam *who does his ordinary revenue work* according to the rules; unfortunately, there are none such; I have to educate the Curnams; even Village Account No. 1 has not been written up by one single Curnam in all the necessary columns.

9. What is the extra work a Curnam has to do? He is *supposed* for ordinary revenue administration to go over his fields monthly; when he does, I want him to write in the source of irrigation column the approximate area irrigated in each field (Ka A-2-31), and to submit monthly the total of this column; when the adangal is written or when the crop is cut the actual measurement has to be taken and similarly entered in the source of irrigation column; a separate Irrigation Chittah (Account No. 5) must be kept; some Curnams find it more convenient to keep separate collection books with a view to the preparation of the elaborate return of collections prescribed by the Chief Engineer for Irrigation. I have recommended the abolition of this return in its present form, and, if the collections are allowed to be entered in one column, these additional books can be dispensed with, and there can be a separate column for irrigation collections in the ordinary accounts, Nos. 10 and 11, by which an enormous amount of clerical labor will be saved and a wide door for embezzlement closed.

10. The Board must be told that in the taluks of Ramallakota, Nandikotur, and Nandial not a single Curnam has yet received an anna of remuneration, although half an anna in the rupee was sanctioned four years ago; when I talked to them about an anna in the rupee yielding a monthly salary of Rupees 5 in thousand-rupee villages, one of them with more point than courtesy observed that promises were all very well in their way, but that they had had enough of them in the last three or four years, and they would now like to receive the money.

11. The grave objection, in my humble opinion, to independent salaried Assistant Curnams is that it is impossible to clothe them with the requisite authority and power, and that what is easy for the Curnam to do would be difficult for them. I do not believe it possible for one single acre of land to be irrigated in a village without the Curnam hearing of it, whereas an Assistant Curnam would not have same means of information at his disposal; an Assistant Curnam, too, would have his attacks of fever, his marriages, his Court business, and his private vocations, and would not always be in his village.

12. What class of men are to supply these Assistant Curnams? If a member of the family is taken, we lose the salary and the weight of the missal Curnam's responsibility; if an outsider, with no maniem land, an inefficient raw youth with no responsibility is all we can get for 6 Rupees.

Mr. Crole—continued.

13. In Kulloor, the largest irrigation village in Ramallakota Taluk, the Curnam died last year; there is in that village an Assistant Curnam of poor attainments on Rupees 6 a month; now Kulloor, the Board must know, is Kurnool, the cusbah station itself, of all places the easiest to procure extraneous help for a village; this Assistant Curnam was unable to give in *any accounts at all* for irrigation, and the settlement had to be conducted on the Company's books only. I want this to be fully realised; if the Company had not kept officers to do revenue work and to record the irrigation, we should have had no accounts at all for about 3,000 Rupees owing to the Company.

14. I have talked the matter over with the Curnams, and, of course, they all wanted to have a member of the family as salaried Assistant Curnam, but they were reasonable and logical. I explained to them that, if the Assistant Curnams were paid, they would not have the nomination of them, and they would lose the irrigation allowance; and when I pressed them about the additional work entailed by the canal, they admitted, what it was impossible to deny, that it was but slight if they did their revenue work properly.

15. The work connected with the registration of irrigated land must be regarded as part and parcel of ordinary revenue administration and as a portion of the Curnam's legitimate duties; the Curnams must be held responsible and must have a regular trial under Regulation IX of 1822 and be fined heavily if they neglect it personally; the Curnam, who has gained that envied position in which a man can damage his enemies and serve his friends, and who has the power, influence, and respect which such a position carries with it, can easily secure every irrigated acre being brought to account, and he must be made to do it; my own impression is that they only want some one person in authority to be terribly in earnest about the matter to do it at once; neglect of duty must be promptly and sternly punished, but I hope such punishments will be rarely needed, and what the Curnams want is instruction and supervision rather than punishment at all events in the early days of the substitution of order and work for anarchy and indolence.

16. The Board's plan for carrying on the work during the temporary absence of the Curnam is, in my humble opinion, not only far the best, but the only one likely to be successful. I propose exactly and precisely what the Board suggested in paragraph 5 of their Proceedings of the 4th August, No. 3,654; for easy reference I will put the proposal here:—

“That each Curnam of a canal village be required to nominate a friend or relative to be duly registered as Deputy Curnam, who will conduct the duties of the office during the absence of the Curnam and on his responsibility; the Curnam will make his own arrangements about remuneration with his Deputy.”

17. This differs from the Board's proposal in one particular, to which I would ask attention. The Board proposed that the Deputy Curnam should act for the Curnam in matters connected with the Company's business only; why make any distinction between the different duties of the Curnams; why say to a Deputy Curnam, “the Curnam is a witness at the Session Court in September. You must report the irrigated area in the village, receive applications for water and credit in the accounts all irrigation collections, but you must not credit ordinary revenue collections, nor need you send the monthly cultivation account to the taluk.” I recommend that the whole mantle of the Curnam should fall on his Deputy during his absence, for I want to keep one set of books only.

18. This differs from Mr. Latham's proposal in the matter of payment only; Mr. Latham seemingly proposed that the Deputy Curnam should receive all the remuneration; this would lead to the irrigation work being thrown on the Deputy entirely, even when the Curnam was present, on the broad principle that he ought to do the work for which he gets the pay; but I would prefer the Curnam doing the work if he can and drawing the pay; it is clear, too, that if the Curnams of very large villages were rarely absent, and did all their work while they were there, it would be needless to give a registered Deputy, upon whom no duties chanced to devolve, upwards of Rupees 100 remuneration.

19. There is not the least difficulty about carrying out this plan. Twenty-one Curnams in Sirvail, twenty in Nandial, and seven in Koilguntha have already nominated Deputy Curnams; one additional Curnam is required at

Mr. Crole—continued.

Nandial, the ordinary revenue of which is Rupees 17,196, and I recommend the appointment of a third Curnam to be employed in the hamlet of Kottapalli on a monthly salary of Rupees 10; there are already two Curnams, but a third is necessary.

20. I was prepared to recommend an additional salaried Curnam for Chakirajavemala in Koilguntla Taluk, where the land-revenue is Rupees 7,000 and the irrigation revenue Rupees 1,500, but the Tahsildar asked me not to do so as he dislikes Assistant Curnams; every one knows how very very difficult it is, unless there are separate hamlets, to divide the work of a village between two Curnams, and, if all the work can be got out of one man, it is better not to employ an assistant; notwithstanding the Tahsildar's objection, however, and my disinclination to increase village establishments, I would prefer provisional sanction for the employment of an Assistant Curnam on Rupees 10 a-month at Chakirajavemala in the event of its being found necessary to appoint him. I think the Assistant Curnam necessary, but with my short local experience I hesitate to make a recommendation for permanent increase of establishments in opposition to the wish of the Tahsildar who seems particularly able and intelligent.

21. It is not clear why in the new issue of rules six pies in the rupee, and not one anna, was entered for the Curnam's remuneration as Mr. Latham had agreed to the proposed addition. I think this should be altered to one anna.

22. The statement called for in paragraph 6 of Board's Proceedings of the 4th August, No. 3654, is enclosed with the number of Assistant Curnams proposed by Ramachendra Rao; the future extensions of irrigation under improved arrangements need hardly be taken into account in connection with my present proposals as they involve no expense.

ENCLOSURE No. 2.—Special Sub-Collector's letter, dated 14th May 1878, No. 105, copy of which is embodied in Board's Proceedings, dated 13th July 1878, No. 1947.

ENCLOSURES Nos. 3 and 4.—Statements.

With the foregoing letter the Collector of Kurnool submits two letters from the Sub-Collector in charge of Irrigation dealing with the questions of the appointment of Assistant Curnams and the entertainment of additional Revenue Inspectors. The Board have already supported Mr. Lister's recommendations regarding the additional staff required for supervision in their Proceedings, dated 13th July, No. 1947, forwarding a letter from the Collector of Cuddapah on the subject, and sanction has been accorded in G.O., dated 22nd July 1878, No. 1141, just received.

2. As regards the Assistant Curnams, it will be seen that Mr. Lister concurs in the view expressed in the Board's Proceedings, dated the 4th August 1877, No. 3654, that the registration of Deputes nominated by the regular Curnams to conduct the duties of the office during the latter's absence and on his responsibility is preferable to the appointment of independent salaried Assistant Curnams, and he considers that it should be the duty of such Deputies to assist the Curnams in all matters pertaining to their office and not in those connected with the Company's business only. The Collector points out that this measure would be quite unnecessary if the canal were a Government work, but, looking to the complaints that have been persistently advanced by the Company's officers of a want of assistance from the officers of Government and the desirability of leaving no room for such complaints in future, he recommends the introduction of the system in all the villages under canal irrigation in the district,

Mr. Crole—continued.

130 in number. For three villages, where the irrigation interests are considerable, viz., Nandial, Kottapalli, and Chakirajavemulu one Assistant Curnam each on Rupees 10 per mensem is required. The remuneration allowed to the Curnams under the rules out of canal revenue will be raised from six pies to one anna in the rupee, and the Curnams will be left to recompense their Deputies as may be agreed upon by private arrangement. Mr. Crole would limit the allowance to be paid to the Curnams in any one village to a maximum of Rupees 5 per mensem, but the Board think this would diminish the inducement to promote the extension of cultivation, and they would allow the full benefit to be reaped at any rate for the present. The Board support the proposals. It is presumed that similar arrangements will be made in Cuddapah.

3. The cause of the non-payment of the sanctioned remuneration adverted to at paragraph 10 of Mr. Lister's letter of the 14th May, No. 104, should have been explained. The proper course appears to be to deduct the amount due before carrying the collections to the credit of the Company, the deduction being, of course, shown as a charge and the entire collections as receipts. The mode of adjustment for the future should be distinctly settled in communication with the Canal Officers to obviate a repetition of the delay brought to notice, and the result reported.

4. Sanction is requested for substituting "1 Anna" for "6 Pies" in Clause XXI of the Rules approved in G.O., dated 5th December 1877, No. 3359.

(True Copies and Extract.)

(Signed) C. A. GALTON,
Acting Secretary.

Order thereon, 15th August 1878, No. 1309.

The question of the entertainment of additional Revenue Inspectors for irrigation duties in the Kurnool and Cuddapah Districts has already been disposed of by the sanction accorded in G.O., dated 22nd July 1878, No. 1141, R.D.

2. The second question discussed in the papers recorded above relates to the appointment of Assistant Curnams regarding whom detailed arrangements were to be reported for approval with reference to paragraph 3 of G.O., dated 19th March 1878, No. 423, R.D.

3. As the Irrigation and Canal Company's Agent is in favor of the higher rate of remuneration, viz., one anna in the rupee of the Company's adjusted gross demand, His Grace the Governor in Council is pleased to sanction the modification of the Water-rate Rule XXI* by the substitution of "1 Anna" "6 Pies," on the condition that each Curnam is to nominate a Deputy to act for him in every capacity in his absence from the village and on his responsibility, he providing the remuneration.

* G.O., dated 5th December 1877, No. 3359.

4. The Government understand that the assistant salaried Curnams whose appointments is proposed in paragraphs 19 and 20 of Mr. Lister's letter, are to be paid at the cost of the Company.

5. His Grace in Council accepts the Board's recommendations throughout. The result should be reported in due course.

(True Extract.)

C. G. MASTER,
Secretary to Government.

Proceedings of the Board of Revenue, dated 2nd August 1878, No. 2138.

Read the following letters :—

From C. S. CROLE, Esq., Acting Collector of Kurnool, to the Acting Secretary to the Board of Revenue, dated 13th July 1878, No. 271.

As directed in the Board's docket, dated 18th October 1877, No. 14,385, on G.O., dated 8th idem, No. 6059, I have the honor to submit a report from the Special Sub-Collector on the alleged improper interference by ryots with the distribution channels under the Irrigation Company's Canal.

2. This class of dispute came into prominence during the famine, and the cause is to be found in the sudden demand for water caused by the failure of the monsoons in 1876-77.

3. It is sufficient to note that the irrigated area rose from 14,000 to* 90,750 acres in order to understand the pressure which must have suddenly been laid upon the works, as well as the establishments, both alike prepared for and used to a very insignificant demand for irrigation.

* *Vide* Mr. Latham's Annual Administration Report for 1876-77.

4. Ryots in large numbers applied for water and became responsible for the payment of the water-rate, their crops were dying, famine was staring the country in the face, and there was a general scramble for water, which was believed, rightly or wrongly, to be insufficient to meet all demands.

5. In connection with this remark, I beg to draw attention to the enclosed report from the Deputy Collector of Peapally and its enclosure, a letter from that officer to the Conservancy Engineer of the lower division. The statement that the distributionary channels were utterly insufficient to carry the volume of water for which the ryots had, by applying, bound themselves to pay is there deliberately made.

6. Some of the ryots, who, in the confusion, had taken the supply of water to their field into their own hands, merely a question of a few spadefuls of earth, were prosecuted under Section 430 of the Indian Penal Code.

7. Now, the act may have been, in a sense, wrongful, but it was clearly an act committed by one of the parties to a civil contract for the supply of water, *prima facie*, for the *bona fide* protection of his interests under that contract.

8. This, doubtless, was annoying to the other party, represented by the officers of the Company, who, not being lawyers, complained to the Magistrate.

9. That a very grave mistake, both in policy and in law, was committed in instituting such prosecutions seems undeniable. Such a course was impolitic and indiscreet, because it tended to increase the tension on the relations subsisting between the Company and the ryots, which the correspondence shows were sufficiently strained already.

10. Moreover, convictions obtained on such facts were illegal. Mr. Lister suggests the advisability of submitting a case in the following terms for the opinion of the Advocate-General: "A ryot, having applied for water, is dissatisfied with the supply given him; he puts a dam across a channel to carry more water to his field; the result of this act is a diminution of water to other fields. Does this act constitute a criminal offence?"

Mr. Crole—continued.

11. I see no reason myself for obtaining an opinion on the subject. The High Court have already decided that no offence would be committed (*vide* their Proceedings, dated 12th November 1874, and 19th January 1877, No. 143).

12. Moreover, the law itself is perfectly plain, and it would be preposterous to control the distribution of water, solely in the Company's interests, by fine and imprisonment. I think it shows a want of prudence and discretion much to be deplored, and accounts for not a little of the failure of the present management of the canal, when we find its Chief Engineer and Manager bringing forward charges against the officers of Government, because they "failed to control the irrigation as Magistrates." No commercial undertaking conducted on such principles can ever succeed.

Vide last paragraph of Mr. Latham's letter to the Chief Engineer for Irrigation printed in Government Order under reply.

13. If the Company were as fully alive to its interests as the ryot is to his, there could be no difficulty, but the latter has hitherto been regarded *prima facie* as a criminal instead of as a customer; and efforts which should have been directed to making him glad to deal with the Company have been used to throw him into jail. To this he has sullenly submitted hitherto, because in Kurnool his class is poor and ignorant. The consequences to the Company have been confined to a loss of revenue merely. I hesitate not to say, however, that, if such a course had been attempted in Tanjore or Chingleput, both of which districts I know well, the Company's officers would have found to their cost that there were two sides to the legal aspect of the question, and would have been overwhelmed with suits.

14. So much for the class of cases which consist in the mere interference with the distribution on the part of ryots who have applied for water.

15. There is another class of complaints regarding illicit irrigation by persons who have never applied. To begin with. I observe that it would be much better to cut away the possibility of any such by abolishing these applications altogether. Government ryots are not accustomed to this formality, and it irritates and confuses them. It is, moreover, quite unnecessary. With the increase in the Curnam and Revenue Inspector staff, recommended in my letter of the 11th instant, No. 270, surreptitious irrigation cannot remain unregistered for a fortnight. I would propose, therefore, that the Company's officers should let water flow into any field, the owner of which opens the necessary cut in its bund, and that they should look to the Curnam to enter the fact in his register. There can never be the slightest dispute about the class under which the irrigation falls, for the description of crop raised supplies palpable evidence as to the quantity of water which has been taken.

16. Mr. Lister recommends, in the event of prosecutions being declared illegal, the institution of fines of double the rate for taking water at irregular times or in an irregular manner, and Rupees 25 per acre for water taken from breached channels or improper dams, the power to impose such fines being vested in him. I have no doubt that he would use such a power with discretion, and I have the honor to recommend that it be granted to him as a sort of reserve of authority to be exercised in the treatment of exceptional cases.

17. At the same time I feel certain that if an attitude of fairness and confidence be assumed towards the ryots, and if proper relations be cultivated with them, it will be found unnecessary to resort to either of the above expedients, and that an increased revenue under the canal will not be slow to justify such a change in policy.

ENCLOSURE No. 1.

From A. L. LISTER, Esq., Special Sub-Collector in charge of Irrigation, Kurnool and Cuddapah, to the Acting Collector of Kurnool, dated Dhoor, 9th May 1878, No. 98.

In reply to your endorsement of the 25th October on Government Proceedings, 27th September, Public Works Department, No. 348-I, I have the honor to state that the delay in submitting this report has been caused by my inability to procure the records of the cases in question from Chagulmarry. I managed at last to procure them as I passed through this week.

2. Two cases were tried by the Sheristadar Sub-Magistrate of Sirvail, the accused were acquitted in one case because the Magistrate discredited the testimony of the bankers who were the only witnesses in support of the complaint; the second case was adjourned at the request of the complainant, and, as he was not present on the date of adjournment, the case was dismissed.

3. The Taluk Magistrate would, no doubt, assign the pressure of famine duties as his reason for transferring these cases to the Sheristadar, a newly-appointed Magistrate: I would suggest that for the future Taluk Magistrates should be directed to dispose of all irrigation cases which may hereafter be brought before them.

4. I enclose the judgment of the Deputy Magistrate in the case in which the defendants were fined 10 Rupees; the finding, in my opinion, discloses no criminal offence, for the marginal note is at variance with the plain words of the section.

5. This point raises the whole question, whether Magistrates have any power by law to control the distribution of water in irrigation channels; does a ryot who puts a dam across an irrigation channel to turn water into his field and who by doing so diminishes the supply of water to other lands, commit a criminal offence at all; no doubt if he is trying to filch the water without paying for it, he commits theft, but this is rarely the case; there is an absence of dishonest intention in most cases; the ryot means to pay the Company their charge for a supply of water, but he is dissatisfied with the supply the Company gives him, and he tries to supplement it by a dam of his own.

6. Is this mischief within the meaning of Section 425 of the Penal Code? I think not; look at the illustrations to 425. Even if the case can be ingeniously brought within the words of the section and the ryot can be said to have caused such a change in the situation of some property as to diminish its value, knowing that he is thereby likely to cause wrongful loss to some person, and if the distinction drawn by the High Court between the act itself and the probable result of the act be got over, can one look at the illustrations and honestly think that the framers of the Code, drafted before the days of Companies and Canals, intended its provisions to cover a case of this kind. Is a ryot who conducts to his fields through unauthorised channels water to which he believes he has acquired a right to be placed on the same footing with a man who scuttles a ship, burns a will, melts his neighbour's ice, shoots his horse, or tramples down his crops?

7. On the 12th November 1874, the High Court in quashing a case of mischief under 430, tried, I believe, by the District Magistrate of Kurnool, distinctly disposed of the question, that opening a sluice at a forbidden time amounted to an offence under Section 430, even though the destruction or diminution in the value of crops or lands of others might be a probable result of the act.

8. Even though the entry is upon a channel which belongs to the Company is it trespass? I think not; the entry is not made with intent to commit any offence; if it is, let that offence be stated in specific terms, and let the trial be for that offence.

9. Even if a Collector can lawfully promulgate an order on the subject, could disobedience to such an order be said to cause injury or annoyance to any person lawfully employed? I think not.

10. It is quite impossible for the Company to protect their numerous works and channels by civil actions; there must be some simpler and quicker remedy.

11. I would suggest that the Advocate-General's opinion should be taken on the point, whether the provisions of the Penal Code enable the Magistracy to

Mr. Crole—continued.

control the distribution of water belonging to the Canal Company, and if his opinion is an affirmative one, that plain instructions should be issued on the subject for the guidance of the Magistracy; if he should consider the general question too vague, this case might be submitted: a ryot, having applied for water, is dissatisfied with the supply given him; he puts a dam across a channel to carry more water to his field; the result of this act is a diminution of the supply of water to other fields; does this act constitute a criminal offence?

12. If it is no offence, some remedy must be supplied either by legislation or by extra charges for water improperly taken.

13. A great advantage of the latter plan would be the ease and certainty with which it could be enforced; it is often difficult to prove who erected a dam or who cut a hole in a channel bank, but what land is irrigated by the dam or through the hole is at once ascertainable.

14. I would, therefore, suggest that Government should issue a clear notification that the rates specified in the rules apply only to water taken by authorised channels, at stated times, under instructions of the distributor, and that permission should be given to Revenue officers to charge, but not for the Company to demand, up to Rupees 25 an acre for water taken from breached channels or diverted by improper dams, and double rate for water taken at improper times and in disobedience to the instructions of the distributor; the actual collections of such extra charges to be paid to the Company.

15. The matter is of pressing importance, for until effectual control over the distribution of water is secured and improper interference with it stopped, there can be no improvement in the management of the affairs of the Company.

ENCLOSURE No. 2.

From P. RAJARUTNUM, Deputy Collector of Peapally, to the Acting Collector of Kurnool, dated Koilkuntla, 15th January 1878, No. 20.

In reply to your endorsement, No. 2871, dated 25th October 1877, I have the honor to inform you that no complaints have been made by Canal officers of any improper interference on the part of the ryots with the distribution of water in the Koilkuntla.

2. At the irrigation settlement held in June last, the ryots of Kristipad, Harivaram, and other villages complained that sufficient water did not flow down the distribution channels. In December 1876 when I went to Joladarasi and Koilkuntla to start relief-works, the ryots stated that water was not supplied to them, although they had applied for it several weeks previously. I was told that one main distribution channel has to supply water for ten villages, and that it was not large enough to bring down a sufficient volume of water for the purpose. I noticed that the whole of the available supply had been appropriated, and not improperly, by the ryots of Ravenur, two miles north of Koilkuntla, and that very little water could be spared for the small patch of land irrigated in Vuppalur, half a mile lower down, although there was then a large quantity running to waste into the Kundar and other streams from the main canal. I enclose copy of a letter I wrote to Mr. Dumphy at the time. No reply was received, but it is possible the letter may have miscarried, for I found two months ago that letters addressed to him after the settlement took from thirty to thirty-five days to reach him by Post.

3. It seems to me that there ought to be no ground for complaint if the Company's officers would only arrange to give each ryot his full fair share of water necessary to mature his crop. It is more than doubtful whether this can be properly effected in the present condition of the main and minor distribution channels; and with the insignificant staff of bankers and amins now employed for regulating the supply of water, I think the capacity of the channels should be improved and an efficient water-distributing agency organised as recommended in my letter, No. 172, dated 23rd May 1877, before the Company's officers can hope to remove all cause for complaints.

ENCLOSURE No. 3.

From P. RAJARUTNUM, Acting Deputy Collector of Peapally, to the Conservancy Engineer, Donnipad, dated Koilkuntla, 9th December 1876, No. 362.

I was at Koilkuntla on the 2nd instant and again yesterday; I had been also to Joladarasi, Dodanala, and Vuppalur. The ryots complained that canal water has not yet been brought to their villages. They have now evidently opened their eyes, and are most anxious to sow dry crops with canal irrigation. It is greatly to be regretted that arrangements have not been completed to meet their demand. The ryots tell me that one sluice has to supply nearly ten villages, and that consequently a sufficient head of water is not brought down the main distribution channel to afford irrigation for all the villages affected. I do not know how far this is correct, but I noticed on the 2nd

instant* that the ryots had not enough water even to bale to their cholam fields. All the available supply was appropriated by the Ravenur people, and there was not a drop of water flowing down the branch which runs past Vuppalur. I beg you will issue such orders as you deem proper to supply irrigation to all the villages below Ravenur. I can give you any number of coolies for working at the channels.

ENCLOSURE No. 4.—Copy of Judgment in Calendar Case No. 27 of 1876 in Nandial Deputy Magistrate's Court.

From W. D. HORSLEY, Esq., Collector of Cuddapah, to the Acting Secretary to the Board of Revenue, dated 22nd July 1878, No. 433.

I have the honor to enclose copy of a letter from the Special Sub-Collector in charge of canal affairs to the Collector of Kurnool, suggesting that rules should be framed to prevent ryots taking water in an unauthorised manner from the Irrigation Company's Canal.

2. The subject is connected with something that has occurred in the Kurnool District, and of which I am ignorant. The only criminal offence that can be committed in taking water is theft, but Mr. Lister has discovered that the act seldom constitutes such an offence, because the ryot has no intention to evade payment for the water. He suggests a reference to the Advocate-General, which I do not think necessary, or that rules authorising additional charges for water surreptitiously taken should be framed. Such charges are always imposed when water is taken without a written application, and they might be equally imposed when water is taken without the sanction of the distributor, and I do not know that any special rules are required on the subject.

3. In such cases there is a difficulty in determining whether the ryot has received all the water to which he is entitled. The banker, who is apparently the distributor, says he supplied the proper amount of water. The ryot says he did not receive all he was entitled to, because he refused to fee the banker, and therefore without the knowledge of the banker he helped himself. This is, I imagine, what Mr. Lister refers to when he says that water is seldom taken in order to evade payment. There is no doubt that the ryot in this requires protection, and I would suggest that the distribution should not be left to low-paid bankers, but that the village authorities should be present at the sluice to see that the interest of the villagers are attended to, and that the banker supplies all the water he has been directed by the Canal officer to furnish to the village. This will put an end to the frauds of the bankers, the complaints of the ryots will cease, and there will be no excuse for taking water surreptitiously.

Mr. Crole—continued.

ENCLOSURE No. 1.—Copy of Mr. Lister's letter to Collector of Kurnool, 9th May 1878.

The foregoing papers relate to the complaints of improper interference on the part of the ryots with the distribution of water from the Madras Irrigation and Canal Company's Canal, regarding which a report was called for in G.O., dated 27th September 1877, No. 348-I, Department of Public Works. They will be submitted for the orders of Government with reference thereto.

2. Mr. Lister has carefully investigated the circumstances out of which the complaints arose, and points out the difficulty of dealing with cases of the nature referred to, inasmuch as there is seldom any dishonest intention; the ryot is perfectly willing to pay the regulated charge, but being dissatisfied with the supply furnished supplements it by a dam of his own. The Collector of Kurnool encloses a report from the Deputy Collector of Peapally bearing out the statement as to inadequacy of supply. Mr. Lister suggests that the Advocate-General's opinion should be taken on the point whether the provisions of the Penal Code enable the Magistracy to control the distribution of water belonging to the Canal Company, or that the Revenue officers should be vested with power to charge up to Rupees 25 an acre for water taken from breached channels, or diverted by improper dams, and double rate for water taken at improper times and in disobedience to the instructions of the distributor.

3. Mr. Crole considers that it is unnecessary to obtain an opinion on the legal question, as the High Court have already decided that diversion of water under circumstances similar to those now under discussion does not constitute the offence of mischief. He points out the impolicy of such prosecutions as those which have been instituted in connection with canal irrigation, and supports Mr. Lister's proposal in regard to the imposition of penal rates. With the increase of the staff of Curnams and Revenue Inspectors lately recommended for sanction, he considers that the formality of previous application for water may be abolished. Mr. Horsley does not consider that any alteration of the rules is necessary to warrant the imposition of additional charge for water taken surreptitiously, and suggests that for the protection of the ryot the distribution should not be left to low-paid bankers, but that the village authorities should be present and see that the interests of the villagers are attended to.

4. The Board think that the view taken of the legal question is correct; but, apart from this consideration, they entirely concur with Mr. Crole as to the inexpediency of the action taken at a time when great allowances should have been made and when an opportunity was offered of diminishing the strain on the relations existing between the representatives of the Company and the agricultural community. When the revenue staff is strengthened it may be possible to allow the ryots greater freedom in the matter of taking water without prior application; but to meet cases of diversion, construction of unauthorised dams, &c., power to levy penal rates should be conferred on the special officer entrusted with the administration, as the existing rules do not sufficiently meet the case. Under Clause 4 of the rules an enhanced charge is permissible and the right to remission is forfeited when water is taken without application or registration, but no penalty is attached to any interference with the distribution when application has been duly made. The Board, therefore, support the amendment suggested, which might be embodied in Rule 4. As regards protection of the ryots from fraud

Mr. Crole—continued.

on the part of the bankers, the Board do not see how the presence of the village authorities who have other duties to attend to can be required at all times, but Mr. Lister will consider what remedy can be applied. The Board concur with him in thinking that cases connected with breaches of canal rules should not be referred to Taluk Sheristadars for disposal.

(True Copies and Extract.)

(Signed) C. A. GALTON,
Acting Secretary.

From C. S. CROLE, Esq., Acting Collector of Kurnool, to the Acting Secretary to the Board of Revenue, dated Peapally, 7th September 1878, No. 351.

I have the honor to forward a very lengthy report on the present position of the Madras Irrigation Company's Canal by the Special Sub-Collector for Irrigation.

2. He assumes at the outset that the Canal is a failure. This and the fact that, although the Canal has been open fifteen years, the Company is practically insolvent are too painfully evident. Mr. Lister's remedies for this state of things consist in various improvements of administrative detail in view to adapting the Canal, as he says, to the wants of the people. But it seems clear that such a mode of treatment, however suitable to effect improvement or remove superficial defects, and which Mr. Lister himself justly describes as neither brilliant nor heroic, is quite out of place when dealing with a state of affairs such as this Company exhibits. It can never convert total failure into complete success. Superficial reform must necessarily be inert in the treatment of radical unsoundness.

3. I may briefly say that I concur in most of Mr. Lister's proposals, which are good as far as they go. I specially notice the appointment of a permanent Sub-Collector with head-quarters at Nandial (paragraph 41); the proposal to make it obligatory on the Chief Engineer and Manager to address the Collector before carrying any matter to Government (paragraphs 46 and 47); the abolition of applications for water, a proposal which, by the way, has already been made by myself* (paragraphs 70 to 85); the one-acre minimum with one-fourth acre increment for sub-divisions of fields (paragraphs 86 to 93); the proposal regarding the revision of Rules IV, V and VI (paragraphs 102, 114, and 118), and the recommendation that village officers should not be in any way subordinated to the officers of the Company, and should not have to attend them to make measurements of crops, which, if they wish to make, they should do themselves, or apply to the Sub-Collector (paragraphs 111 to 113).

* Vide paragraph 15 of this Office letter, No. 271, dated 13th July last (embodied in Board's Proceedings, dated 2nd ultimo, No. 2138).

4. This last point has a direct bearing on the strict observance of the contract under which the Government engaged to purchase the water from the Company. I am aware that the Chief Engineer was permitted to supersede this provision by the rule making applications in writing for water to the Company's officers, with whom was afterwards joined the Village Curpan, an indispensable preliminary to legitimate irrigation. But this plan was conceived in defiance or ignorance of native habits, and as it has failed miserably and entailed a very large amount of unnecessary trouble and many complications, besides injuriously affecting the guarantee payable by

Mr. Crole—continued.

Government, permission should be peremptorily withdrawn. Government,—and Government alone,—will then be left to deal with the Company to purchase and to pay for what water is utilised by its ryots. The position thus occupied, resting as it does on the terms of the contract with the Company, will be a strong one, and is as simple as it is intelligible. The present relations can be described by none of these terms.

5. In the above and several minor details I concur with Mr. Lister, but there are certain points in his report to which it is impossible to assent. Among these the first is his wholesale condemnation of the Revenue administration of this district. In reference to this matter he has gone into detailed cases of error, ignorance, or irregularity on the part of certain officers of the district. Not one single complaint of this sort has ever been made by Mr. Lister till now, and I apprehend that a general report was hardly the place to spring on the Collector of the district,—a sweeping charge against its administration. If Mr. Lister found defects and shortcomings, the experience is not one unknown elsewhere. Two courses were open to him, either to redress them himself by punishing offenders and otherwise, or, in cases with which he felt himself incompetent to deal, to bring the matters to my notice as they arose. I have been too short a time in charge of the district to be connected either with good or with bad management, both of which take a considerable time to bring about. The experience I have gained, however, leads me unhesitatingly to say that there is no such startling difference between the village and Taluk Revenue staff here and elsewhere as Mr. Lister's unbounded strictures would seem to imply. The assertion, for instance, that Curnams are usually ignorant of the Kistbandi of the district is simply incredible, and I feel certain that if the Special Sub-Collector intended higher authority to infer that the Revenue staff in Kurnool is by comparison with the average of other districts exceptionally bad, the condemnation will not stand the test of facts. It would be quite easy in either of the last two districts in which I have served, Chingleput and Nellore, to find instances of mismanagement and ignorance quite as glaring as any of those quoted against Kurnool. I do not believe that even allowing for the strain imposed by the famine operations on the village and taluk establishments, this cause has had any appreciable effect on the fortunes of the Company.

6. In paragraphs 198 to 204 Mr. Lister seeks to prove that a legislative enactment is necessary for the due management of the Canal. With reference to this it is merely necessary to remark that he has not made out his case of absolute necessity, without which any addition to the Statute Book is much to be deprecated in regulating the relations of the Madras ryot with the Government. Legal forms, pains and penalties are inelastic and irritating and are foreign to the genius of the Madras ryot, whose experience of the instalments of legislation already given to him has not been such as to decrease his dislike of such measures.

7. Little less than one-fourth of Mr. Lister's report is devoted to showing, directly or indirectly, that the Rupees six an acre water-rate should not be lowered. His line of argument is not altogether devoid of obscurity or free from contradictions; but as far as I understand him, he thinks the present water-rate to be fair and equitable on the ground mainly that it is not prohibitive, although he admits that it just touches the line, and he would not have any change at present.

Mr. Crole—continued.

8. The arguments adduced by the Special Sub-Collector may be left to speak for themselves. I merely venture the following remarks. The Madras Irrigation Canal is a commercial undertaking with water for sale. Its fate depends on the amount it can dispose of, and since it offers the commodity in a tract of country in which it has not hitherto been used for irrigation, the rate should be attractive. Moreover, the charge levied by Government for the same article cannot well be exceeded without a check being given to the Company's operations. Now, what does the Special Sub-Collector admit? Nothing more nor less than that when under the progressive rates (cowles) the charge reaches Rupees 5, the land is mostly thrown out of irrigation, and is brought under dry cultivation again.

9. It is a fact that in the commanded villages of Ramallakota, Nandikotkur, Nandial, and Sirvail, the taluks almost solely affected by the Canal, the average charge for first-class irrigation under the Canal is Rupees 2 per acre more than the Government charge for lands of similar quality. This makes a difference of 32 per cent., or, adding second crop charge, of no less than 39 per cent. Mr. Lister apparently thinks such a difference slight. No farmer either in this country or at home would agree with him.

10. In second-class irrigation again the difference is Rupees four to Rupees two, or 50 per cent. in favor of the Government rates.

11. Mr. Lister urges that it would be hard upon the Company to ask them to reduce their rates, and instances the loss which followed the reduction in 1874. He forgets, apparently, that the year in question was marked by an abundant rain-fall which would have caused a decrease of irrigation under any scale of rates. It is also quite patent that some immediate sacrifice must be accepted when steps have to be retraced. A temporary loss is a small price to pay for the opportunity of retrieving a mistake. That such a mistake has been made cannot be seriously denied, when the best apology that can be made for rates, which are admittedly not attractive, and which are very much, and not merely a trifle, higher than Government rates, is only that they stop short of being prohibitive. This surely is not the way of securing a heavy demand and a large sale for the Company's wares. As well might it be said in defence of the system prevailing in the wretched rack-rented Zemindaris of this Presidency that the rent exacted is fair, because those estates are not left waste and deserted. The ryot must live. He is a long suffering being, and if the Circular increases taxation he lives on less than he did before. That is the sole difference to him, but the country is the poorer also.

12. In the case of the Canal, the bulk of the ryots finding no inducement to take canal water do not take it; and this is just where the mistake of a so-called fair and equitable rate, stopping short of being prohibitive, tells on the returns of the Company. When there are no attractions to do so, it is not in reason to be expected that the ryot will forsake the traditions of his forefathers, convert his stock, change his modes of cultivation, transform his land, import labor and go to great inconvenience and expense merely to pour money into the coffers of a Company whose officers seize the slightest pretext of irregularity in his mode of taking water to throw him into jail.

13. In connection with this subject, I observe that Mr. Lister states that he has varied the settlement made in Fasli 1287 by Ramachandra Row, Irrigation Deputy Collector, on the ground of its inequality. This proceeding was taken without my knowledge

Mr. Crole—continued.

and was *ultra vires*, being without the sanction of the Board and Government, which should have been first obtained.

14. Having now noticed the salient points in Mr. Lister's report, I find with disappointment that he offers no solution to the question as to how the Canal is ever to be made to pay a fair profit on the outlay, or as to how Government is to be relieved from the continued pressure of the guarantee which should long ere this have sensibly diminished, if, indeed, it had not totally disappeared.

Vide especially—

- (a) Despatch addressed by the Government of India, to the Secretary of State, dated 4th June 1870, No. 72, embodied in G.O., dated 4th July 1870, No. 1609, Public Works Department.
- (b) Secretary of State's Despatch, dated 12th April 1876, embodied in G.O., dated 23rd May 1876, No. 1296, Public Works Department.
- (c) G.O., dated 9th February 1876, No. 371, Public Works Department.

15. The figures illustrating the Company's past and present financial position are all before Government embodied in periodical Proceedings.

16. The causes of the Company's failure must, in my humble opinion, be looked for much deeper than in alleged departmental irregularities or administrative defects, which, although they might injuriously affect receipts, are powerless to make total shipwreck of a great undertaking.

17. As an immediately remunerative work the construction of a canal through a very sparsely populated tract, composed largely of black cotton soil, in itself better adapted for dry than for wet cultivation, must now, by the light of experience, be admitted to have been a mistake, being work unsuitable for private enterprise. The sole present value of the Canal is as a provision against bad seasons which may be taken as occurring once in ten years. The profits thus gleaned will never suffice to repay capitalists. Supposing that the ryots were as eager for, as they are averse to, wet cultivation, the labor required to raise paddy is so infinitely in excess of that required to raise the nutritious cholam and remunerative cotton crops which the soil yields with little effort that any sudden conversion of large tracts from dry to wet was in the nature of things impossible within the present generation. The required population does not exist and the importation of the necessary labor, even if it existed, pre-supposes an amount of capital and enterprise which the ryots do not possess.

18. Next in order in the list of causes of failure must be placed the great original cost of the construction of the Canal over and above what was necessary, and the absurdly extravagant scale of expenditure on salaried staff which the Company have all along affected and still continue to affect. I have already brought to notice elsewhere that this latter item, even now that the Canal has been fifteen years open, swallows up more than the total earnings.

19. The fourth cause is the exorbitant charge for water. This has already been touched on above.

20. The mismanagement of the Company's officers, their hostile attitude to the ryots, their disregard of their habits and prejudices,

Mr. Crole—continued.

their failure to adapt the Canal thereto, and the system of exaggerated complaints and argumentative correspondence pursued by the Chief Engineer and Manager, by alienating ryots and officials alike, have also contributed to place the undertaking in its present embarrassing position. I need, perhaps, hardly remind the Board that in making these remarks I do not speak from any personal bias, as there has been none of the unpleasant discussions alluded to since I joined the district.

21. The remedy I should propose is very simple. The scheme has for its sole object the avoidance of throwing good money after bad, strict economy, and good administration.

22. It is quite clear,—a glance at any schedule of the Company's affairs demonstrates the assertion,—that, as things are, both the shareholders and the Government lose heavily, and that there is no present prospect of material improvement. Ten years, certainly, have still to elapse before the State can of right take over the works at the market-price of the shares. These shares have at present no real market-value, that is to say, they are hardly ever quoted. On the only occasion on which I have observed a transaction in them during the last five months the price was 107, but such an exceptional quotation cannot be taken as a reliable guide to the opinion of the money-market or to the true value of the shares. Under these circumstances, it does not seem unreasonable to suppose that

the shareholders would listen favorably to overtures from Government, having for their object the return to the former of a fair sum for their property. The gain to the shareholders would be that they would recover some of their money now uselessly locked up. The gain to Government would be an immediate saving of at least Rupees 1,00,000 per annum on the pay of unnecessary staff and the bringing of the concern under direct management. An untold amount of power is worse than wasted at present owing to the numerous departments who have to do with the work and the amount of useless correspondence thus produced. The District Engineer could easily manage the Canal with a Royal Engineer, Executive, and an Assistant Engineer in immediate charge. The salaries of these officers, with a subordinate staff on the same scale as that allowed on other Government works of a similar character, would be the sole charge on Government. The Revenue staff of the district without increment could attend to the revenue and general administration.

23. I have made bold respectfully to throw out the above scheme for getting quit of the burden of the anomalous and costly responsibilities entailed by the connection of the Government with this Company after giving much study and attention to its history and affairs, as every day serves only the more forcibly to drive home the conviction that no change less radical offers any well-founded hope of real improvement.

Q. 24.

Where the financial prospects of projected irrigation works are not such as appear to justify the outlay of public money on them in the expectation of the income being at an early date sufficient to cover all the expenses including the charge of interest on Capital Outlay, I do not think that a special rate to cover the deficiency

Mr. Crole—continued.

might properly be charged either on the district, for the benefit of which the works are designed, or on the land that would be protected. My objections are that all such works are Imperial, and, as such, should form a charge on the general revenues. Lands benefited by such projects prevent the depletion of other districts of the grain produced in them *quoad tantum*. The material wealth of the whole country is thereby increased, the prices of food are lowered and equalised, and the effects of famine diminished.

Considering also that those very works which enable other districts to export grain to the less favored were originally executed, partly, of course, at the expense of the latter, out of the State funds, it seems unjustifiable to tax these latter for the execution of the new works alluded to. I take it that there are few large works in existence whose construction could be defended if the canon contained in this question were rigidly applied. It is even less open to question that no district or tract in this Presidency, however remote from a new work such as that alluded to, could be said to derive no benefit from it. The construction of such works cannot be safely regarded otherwise than from an Imperial stand-point. The State as landlord and as the head of the whole agricultural community should pay for them; a *general* irrigation cess is what I advocate, but only in the event of a candid examination of the finances requiring it; but it has long seemed more than doubtful to my mind whether such a measure could be defended in presence, for instance, of the Bengal permanent settlement and of the very small per-centage of the land-revenue of Madras, which is spent on the irrigation works of this Presidency.

Q. 25. This question does not apply to Kurnool.

Q. 26. This question has been raised before (1869), and has been considered and reported on by me as well as several other Revenue officers in Madras. I am quite clear that the project of handing over the care of any of the tanks to the ryots would result in loss to the State and the country alike. Interests in villages are, as a general rule, too divided; the art and power of combination has, under our Government, been weakened; the very knowledge of simple hydraulic engineering, for which the Madras ryot was at one time famous, has nearly died out for want of exercise; under our rule the admirable Madras village system has decayed, and economic and administrative conditions have undergone great changes. These and similar causes make it impossible for the present to hope for any success for a proposal which might have worked fairly if introduced fifty years ago. There is a prescriptive duty imposed on every ryot holding land under an irrigation work of contributing the labor required for its protection and slight repair. This used to be called *Kudimaramut*, or customary labor. The custom is most unfortunately for the country fast dying out. Its decay dates from the present constitution of the Public Works Department, which, by relieving the Revenue Authorities from direct responsibility, for and interest in, the repair and up-keep of works, has entailed a vast amount of unnecessary expenditure on the State. If the Collector had an Engineering Assistant, something in the same way as he has a Police Assistant, there can be little doubt that the present unsatisfactory condition, of the smaller irrigation works especially, would soon cease. It is a suicidal policy to break up the administration of a district into weak and peevish departmental fragments, owing allegiance to as many departmental heads. *Kudimaramut* might still be revived under the plan suggested, and the

Mr. Crole—continued.

interests of Government and the ryot, being in the hands of a strong central authority in each district, would be properly conserved instead of being endangered in the interests of so-called departmental independence. Cases proving this are constantly cropping up. A flagrant instance regarding a breached tank, 20 miles from the head-quarters of this district, at this moment condemns this existing system. Touching the question of funds, my strong opinion is that these tanks are the most paying works we have. As in the case of all structures, a part of the gross revenue derived from them is properly and strictly debitable to maintenance. It is not, and cannot, all be considered pure income. That the duty of maintenance rests on Government, and not on the ryot, is proved by the admission of Government, made a hundred times, that when it supplies no water, the ryot is to pay no land revenue. The observance of a plain business-like rule, to reserve each year a per-centage of the irrigation revenue to meet charges for accident and wear and tear, would place these works in a sound condition. At present the whole revenue is swept into the coffers of the Imperial Government, and plain duties are overlooked. I am in favor of giving the Collector the absolute disposal of the allotment of a certain portion at least of the per-centage of the irrigation revenue alluded to. This per-centage should not be less than 15 per cent., of which the Collector should have 10 per cent. for the maintenance of his irrigation works, the remainder being left at the disposal of Government for special allotment. We all recognise the necessity for spending money to maintain roads in efficiency. It is strange that the far more urgent duty of setting aside a maintenance grant for irrigation works seems still to require demonstration.

Mr. Foster.

Q. 12.

The capital expended to the end of March 1878 in the construction of the main canals and the chief distributaries is Rupees 65,81,783; the interest, calculated on which would be at $4\frac{1}{2}$ per cent., Rupees 2,96,180. The average annual cost of maintenance is Rupees 1,74,628; but if we only take the last four years, (and it must be remembered that as the irrigation system is extended, the annual cost of maintenance will be proportionately increased) the average annual cost of maintenance is Rupees 1,93,248. For these figures up to the year 1874 reference can be made to G.O., dated 21st August 1874, No. 2365, and Proceedings of the Board of Revenue, dated 10th September 1874, No. 6270.

The area in Fasli 1286 irrigated under the anicut canals (Government Inam and Zemindari lands) is 558,480 acres. Hence, the amount spent per acre on the construction of the canals is about Rupees 12, and for the maintenance of them each acre of land irrigated has to pay about six annas. Paddy and sugar-cane are the two chief crops grown in the delta; the value of an acre's outturn of paddy is about Rupees 30 and of sugar-cane Rupees 75. The value of an acre's outturn of "dry" paddy would be about half the other, sugar-cane could not be grown without irrigation.

Q. 13.

The rates paid to Government for anicut water for an ordinary wet crop, such as paddy, &c., is Rupees 4 per acre; but in the case of sugar-cane and betel leaf, which remain on the ground for double the time of an ordinary crop, the rate is Rupees 8. Dry crops irrigated pay Rupees 2 per acre. We may take it that the rent on irrigated land may be double that on unirrigated. The rent paid by the proprietor per acre in the shape of land-revenue varies from four

Mr. Foster—continued.

annas to ten rupees. There is no reason why a proprietor should not contribute to the State in return for the advantages he obtains from canals constructed and maintained at the public cost, but there is considerable difficulty in making him pay. If we charge him either extra rent or water-tax, he transfers the burden to the cultivator; very seldom does he think it worth while to spend any thing on the land. The result of this is, either that the land becomes impoverished for want of improvement, or the cultivator gets into the hands of the sowcars who derive all the benefit. It seems to me there is a marked distinction between the generality of the actual cultivators in Zemindari lands and those in Government lands; from this remark I exempt those Zemindaris which have been under the management of the Court of Wards. In the case of lands where the land-revenue is not liable to revision, I know of no other plan of obtaining payment for water but by charging a water-rate; and this, as I have said before, is sure to be transferred by the proprietors to the cultivators. Where the land-revenue is liable to revision I would prefer, instead of a water-tax, a fixed consolidated assessment, but I would have it revised oftener than is at present contemplated. Where the land is not charged with revenue a water-rate is the only way.

Q. 14.

Canal dues are recovered in the same way as arrears of revenue under Madras Act VII of 1865. There has been found no difficulty in applying this law.

It is true that water is used in too lavish a manner when the charge is made on the irrigated area, or otherwise than by the quantity supplied. Raising the water-rate would not have the effect of preventing this, nor is it easy to say what remedy could be applied. It might be possible to make a reduction in the rate for people that applied for water every other day instead of every day, and by that means induce economy, but such a plan would be difficult while the notions of honesty of the people employed in distributing the water remain as they are at present.

I do not think that raising the water-rate would have much effect in throwing the poorer crops out of irrigation, and in confining irrigation to the more paying crops, for the people have already had time to find out which lands are best suited for each kind of crop, and the rate of water-tax would not affect this. Irrigation itself has had the effect of throwing the poorer crops out of cultivation, but the result is, in the delta, to make the people live on the better crops and to be able to procure them.

Water is never charged for by quantity, it would be impossible to do it in ryotwari lands, but I do not think it would be difficult to do it in the case of whole villages or blocks of villages for which the proprietors pay the water-rate. In these cases I think it would be possible to measure the water entering the village, and then leave it to the proprietor to distribute.

In one Zemindari of this district the proprietors pay a lump sum for the water supplied to them. I cannot say that I think the system is, on the whole, a good one. I am of opinion that the estate gets an unreasonably larger quantity of water than it pays for. If the system were to be that the Zemindars should compound for the whole water entering their lands through a particular aperture, I think the system would be good. The present system by which the amount of composition is fixed by the area that we know to have been cultivated in former years, I do not think very advantageous to Government. We have no accounts to show what is the extent of land

Mr. Foster—continued.

cultivated in Zemindaris, and we cannot fix the amount of composition properly in this manner, unless we have trustworthy accounts showing former cultivation. Where the contract system is adopted, the proprietors themselves arrange for the distribution of the water. I think that a scheme might be introduced for making compulsory the system of contract in the case of large blocks of land where the water can be measured where it passes through a given aperture.

Q. 15. I take the average profit to a ryotwary ryot to be Rupees 15 an acre after paying the Government assessment and water-rate, which would be about seven or eight Rupees ; that is to say, the actual profit after deducting only the expenses of cultivation would be about Rupees 22 or 23 ; the margin of profit usually supposed to go by right to the ryot is half of this ; hence, by raising the water-rate we should not trench unduly on the ryot's profit, but the above figures I have given for ryotwary lands. I do not feel so sure that the ryots in Zemindari lands could bear much extra water-rate.

If we raised the water-rates on land cultivated by a ryot under a lease from a Zemindar, the Zemindar himself would really have to pay the extra rate, but he would probably find even during the currency of the lease some means of making the cultivator share it with him, and it would be very unlikely that he would renew the leases except on terms which would amply repay him for any thing extra he had paid.

Q. 17. It is difficult to say whether any mischief has been done by canal irrigation by sickness. The statistics of births and deaths are not sufficiently reliable even now, and they were worse before the anicut was built, so that it is impossible to compare the two with any good effect. Before the anicut was made the delta still had the same quantity of water, and perhaps more than it has now, but it was distributed in a less orderly manner. There is no doubt now that there is a marked distinction in the statistics of fever between the delta and the upland taluks, and I am inclined to think it is a different type of fever. The delta fever begins one month earlier in the year than the upland fever, though they both remain at their height for about three months, from July to October ; in the upland taluks the fever decreases, but in the delta it increases during those months. I certainly think that irrigation (whether by distribution by canal, or by overflowing of the river I cannot tell) has some effect on sickness. I have not heard of any injury done to the land by raising the water level or by the production of efflorescent surface salts.

Drainage has been carried on to a considerable extent of late years ; it was, in my opinion, neglected at first ; it would certainly have increased greatly the expense of the works in the first instance. Drainage should, I think, be carried out so as to afford no hindrance to the natural flow of water, except in such cases where the water is held up for use, and is not allowed to become unpleasantly stagnant. We have not yet done all that might be considered necessary, but drainage works are in progress.

Q. 19. On the whole, the effect of canal irrigation on the character of the cultivation has been to reduce the irrigated area of the poorer grains and to increase the area of the better ones ; but, at the same time, the better ones have also become the chief part of the food of the people. They say now cholera and raggi disagree with them, while in other districts (and probably here before the anicut), rice is said to have the same effect.

Mr. Foster—continued.

The cultivation of rice in supersession of the poorer grains is doubtless due to the relative profits in the case of rice being greater than in the case of the poorer grains.

The area irrigated during the last ten years under the anicut and other sources is given below :—

Years.					Area irrigated.
1868-69	..	..	..	..	497,059
1869-70	..	..	..	..	529,654
1870-71	..	..	..	..	549,498
1871-72	..	..	..	..	527,852
1872-73	..	..	..	..	627,502
1873-74	..	..	..	..	609,860
1874-75	..	..	..	..	614,201
1875-76	..	..	..	..	574,082
1876-77	..	..	..	..	587,718
1877-78	..	..	..	..	617,861

The figures really show a steady increase. It used to be the rule that if any land were irrigated for three years consecutively, it was to be classed as wet for ever; the extent was reduced in 1873-74 by striking out land that was found no longer capable of being irrigated, and the extent was again reduced in 1875-76 by the permission accorded to the ryots of relinquishing water in any year they may choose to do so.

In this district I have no reason to suppose that prolonged irrigation damages the land. The water of the Godavari is so full of silt that it replaces the soil that it washes away, but I can understand that clear water irrigating shallow soil on rocky ground would do no inconsiderable harm. Since the introduction of anicut irrigation there seems to have been a diminution in the cultivation of second crops. The water in the river does not in many years last long enough to allow the ryots to sow with a feeling of certainty that the second crop will come to maturity; but whether the diminution in the cultivation of the second crop is due to this or to the fact of the first crop being so much better that it exhausts the land too much to allow of its producing another crop so soon, I cannot say.

Q. 21.

The officers of the Public Works Department have entire control over all the main channels and sluices in the delta; they give the water from the main channels to each village, and the village officers distribute it to each field. The Revenue Officers are responsible for collecting water-rates. The actual agency employed in keeping the works in proper order and in distributing water equitably to the ryots should be kept separate, but there should be one head in the district. There must be a professional man responsible for the works being maintained in an efficient condition, but his professional experience will not generally qualify him to settle questions of right to the water or to judge impartially between Government and the ryots in the case of remissions. An officer in charge of the works would be liable to consider an application for remission as a charge against the efficiency of his own works; and liberality in the case of remissions is, in my opinion, more profitable than very strict economy.

Again, the people of the villages have got used to obeying orders from Tahsildars, Revenue Inspectors, and others of the Revenue Department, while they resent any show of authority from others, unless those others can exercise a personal influence over them; it is, of course, not to be supposed that every one in a department should be able to exercise this personal influence, and as the people who have

Mr. Foster—continued.

to come in contact with the ryots in the matter of the distribution of water, must belong to one department, it is advisable that they should belong to that department which the ryots have been accustomed to look up to, from generation to generation, as their fathers.

Q. 22.

In this district the canals are entirely under the control of the District Engineer, and also the main channels from them. The Revenue Officers give him information as to the extent of land, and its situation to be irrigated. The Engineer Department, then, will arrange for the opening of the sluices of the particular channels for such a time as will allow sufficient water for the area to be irrigated under each, and they will also distribute the water to the villages. It is the business of the village officers, then, to distribute the water to the different fields. The water-rate on the land is collected also by the village authorities.

The system has, on the whole, been found to work well in practice, and the defects are not worth mentioning here.

There is a special canal law, but, as far as canals are concerned, it is of very little use, and the canals could be managed equally well without it.

Q. 23.

In this district the extension of the use of canal-water has not been slow. There are no obstacles to it here, nor are any of the canals in an unsatisfactory condition as far as their utility is concerned. In regard to the works of the Madras Irrigation Company, the extension of the use of canal-water has been slow. That canal has been taken through country in which, up to then, irrigation was almost unknown; the nature of the soil generally, in the opinion of the ryots at least, was not such as would allow wet crops to take the place of dry. Again, the lower subordinates of the Company would often conduct themselves towards the village authorities as their superiors, and the village authorities on that, would not allow any of their villagers to take the water. As I have said before, the villagers will not listen to any one who comes in the name of a department or a Company, with the single exception of the Revenue Department, unless he can force them to listen by his own personal influence. The subordinates of the Company have failed to exert this influence.

No difficulties need be met with in preparing land for irrigation for the first time. All fields can be sub-divided by the ryots. They only have to put up boundary marks, and to apply for the sub-division, and it is done. Practically, there is no limit to the sub-division which they can have. Also, if there is sufficient water in the canals, it will be given at half rates to people who are wanting to prepare their land for irrigation for the first time. There is certainly here no necessity for making advances to cultivators to adapt their land for irrigation. The expense and trouble of thus preparing the land must be very small, in cases where, as in the Godavari Delta, the soil is better adapted for wet than dry crops. The shortness of supply during the hot season has not affected the progress of canal irrigation.

Q. 24.

I can hardly imagine the case in which a work would be undertaken for purely local benefit, unless it was likely eventually to pay its expenses. In such a case, I think theoretically a special rate would be the only way to make good the deficiency. The compulsory charge should, in my opinion, only be levied on the people benefited, but then it is difficult to find out who are the people really benefited,—the cultivator, the consumer, the merchant, the sowcar divide the profits between them. And the consumer's share is generally the least, although the most prominently brought into notice. In the

Mr. Foster—continued.

matter of the profits of any undertaking in this country, it is almost impossible to tell really on whom they fall.

- Q. 25. . Where the canals have intercepted old water-courses, or otherwise prevented lands from being irrigated by the same means as they were before, the owners of those lands have prescriptive right to the free use of water from the canals. Also under a few of the tanks some lands are entitled to water free of cost. It is very doubtful how these rights began under the tanks, but it is probable that the source of supply to the tank had been utilised by these lands before the water was intercepted by the building of the tank. These rights have caused no inconvenience in respect to the general utility of the works, but in the case of the canals it would, in my opinion, have been better to buy out these rights at first. The people themselves delayed some time in bringing forward their claims, and when they did so, it was too late to test the accuracy of old accounts, and it was necessary for Government to act with strict justice, they consequently had to err on the side of liberality.

It would be even now advisable to buy out these rights, supposing money was available, and supposing there was the least idea that it would be necessary to raise the water-tax. Their rights would now be valued in proportion to the rate now obtaining, and if, after some time, the rate were raised on the other lands, the owners of the exempted lands would have the value of their property enhanced, and there is no obligation on us to bring this about.

I do not know of any cases in which claims to the water in the upper part of rivers have obstructed the application of the water in the lower parts to the purposes of irrigation. If this were to occur in parts where the whole river lies within the jurisdiction of one Court, there would be no difficulty in the matter being settled by the ordinary Courts, but the matter would be more complicated if, for instance, the Sebry water were intercepted in Jeypore, and thereby caused inconvenience to the ryots of the Rekapalli Taluk of this district; but I think that the principle to be adopted in settling such disputes should be, that no new use should be made of the water in the upper part of the river which would deprive the people in the lower part of water for purposes to which they had a prescriptive right to apply it.

- Q. 26. In the case of small tanks used for irrigation, I think it would always be expedient that the duty of carrying out all necessary repairs or works for securing the irrigation in an efficient condition should be imposed on the cultivators or proprietors who benefit by the water. In the case of larger tanks which require engineering skill and practice to keep in proper order, the matter would be more difficult, but the principle should apply to all tanks.

In old times the people themselves, I believe, did carry out the repairs and works without any assistance from Government, and even to some extent now they are supposed to be liable to do it, but there is no law by which we can enforce this duty.

In the case of tanks that have been out of repair for a long time, they are sometimes given up to the proprietors of the lands under them on payment of the assessment on the bed of the tank; the proprietor, then, is at liberty to repair the tank, and use the water without paying any extra tax. This I consider to some extent a good arrangement; as the tank has been out of repair for a long time, the land only pays dry assessment; the only alteration that I would make in it is that I would require the proprietor to put the tank into order.

Mr. Foster—continued.

I would extend the principle to the case of all small tanks, giving up even those that are in repair. I do not believe it can ever be of any real benefit, either to Government or the people, to allow tanks that have once been used for irrigation to be abandoned as tanks, unless their place is taken by other irrigation works.

The duty of keeping the small tanks in order should, I have said, be imposed on the proprietors or cultivators who benefit by the water. If the tank is in proprietary land, the proprietor should be the person with whom we have to deal. If it is situated in a Government village, we might make the land over to any ryots of the village who wish to take it up. I would, in all cases, reduce the rent payable for the water to Government, and then allow the people who take up the tanks to charge what water-rate they like to the people using the water, and it should be with these people, jointly and severally, who take up the tanks that we should deal in enforcing the repairs.

These tanks should be regularly inspected by an Engineer Officer, who should certify to the repairs required, and on that certificate the Revenue Authorities should call upon the people with whom we have to deal to carry out the repairs within a specified time. Should they fail to do so, the repairs should be carried out by Government, and the expenses of the repairs, together with a fine, should be recovered from the people we deal with as arrears of land-revenue.

If no one in a Government village is willing to take up the tank on these terms, the duty of keeping the tank in order should devolve on the head of the village. Every ryot holding land under the tank should be liable to contribute labor in proportion to the land held by him; and I would give the head of the village, under certain conditions, the power of requiring each ryot to contribute labor; should the ryot fail to do so, the value of the labor he was called on to contribute, together with a fine, should be recovered from him as arrears of land-revenue. With these powers the head of the village ought to be able to carry out the repairs, but if he is unable to do so, he could report the matter to his superiors, and the Government could undertake the repairs, levying the expenses and a fine on the villagers in proportion to the land held by them. Should the head of the village culpably neglect to report any repair that may be necessary, I would visit the offence with most severe punishment, even going to the extent of making him liable to imprisonment.

In consideration of our not having enforced these repairs for so long, it would be right if we reduced the assessment when we do impose it.

In the case of the larger tanks it would be best to relieve the villagers altogether of any duty connected with them; but at the same time it would be well to make them pay for this relief an extra assessment sufficient to cover the expenses of the repairs. These works require engineering knowledge, and therefore some of the repairs must necessarily be done by the Engineer Department, and it certainly has been found inconvenient, in practice, to attempt to carry out works by two distinct sets of people. It is advisable that only one should be responsible for the whole work.

The extra assessment we impose might possibly be put in a separate fund for the repairs of the tank, or it might be carried to the general revenues of the province; but in the latter case I suppose the villagers could compel Government to carry out the necessary repairs, however costly, without reference to the amount they had collected; whereas in the former case, it is probable that they could only be compelled to spend on the repairs as much as they have in the fund.

Mr. Foster—continued.

- Q. 27. No obligations rest on Zemindars or other superior landholders to maintain tanks or other irrigation works. I must certainly think they ought to be required to keep them in repair. The land forming the bed of the tanks was excluded from consideration when the permanent settlement was fixed; but now the rule is that this land is the absolute property of the Zemindar to do as he likes with; he can build on it, or he can cultivate it without interference from us.

I suppose now in the case of tanks which Zemindars have put to other purposes, they must be left as they are; but in the case of those that were excluded from the permanent settlement Zemindars should be compelled to keep in order all tanks which are not irretrievably ruined; but in consideration of this being a somewhat new duty imposed upon them, I think Government might give them some assistance in money for the first repairs, even though all the direct benefit accruing from the repairs goes to the Zemindars.

I would allow no tank that is not now irreparably ruined to be allowed to fall out of repair, unless an Engineer Officer should certify that its place had been properly taken by some other means of irrigation. If the Zemindars fail to carry out the necessary repairs to the tanks, I see no objection to Government carrying them out at the Zemindar's expense. If it were thought that this would be in contravention of the agreement between Government and the Zemindars at the permanent settlement, Government could acquire the half-ruined tanks by the Land Acquisition Act, repair them, and charge for water any one who wants to take it. Water is absolutely necessary for the country, and it is impossible that any one can be allowed to exercise any private right even with regard to it, to the injury of the community, so long as he does not suffer much injury himself.

- Q. 28. The revised rules made under Act VII of 1865 for levying water-rate in the Godavari and Kistna Deltas will be found in G.O., No. 617, dated 16th June 1873, and Board's Proceedings, No. 248, dated 20th February 1873.

The works to which the Act VII of 1865 has been applied are given below:—

Anicut, channels, Tanks, and any work belonging to or constructed by Government.

The amount of water-tax that was demanded in Fasli 1286 is given below:—

	Delta Water-tax.			Upland Water-tax.			Total.		
	RS.	A.	P.	RS.	A.	P.	RS.	A.	P.
Government Jeroyeti lands ..	10,28,920	9	2	1,471	7	9	10,30,392	0	11
Government Inams	3,38,204	6	4	428	4	1	3,38,632	10	5
Government Inam villages ..	32,678	15	1	31	8	0	32,710	7	1
Government Ashal Minha lands ..	826	14	4	4	14	9	831	13	1
Miscellaneous Jeroyeti ..	9,810	0	0	24	13	2	9,834	13	2
Zemindari lands ..	97,203	2	8	304	1	5	97,507	4	1
Zemindari Inam ..	83,935	8	11	3	7	9	83,939	0	8
Total ..	15,91,579	8	6	2,268	8	11	15,93,848	1	5

Some of the cases in which the exemptions are granted under Section 4 of Act VII of 1865 are mentioned below.

Mr. Foster—continued.

The Raja of Pittapur had claimed certain lands in the village of Vemulavada to be exempted from the payment of water-tax on the ground that the usual sources of irrigation to such lands have been obstructed by the construction of certain Government works. This claim was fully inquired into and all the circumstances were reported to the Board, recommending that such lands claimed by the Raja be treated as usual wet. The Board of Revenue, in their Proceedings, dated the 5th October 1874, No. 2884, have directed that 152 fields of Vemulavada, containing 525 acres, be treated as usual wet and exempted from water-cess; ever since the water is given to those fields free of any charge. In the village of Velangi in the Pittapur Estate certain land was also claimed by the Raja to be treated as usual wet on the ground that the usual sources of irrigation have been obstructed by anicut works. This claim was also fully inquired into and reported to the Board. Thereupon the Board, in their Proceedings, dated the 11th December 1875, No. 334, have directed that 802 acres should be treated as usual wet in the above village; consequently, the land was irrigated free of charge.

The total area irrigated without charge under the anicut channels in the whole district is 31,858 acres. That irrigated under tanks without payment of any charge cannot be ascertained without considerable trouble.

This is levied under the name of Gottutumpulu assessment from certain Inamdars whose lands have been irrigated by the tanks. This assessment in Government villages occurs only on Inam lands in such villages as have come into the hands of Government since the time of the permanent settlement.

Cess for the repair of
Tanks.

Mr. Turner.

Q. 23.

I cannot answer Questions 12 to 23 as we have no canal administration in this district. Some years ago, however, I was an Assistant to the Collector in the Kurnool District, and saw a good deal of the working of the Madras Irrigation and Canal Company, and can, I think, give one reason why it has not been a success hitherto. The canal is an entirely *new work*, and passes through a district which produces excellent dry crops; the valley of the Khunder, in Nandial and Sirvail Taluks, produces the finest cholum crops I have ever seen. What the ryots used to tell me was this, "Sir, we don't want to grow wet crops, our lands are well adapted for dry cultivation, and produce excellent crops; our bullocks are too small to work wet land, our ploughs and agricultural appliances generally are not adapted for wet cultivation. Besides, we ourselves are not used to, and do not like, wet cultivation; we don't like sweltering up to our necks in slush under a boiling sun. It is contrary to our habits. Besides, supposing we do change the previous habits of our life and invest in fresh stock and agricultural appliances, are we sure that our money will not be thrown away, are we sure of having a constant supply of water? Hitherto the canal has been constantly breaching, consequently we have not sufficient confidence in it yet to induce us to spend our capital upon the cultivation of wet crops under it."

It is on this account, probably, that you will usually find the repair of old native irrigation works begin to pay at once, while newly projected works sometimes scarcely pay their working expenses. The repair of old works merely brings things back to their old condition; whereas an entirely new state of things is created by a newly projected work, and it seems to me unreasonable to expect such a work to pay *at once*.

Mr. Turner—continued.

Q. 24.

I believe irrigation works will always pay in this country if carefully projected and constructed, and I believe the ryots will always take the water and pay for it if it is to their advantage to do so. I believe it would produce the greatest discontent throughout a district if you imposed a tax upon that district to bolster up a work which had turned out a failure, even though it may have been started for the benefit of that district. Nor can I see how you can tax the land which would be protected. It is not sufficient to bring water to a man's door, and say to him "use it;" if you don't use it, you must pay for having it there, as it is an assurance against future drought and famine." I think if you imposed a tax of this sort you would produce grave discontent. But it would, I think, be unnecessary to impose such a tax, because I am certain the ryot would use the water, if it was made worth his while. Take again the instance of the Madras Irrigation Canal, the rate for water under that canal used to be, I think, Rupees 6 per acre. No one, I presume, would inflict a tax on land which "would be protected" of Rupees 6 per acre. No permanent tax exceeding Rupee 1 or 2 per acre could, I suppose, be imposed. I think the ryots would gladly take water at this rate for their dry crops, and no tax would be required.

Q. 26.

I know of no district where the tanks are so small and numerous that Government cannot practically carry out their supervision and maintenance. If the Department of Public Works is brought up to its full strength and a proper system of supervision insisted upon, and that not for one or two years, but always, in that case I do not see why tanks, &c., should be allowed to go out of repair. It would be useless to entrust any tank-repairs beyond "emergent repairs," and what are called "kudimaramut," to the villagers. But I would insist on emergent repairs and kudimaramut being carried out by the villagers. I think it might be advantageous to enforce this duty, but, in my opinion, it would be dangerous to go further in this direction at present. However, in places where there are such small tanks, the up-keep of which is practically difficult, and if the lands under such tanks belong to one or two private individuals, and are not common to the whole village community, I would propose to make over such tanks to their respective proprietors, charging the extent of cultivation under the tanks with the permanently* improved dry assessment thereof and the extent of water spread of the tanks with the dry rate of assessment on the neighbouring dry lands, as proposed by Mr. Puckle in settling the villages of Tenkasi Taluk in Tinnevely District, leaving entirely to the proprietor the option of keeping the tanks in good order or of making use of the lands in any way he pleased.

* Rupees $2\frac{1}{2}$ to $3\frac{1}{2}$ per acre.

Q. 27.

No obligations, other than being sued in the Civil Courts for damage done, rest, so far as I know, on Zemindars or other superior land-holders to maintain tanks or other irrigation works, and I have now before me (Ramnad Zemindari), an instance in which the Zemindars have neglected the repairs of their tanks for years until the whole country is well nigh ruined. Such a state of things must, it appears to me, be remedied. The wretched state to which the misrule of the Zemindars has reduced Ramnad is something appalling. While the rest of the country has been progressing Ramnad has positively retrograded. To quote from Mr. Boyle's Report on the Estate, dated 18th September 1873: "Not only is the country in the condition in which men depict India fifty years ago in the utter absence of made roads, but this event has been intensified tenfold by the utter neglect of all irrigation works, tanks, and channels for years." At the present minute, there is not a single made road in

Mr. Turner—continued.

the Zemindari along which traffic can pass during the wet months with safety, the revenue system is an anachronism, and must be remodelled, and the revenue servants are still little better than a swarm of devouring locusts. Fortunately, we have a long minority of ten years before us, and we can do a great deal in that time, but there ought to be some means of rendering the former state of anarchy impossible for the future. I would suggest that a clause might be entered in the "Form of Permanent Sanad," rendering it obligatory on the part of the Zemindar to maintain his tanks or other irrigation works in good repair. He should also be held responsible that his administration be so ordered as to favor the progress of the estate and well-being of the ryots.

Q. 28. Act VII of 1865 is not in force in this district, probably because the supply of water is too uncertain.

Mr. Wilkinson.

Q. 14. I have seldom found water from tanks used in too lavish a manner. As a rule, I should say that the ryot was most anxious not to squander tank-water, but to eke out the supply so as to be able to obtain a second crop. I have never known water charged for by quantity, nor do I think that under tanks such a system could be inaugurated. I think the ryot has quite a sufficient knowledge of his own interests to make him economise his use of a limited supply of water, and that no new system is called for or is practicable.

Q. 15. The rates on wet land in the Salem sub-division were raised during the recent settlement, and the margin of profit left is so small that they could not safely be raised.

Q. 24. I think that a special rate might in such a case be charged on the land which would be benefited by the projected irrigation work over and above the regular wet assessment; that such special rate should commence at a low per-centage charge over the annual wet assessment, rising gradually until it reaches, say, 10 or 20 per cent., and then as gradually decreasing. Thus a holder of wet land under the Marandahalli project in Dharmapuri paying Rupees 50 per annum should be required to pay in the first year 2 per cent. over and above the Rupees 50, in the second year 4 per cent., in the third year 6 per cent., in the fourth year 8 per cent., in the fifth year 10 per cent., in the sixth year 8 per cent., and so on. The amount of per-centage payable by each ryot would depend on the sum necessary to cover expenses and the number of years within which the State expected such expenses to be covered. To charge a ryot 10 per cent. at once, before he has, in all probability, realised the benefit of the improvement effected in the water-supply, would, in my opinion, merely cause him to throw up his land. It seems to me that it would only be equitable to make an additional and special charge on the area protected, not on the district.

Q. 25. The right to the water in a tank or channel resides in those persons who pay Government a higher rate of assessment for supplying or rather storing the water. A holder of dry land in the vicinity is not allowed to take the water, unless it is clear that the supply will more than suffice to meet the demand of the holders of wet lands. If he is

Mr. Wilkinson—continued.

allowed water, he is charged for it; and if he takes it without leave, he is charged a penal assessment, viz., twice or thrice the amount he would have paid had he obtained permission. I do not think that the Revenue Authorities require any other powers than those they now possess to settle disputes as to water; any disputes which they are unable to settle should go before the Courts.

Q. 26.

There is no doubt there are a very large number of small tanks whose maintenance Government cannot practically carry out; but I have always found that if Government did nothing the ryots invariably failed to help themselves. I think it would be a very difficult duty to enforce if it were made the duty of cultivators to carry out all necessary repairs. If the principle were adopted, and it would, in my opinion, be fatal to the irrigation of the country, it should certainly be limited to small tanks of a capacity of one or two months. It would be far better for Government to settle once for all which tanks they intended to keep up, and which they intended to abandon. In the case of the up-keep of a tank being abandoned by Government it should be offered, in the first place, to the ryots holding land under it. If they were willing to undertake its repair, they should be told that they, and they alone, were responsible for it, that no remission would be granted on account of loss of crop or of short crop owing to deficiency of water, and that, in consideration of this, a uniform low rate of assessment, say Rupees 2-8-0 per acre, would be levied, and they would be at liberty to raise any crop they liked, to sink wells, &c., without any increase of assessment. If the holders of wet lands declined these terms, the tank might be offered under the private tank rules, and the holders of lands left to make their own terms with the proprietor. Another plan which has much to commend it, especially if the present unwieldy ranges of Revenue Officers are reduced, is to hand over all the smaller works of irrigation, for the repair of which no engineering skill is required, to the Revenue Department, to raise a fund for the repair of such works by a cess of 6 pies, 9 pies, or 1 anna in each rupee paid for wet land under such tanks and to allow the Revenue Officers to administer the fund carrying out the repairs either by contract or special department as they saw fit. Government should guarantee to pay a certain per-centage (say 10 per cent. per annum) on the fund raised in lieu of the diminution of their Public Works expenditure, and the amount of the cess would, of course, depend on the annual amount required, and could be fixed at each annual settlement. As the ryots would see the money thus levied spent in their own village, I do not apprehend that they would have much objection to the cess.

Q. 27.

I know of no obligations which Zemindars, Mutadars, or Inamdars are under to maintain their tanks and irrigation works in order, and the consequence is that they seldom are kept in order. I think it is highly desirable to impose on all superior landholders not holding under a Sanad-i-Milkiat Istimrar or permanent Sanad the obligation of keeping all their irrigation works in proper repair; but I cannot suggest on what general system such obligation should be enforced.

Mr. McWatters.

Q. 12.

The present irrigation channels were in existence when the district was ceded to the British on the fall of Tippoo in 1799. There are no data for answering the first part of this question. However, the present acreage irrigated is only 4 per cent. of the whole cultivated area.

Mr. McWatters—continued.

A good crop of first-sort paddy will yield 1,400 Madras measures* per acre; and a middling crop 1,000 measures.

* A Madras measure contains about—

3 lb. of rice or horse-gram.

2½ lb. of husked cholum.

2½ lb. of do. raggi.

2 lb. of do. cumboo.

2½ lb. (nearly) of husked paddy.

The quality of the grain makes a difference in the weights. I have ascertained the above from ordinary bazaar grain. I have found that a Madras measure of good paddy will yield 1½ lb. of rice.

(Signed) G. Mc. W.

A good crop of second-sort paddy yields 1,300 measures, and a middling crop 1,000 measures.

The current price of first-sort paddy is 10·8 Madras measures and of second sort 11·4.

Omitting from consideration the value of the straw, an acre of good first-sort paddy would be worth Rupees 129, and middling Rupees 90; and an acre of good second-sort paddy would fetch Rupees 110, and middling Rupees 80.

A good crop of cumboo yields 405 Madras measures per acre, cholum 374, and ragi 423; a middling crop of the same cereals yields, respectively, 242, 261, and 255 Madras measures. Cumboo sells at present at 9·6 Madras measures per rupee, and ragi and cholum at 7·2.

The value of a good crop per acre would be—

	RS.
Cumboo	40
Cholum	50
Raggi	58
and of a middling crop—	

	RS.
Cumboo	25
Cholum	36
Raggi	35

The outturn or yield as above given has been arrived at by the Settlement Department after thousands of experiments, and are as accurate as ever such things can be. The present high prices will not continue much longer; but it is questionable whether they will ever rule as low as they did before the famine. The adoption of just rates, as between Government and the ryot, in introducing the new settlement is matter for grave consideration, seeing the altered state of things.

The selling prices taken as a standard by the Settlement Department have been calculated on an average of 20 years from 1845 to 1864 and are as follow :—

	Madras Measures per Rupee.
First-sort paddy	22·2
Second-sort paddy	24·
Cumboo	27·8
Cholum	20·7
Raggi	25·

Taking these prices the value of an acre of each crop is as follows :—

			At current Prices.
	RS.	RS.	
A good crop of first-sort paddy ..	63	=	129
A middling crop of first-sort paddy ..	45	=	90
A good crop of second-sort paddy ..	59	=	110
A good crop of cumboo	14	=	40
A middling crop of cumboo	8	=	25
A good crop of cholum	18	=	50
A middling crop of cholum	12	=	36
A good crop of raggi	16	=	58
A middling crop of raggi	10	=	35

Mr. McWatters—continued.

Round numbers have been taken. The difference of value between the settlement prices and current are very marked. In the settlement it is proposed to make a deduction of 10 per cent. from the above prices for carriage of grain to market, and a further deduction of 20 per cent. is allowed for vicissitudes of season in calculating the assessment.

The Settlement Department seems to me to have been over particular at first in attempting to classify soils and to ascertain to a nicety their relative productiveness under the different staples. These elaborate statistics were, however, thrown to the winds as soon as it was found that they would not serve a foregone conclusion.

The settlement rates actually introduced and about to be introduced in respect to lands under the best irrigation channels are, in my opinion, far too low.

Q. 13.

The irrigated lands of this district pay no separate water-cess.

Channel lands are usually rented on varam tenure. The tenant or actual cultivator pays the proprietor or Government puttadar from $\frac{1}{2}$ to $\frac{2}{3}$ the gross produce. The proprietor pays the Government kist, and the tenant gets the straw. In some places the custom has grown up of the proprietor further bearing half the expenses of weeding and transplanting which average $1\frac{1}{2}$ Rupees per acre. Any little manuring that is done in the shape of scattering wild indigo, &c., over the fields is paid for by the tenant.

Channel lands are also rented for a fixed quantity of grain per acre, no matter what the gross outturn may be.

Calculated as in the previous question the rent value at current prices of irrigated land varies from 40 to 80 Rupees per acre, and at settlement prices from 20 to 40 Rupees well lands, now classed as dry or unirrigated, and punjah or dry lands proper are rented at half the gross varam or outturn. Punjah lands are also rented for a fixed money-rate, varying from twice the Government kist or revenue. The rent value at current prices of unirrigated land varies from 12 to 25 Rupees an acre and at the settlement prices from 4 to 9 Rupees an acre. The rent value of well lands is much the same as channel lands; but this sort of land is seldom rented. These different rent values per acre may be placed side by side for easy reference:—

—	Calculated at current Prices.		Calculated at the settlement Prices.	
	RS.	RS.	RS.	RS.
Irrigated lands, including well lands...	40	to 80	20	to 40
Unirrigated lands ...	12	to 25	4	to 9

The highest of these calculations is rather under what the best channel lands rent for. I notice a tendency in proprietors or puttadars lately to exact, as a rule, $\frac{2}{3}$ the gross outturn, probably owing to the extraordinary high prices.

The land-revenue on irrigated land is to vary according to the new settlement from Rupees 12-8-0 to Rupees 2-8-0 an acre. The existing rates are about 97 in number, and average from Rupees 1-7-2 to Rupees 20-13-0. The settlement dry rates are to vary from 6 Annas to Rupees 1-12-0. There are 138 existing rates averaging from Annas 3-6 to Rupees 1-9-0.

Mr. McWatters—continued.

I am decidedly of opinion that a proprietor, the value of whose land is increased by reason of a Government irrigation work, should contribute to the State for the advantage he receives.

Where the land-revenue is liable to revision the assessment might simply be enhanced ; in the other two instances a separate water-rate would be the easiest way of meeting the difficulty.

Q. 21. The system of channel administration prevailing in the Coimbatore District, which is the only one with which I am practically acquainted, is described in the answer to the next question.

The Revenue Department is responsible for distributing the water. The lands under the channels are classed as wet or nunjah, and pay in consequence a higher consolidated assessment, which gives the ryot liberty to use as much water as is necessary. This assessment is collected by the Revenue Department.

With the present voluntary system of management in the case of most of the channels, it would be altogether beyond the power of the Public Works Department to undertake the supervision of the distribution of the water. If the channels were in good condition and amply supplied with sluices and smaller distributing channels, and if the establishment for distributing the water and attending to the sluices and anicuts were paid in money and appointed by the Public Works Department, that department might undertake the distribution of the water. But it would still be wanting in influence over the cultivators, would not know their wants, and could not secure their co-operation in emergencies. I would consequently leave the distribution of the water with the Revenue Department, and hand over all else to the Public Works Department. I believe that this would be in accordance with the views of most of the better class of cultivators.

Q. 22. The system of channel administration is as follows :—

Distribution of Water.—The duty of seeing that water from Government irrigation works is properly distributed is supposed to devolve upon the Revenue Authorities. The establishment entertained for this purpose varies in every village. Under the channels branching from the Noyel river, service Inams have been set apart for the Neerain, Monigars, Nirgantees, &c., comprising the distributing establishment ; under the Bhavani channels a cess is entered separately in the puttahs for this purpose, and is collected in the same manner as Government land-revenue ; while under the Kaveri and Ambravatty channels the distributing establishment is paid by voluntary contributions of grain. Where service Inams have been allotted, or where the custom has grown up of entering a separate cess in the puttahs, the appointment and dismissal of the establishment rests solely with the Revenue Authorities. Where the voluntary system of paying in kind prevails the cultivators appoint the distributing establishment themselves, and the Revenue Authorities have practically no control over the distribution of the water. The rich and influential ryot has it all his own way, and the poorer ryot is generally the sufferer. An obstinate ryot paralyses the whole system, and the establishment either strikes for wages or sides with a particular party or faction in the village, and places every obstacle in the way of all others getting water. The grain voluntarily contributed forms a sort of general fund in the hands of a selected head man, who besides paying the actual establishment defrays also any extra expenditure entailed on the village by officials' visits, &c., and the balance, sometimes very considerable, he appropriates to his own use. This headman is really the only party interested in keeping up such a system.

Mr. McWatters—continued.

Annual Clearance of Silt.—In the channels under the Bhavani and Noyel the Public Works Department carries out this work. In the case of the Kalingaroyen channel there is a particular cess levied for this purpose as well as for the distributing establishment, and this is collected by the Revenue Department, and carried to the credit of Irrigation. The southern channels, or those leading from the Kaveri and Ambravati are cleared, except in special instances, by kudimaramut, that is, by voluntary combined village labor. Kudimaramut, however, has greatly fallen into desuetude, and has been found well nigh impossible to enforce in practice. The result naturally is that these channels are not attended to.

Breaches.—Emergent breaches, costing Rupees 20 or under, are usually closed at once by the Revenue Department. Larger breaches the Public Works Department takes in hand.

New works and other repairs than above are carried out by the Public Works Department on regular estimates.

Koramboos.—Channels without anicuts are particularly troublesome. To secure a proper supply of water in such channels, every time the rivers are low the ryots should voluntarily combine among themselves and construct temporary dams or koramboos to raise the level of the water in the rivers and force it into the channels. The first fresh washes these koramboos away, and when the water runs low again they have to be reconstructed. If the ryots combine the work is easily done, but when they quarrel, as they nearly always do now, the koramboos are either not raised at all or done so indifferently that the water fails. A great many of the cultivators under the Pugalore channel have been nearly ruined during the last two or three years owing to dissensions about koramboos. The channel administration is susceptible of vast improvements. At present, the channels from the Noyel and Bhavani are much better managed than those from the Kaveri and Ambravati, simply because every thing is left to the ryots themselves under these latter channels. The ryots are supposed to combine voluntarily and pay in kind for the up-keep of the distributing establishment, the annual clearance, and frequent koramboos, and they seldom or never do so, and the channels are neglected. I do not know how two such different systems have existed side by side for so long in the same district. It would seem that at one time the voluntary system prevailed under every channel, and that owing to the difficulties it gave rise to, as in the case of the Kalingaroyen channel, the Government allowed the voluntary grain allowances to be commuted into fixed money payments and entered in the puttahs. This was done also at the instance of the ryots under the Pugalore channel for a few years, but when Mr. Webster was Sub-Collector he considered it was illegal, and the old grain-system was reverted to, and since that time the Pugalore channel has been the cause of constant and bitter feuds, and has regularly been neglected. The Tahsildar is simply helpless in the matter, as he has absolutely no control whatever over the distributing establishment, and he finds it impossible to muster coolies for either the working of the koramboos or the annual clearance. In the Salem District there is a channel leading from the Kaveri nearly opposite to the Pugalore channel under which the pernicious voluntary system prevailed too at one time, and was found utterly impracticable. The system of a fixed money-payment was in consequence introduced by the Collector, and the amount payable by each ryot was entered in his puttah. The Salem channel is managed now without any trouble, and is in splendid order while across the Kaveri, in the Karur Taluk,

Mr. McWatters—continued.

the Pogalore channel is simply not managed at all, and would have been in a very bad state indeed, had it not been taken up as a famine work. This year it has been greatly improved, and is now being extended, and there is all the more reason why the present system of management should be changed. The ryots under every channel in the Karur and Dharapuram Taluks where the voluntary system obtains are willing that a fixed money-payment for the distributing establishment, annual clearance, and koramboos, should be levied at so much per acre, and the whole work managed by the Revenue Department.

As the new settlement is being introduced, I think that something more than this should now be aimed at. Mr. Wedderburn, who was Collector of Coimbatore for about ten years, was always in favor of an irrigation fund, and I believe myself that this would be very beneficial. In addition* to commuting the voluntary grain-contribution into a fixed money-payment at so much per acre, an additional cess at so much per acre should also be levied and set apart solely for the up-keep of each particular channel. Each channel would then have its own funds for management and up-keep and not depend as now on the precarious grants *doled out* by the Government of India.

I have been writing all along of the *main* Government channels. It is these channels that the ryots are allowed to meddle with, and keep whatever establishment they like to take water from without being under any practical control.

I think that a cultivator ought not to be allowed to touch a Government main channel under any circumstances whatever; either to take water through the main channel sluices, or to remove silt from the bed of the main channel. The sluices should be regulated, and the channels repaired entirely under the supervision of Government officers. After water leaves the main channel sluices the ryots may make whatever arrangements they please for leading it to their fields.†

But to enable this to be carried out a great deal has yet to be done to every channel in the district.

At present, ryots are allowed to cultivate up to the main channel bank, and sometimes to undermine it, and where this is allowed it is impossible that any channel management can be successful. The first thing to be done (if I may hazard an opinion) is to take up a strip of land along side the present main channel banks and to construct small subsidiary parallel channels into which the main channel sluices empty. The main banks need never then be meddled with or cut as now by the ryots; the number of sluices could be limited; and the channel banks strengthened, waste checked, and the distribution of water from main channel properly supervised.

* I say IN ADDITION because what the ryots give voluntarily already is only enough for the annual clearance, water distribution, and koramboos. They should pay something in addition to this for permanent improvements, and as the settlement is being introduced, now is the time to impose this cess. The settlement rates are so easy on the ryots that not one of them would, I believe, complain of the extra rate for the channels which I propose.

† If Government are to keep up the main channels the present and proposed rates of assessment for wet lands are, as regards Government, unjustly low. The imposition of the extra cess proposed would be any thing but unfair to the ryots.—G. McW.

† Once water leaves the main channel the villagers manage for themselves easily enough. Many a poor ryot goes to the well now because the MAIN channels are tapped by the upper ryots at pleasure. With the MAIN channel under proper management, water can be brought down to the end of it and not otherwise. Then with a sufficient number of sluices in the main channel no difficulty about distribution will arise. The belts of wet land under channels are so narrow in this district that the ryots seldom quarrel about water after it leaves the main channel. All the trouble I have experienced for the last four years has been in connection with the main channels.—G. McW.

Majors H. R. Mead, J. Pennycuick, and Captain A. Awdry.

Questions 12 to 31 refer mostly to a state of things which has no existence in Salem or Coimbatore, where canal irrigation is practically unknown save along the banks of the Cauvery and Bhavani rivers; it may be stated generally that over the whole of Southern Districts of the Madras Presidency, save in the Deltas and a few exceptional cases, storage by means of tanks is an essential element of irrigation. The tanks may be fed by channels from rivers, and the best tanks are so fed, but direct irrigation by means of river channels is but rarely practicable.

Q. 14. The universal custom is to charge consolidated assessment varying with the nature of the soil and other conditions and including water rate as well as land rent; the charge is invariably measured by the area cultivated, and no attempt is made to measure the quantity of water supplied or to regulate the charge by that quantity. There is no doubt whatever that much water is wasted, but it is doubtful whether this could be avoided without an undue increase in the expense of collecting the revenue. The contract system referred to in question 14 might possibly be applied with advantage to tanks, but it would need great care to prevent the wealthier and more influential cultivators from taking an undue share of the water; the question is one rather for the Revenue officers than for the Engineers.

Q. 15. It is doubtful whether the rates for irrigated land could be raised with advantage, but there is no doubt whatever that the present rates are such as to allow a very handsome profit to the cultivator.

Qs. 17—19. There is no ground for supposing that any sickness or injury of any kind, to the land or its inhabitants, is caused by irrigation. The drainage difficulty does not occur in either of the districts in question, there not being in either a level plain of a square mile in area. The effect of irrigation is an absolute and unmixed good.

Q. 21. The collection of revenue and distribution of water is entirely in the hands of the Revenue officers, the functions of the Public Works Department being limited to keeping in order the works for storage and supply. It is not considered desirable to alter this practice, though the line of separation between the duties of the two departments might be more rigidly drawn, so as to check the tendency which now in Salem and some other districts causes great inconvenience of the Revenue officers to trespass upon the functions of Public Works Department.

Qs. 22—24. The advantages of irrigated over unirrigated land are so enormous that no difficulty ever occurs in disposing of water stored; the opportunities for the execution of works which will certainly prove remunerative are so numerous that the question of compulsory water rates or any similar device has no practical interest.

Q. 25. Numerous customary claims and prescriptive rights have grown up and much annoyance is often caused by their existence, but they can generally be dealt with by existing courts and by the application of existing laws, each such case being dealt with on its own merits.

Q. 26. It is believed that in the case of tanks not supplying more than one village it might be expedient for them to be put in complete order once for all at the expense of Government and then handed over to the ryots, who should be made permanently responsible for their future upkeep, a certain percentage being

Majors H. R. Mead, J. Pennycuick, and Captain A. Awdry—continued.

deducted from their assessment in consideration of their taking this responsibility. The duty of enforcing this responsibility must be left to the revenue officers, and it would have to be a *sine qua non* that no remission of revenue would be granted on account of shortness of water due to the tank being out of order. Repairs requiring engineering skill beyond the reach of the ryots would be but of rare occurrence, and such cases might be dealt with as they arose. It is thought that with properly considered rules regarding inspection and registration this system might be carried out with advantage. In the case of tanks in chains or series it would of course be necessary that the upper tanks should be dealt with before the lower ones.

- Q. 31. The present system of reckoning returns is unfair in the highest degree, no allowance being made on account of the enormous increase in the selling value of the land (or rather of the right to cultivate it) which in many instances exceeds two hundred Rupees an acre, and generally exceeds the capital expenditure on the works. Some portion at all events, if not the whole, of this increase should be credited to the work, whether actually received by the State or presented as is now the practice to the ryots.

Lieut.-Colonel J. N. Hunter.

- Qs. 12 to 23. Refer to canals. The only canal in the Cuddapah District is that constructed and worked by the Madras Irrigation and Canal Company, with a special Sub-Collector to watch Government interests as far as the revenue derived therefrom is concerned.

- Q. 24. I think the extra charge would simply drive the ryot from his holding except in cases where accidental circumstances render the land exceptionally valuable, but this seems rather a revenue than an engineering question.

- Q. 25. Yes, but chiefly in connection with the canal irrigation.

- Q. 26. This question has been propounded by every officer in this district for years past, but nothing has so far been agreed on.

In the Madhanapalle Division alone there are more than 4,000 tanks, nearly all in groups or chains lying one above the other. These tanks are of all classes—Government, Inam, and Dasbundum. Generally the lowest tank of the group is a Government one with a good ayacut and what would be a good water-supply were it not that the supply is intercepted by the petty tanks lying above it in the same catchment basin. Another evil is that if, owing to an unusual flood or more likely still owing to the inefficiency of the bunds and escapes of the upper tanks, one of these bursts it goes all down the chain and the whole supply is thrown at once into the lowest tank which naturally bursts too. The remedies proposed are—1st, to maintain all the upper tanks in a state of perfect efficiency with waste weirs sufficient to discharge all the drainage of the basin above, but it is almost impossible to make the inamdars and dasbundumdars carry out such repairs as we think necessary, and they do not; 2nd, to breach all the less important tanks in a group and allow the water-supply to come uninterruptedly to the lower and more important tanks, and this is the proposal most generally favored; the difficulty seems to be to settle the rights of the Inamdars and the dasbundumdars, who generally look on the scheme with disfavor.

The third remedy is to abandon all the tanks in the group to be maintained by the ryots themselves, assessing the land as dry and the revenue as fixed and not subject to remission.

Lieut.-Colonel J. N. Hunter—continued.

A commission which met at Goorumcondah in December last to examine into one group went into each of these cases and could decide on none; the meeting was finally adjourned leaving the subject still open.

Q. 27.

It would be very desirable that the duties of dasbundumdar's should be defined, and whether Government have not a right to say to any dasbundumdar, who holds land free on condition that he keeps the Government tank in repair, "our contract is now at an end, we resume our tank, and will repair it ourselves, you will be charged rent for your land and have no further duties in connection with the tank repairs."

Qs. 28 to 31. Are revenue questions.

Major H. M. Vibart.

Q. 12.

The capital expended to 1875-76 on—

	RS.
Godavari Delta	69,10,549
Kistna	44,93,902
while yearly interests on them amount to—	
Godavari about	15,61,019
Kistna	8,90,758
Annual cost of maintenance—	
Godavari	1,54,751
Kistna	1,94,905
Acreage irrigated—	
Godavari	5,13,143
Kistna	2,26,226
Godavari—	
Capital expended per acre	13.46 Rs.
Cost of maintenance	4.8 As.
Kistna—	
Capital expended per acre	19.86 Rs.
Cost of maintenance	13.78 As.

When the Kistna works are complete the sums will be greatly reduced.

It is difficult to arrive at the average local value per acre of paddy raised by irrigation.

In an irrigation experiment carried out at Chabrole in Kistna District in 1871-72, the gross value of produce of an acre (average of 9 acres included in experiment) was Rupees 43. The cost of cultivation including kist (6 Rupees) was Rupees 15, leaving net value of produce 28 Rupees. This was when price of rice was twelve Madras measures for a rupee. At the present time, when rice sells at six measures per rupee, the gross value would be about 80 Rupees and the net value Rupees 65.

During the famine, when rice was selling at four measures per rupee, the net value would probably have reached Rupees 100.

In an experiment carried on in Trichinopoly during 1873-74, the gross value of produce of an acre of paddy was found to be nearly 76 Rupees, thus making out net value about 61 Rupees. Rice was then selling at eight measures per rupee. Now the crop would fetch probably 98 Rupees, the net value being 83 Rupees, and during the famine the value would have been considerably more than 100 Rupees.

The value of an unirrigated crop seems generally, as far as I can learn, to be one-half that of an irrigated crop.

One result of experiments was to show conclusively that rice could be successfully grown with a supply of water somewhat less

Major H. M. Vibart—continued.

than 2 cubic yards of water per hour per acre, and in Trichinopoly experiment the ground which produced the best crop received only 2 cubic yards artificially and 2.64 including rain. The yield of this acre was 3,908 lb. paddy and 6,300 lb. of straw.

In many parts of Tanjore and Trichinopoly and other districts two crops are grown, and the net value of the outturn in these cases would probably be 80 to 100 Rupees.

Q. 13. In the Kistna 4 Rupees is paid per acre for use of water. There seems to be every reason why a proprietor who benefits by canal constructed at public cost should contribute to the State in return for the advantages he gains. The best way at present would be to charge him an extra sum of 4 Rupees per acre.

Q. 14. With exception of navigation dues, grass-rents, and such small items, the irrigation receipts are not credited to the works. The rents are collected by the Revenue Department, and generally no distinction is made between that due to rent and that due to water-cess. In Godavari and Kistna a fixed rate, Rupees 4 per acre, has been called the water-rate. There is, I think, no doubt that the ryots use the water in too lavish a manner. I think there is no remedy for this except to teach them that their crops will be increased by moderate use of water. Raising the water-rate would have the effect of throwing land out of wet cultivation; but the area of land being thus reduced, the ryots would probably get better crops, as they would be enabled to manure more heavily the reduced area and otherwise pay more attention to its cultivation, and the land left fallow could be utilized for the support of cattle, &c. Green food for cattle is very scarce in highly-irrigated land, and the cattle deteriorate, it is believed, in consequence. Water is never in this Presidency charged by quantity, nor is it ever charged for on a contract system.

Q. 15. The land and water rates together seems to be in ordinary times about $\frac{1}{10}$ th of the gross value of crop, but at the present time the price of rice is still so high (6 measures per rupee) that the land and water rate is only about $\frac{1}{12}$ th of the gross value of crop.

Q. 16. Statistics of Irrigation and Revenue Reports of Chief Engineer, Irrigation, are recorded by the Chief Engineer for Irrigation, and are published yearly for general information.

Q. 17. I do not think there is much evidence that much mischief is caused by canal irrigation in the directions indicated, although it was, I believe, supposed some years ago that a bad fever which was prevalent in the Godavari was the result of insufficient drainage. Drainage has not hitherto sufficiently accompanied irrigation. It is highly necessary more (in these parts at least), perhaps, for the safety of the irrigation than to ensure the sanitary state of the district. In Godavari and Kistna Districts, when new irrigation works were commenced, they were begun (necessarily I think) without much attention to drainage, but now pretty complete arrangements have been designed in both these districts for efficient drainage. These works should be carried out as rapidly as possible.

Q. 18. I have not heard of any systematic efforts being made in this direction, but several reports have, I believe, been made on the subject, and in a few cases experiments have been made on a small scale.

Q. 19. Continued canal irrigation does not seem to affect injuriously the character of the rice cultivation. I believe that the result of irrigation has been the gradual reduction of area of land used for the poorer grains, and this is due, I conceive, to the profits being

Major H. M. Vibart—continued.

greater in the one case than in the other. I do not think there is any reason to suppose that prolonged irrigation damages the land under any circumstances, and I have never heard of any evidence in proof of reduced production. Of course the application of manure is extremely desirable, and I think the ryots are fully alive to its importance, although in many parts there is great difficulty in procuring a sufficient quantity.

Q. 20. There are no inundation canals in this Presidency.

Q. 21. In the Kistna and Godavari the Engineer Department are responsible for the distribution of water, but the Revenue authorities collect the assessments, which include land and water rates. I think the business of distributing water and that of realizing the canal revenue should be combined in the person of the Executive Engineer. I think he should also be the Canal Magistrate. My reasons are that I think the Executive Engineer would be able to obtain a healthy influence on the ryots, the water would be more economically distributed, and the Engineer Department would be better able to protect the works from injury. Moreover, he would find it much easier to obtain labor for the proper upkeep of the works—a matter which is now sometimes a matter of considerable difficulty. Customary labor or kudimaramut could be more readily enforced.

Q. 22. Systems in different parts of the Presidency differ somewhat. In Godavari and Kistna the Engineer altogether regulates the supply of water, while the Revenue Department collects the assessments and settles all petitions relating to failure of crop through excess or from want of water. There is no special canal law. I think, however, one is necessary to admit of proper administration.

Q. 23. Reasons for extension of use of water being commonly so slow—
Disbelief in a constant and sufficient supply.
Dislike of change.
Expense required in making the change.
Fear of overstocking the market and not being able to sell their produce.

First might be got over by Government themselves taking up a certain area of land and showing the ryots that profits are certain.

Second must be left to education.

Third might be removed by making advances to be repaid by yearly instalments.

Fourth has already greatly been removed by improvements of communication and construction of railways.

The canals of Madras Irrigation Company are, as far as revenue is concerned, in a bad state, I believe the acreage under cultivation being not more than 50,000 acres; but this is increasing slowly, yet I fancy surely. Cause of this large expenditure on navigation works, which have not been yet used, owing to non-completion, scarcity, and consequent dearness of labor. When the navigation works on their canals are perfected, the prospects of their canals will be very largely improved. There is not likely to be any extension of irrigation in the Cauvery Delta, but there is still, I believe, considerable room for extension in the Godavari, I should imagine 50 per cent.; and as for the Kistna, when the works are complete, the irrigation area will be more than double what it is at present.

In preparing land for irrigation for the first time no doubt some time and money must be expended in forming banks, levelling

Major H. M. Vibart—continued.

surface, and forming water-courses. The difficulty generally in this Presidency is a small one, and might be readily provided for by advances to cultivators in the same way as advances are now made for sinking wells.

I do not think shortness of supply during hot season affects progress of wet cultivation. No crop is grown in hot weather except under very exceptional circumstances. In Tanjore and Trichinopoly two crops are brought to maturity during the eight months, June to January inclusive.

Q. 24. I think if a special rate is to be levied to cover all the expenses, including interest on capital outlay, it ought properly to be charged on the land protected; and the ryots, having been informed of the absolute necessity of the enhanced rate, should be told that when a certain extent of irrigation was reached, the enhanced rate will be reduced to that required from other irrigated tracts in the district.

Q. 25. There are, no doubt, many prescriptive rights to use of water from tank or canals in this Presidency, but I am not conversant with their nature and working.

Q. 26. I think that the care of many small tanks might be entrusted to the ryots, but I do not think this system should be applied to large tanks, which should be looked after by Government. If ryots were entrusted with repairs, I think a concession should be made to them in the shape of lowered assessment, which might be easily arrived at by ascertaining the amount spent during the previous ten years. Before handing over the tanks, they should be placed in proper condition by the Government. The duty entrusted to the ryots could then be enforced by a fine double the difference between the former and lowered assessment.

Q. 27. I believe Zemindars are obliged by their Shasanoms to maintain their tanks in an efficient state, but I do not think they at all properly recognise their duties in this respect. I think their duties should be enforced by passing a law that when Government were compelled to interfere the Zemindars should pay double the cost of the repairs which their neglect had necessitated.

Q. 28. I have been unable to obtain a copy of Madras Act No. VII of 1865.

Q. 29. When the supply of water in the Kistna District is less than the demand, the Department of Public Works regulate the distribution of water.

Q. 30. The ryots are so accustomed to the intervention of a Government officer in their affairs that I think they would for a long time look upon the agents of a Company with extreme suspicion; and I understand Government have found it necessary in the case of the Madras Irrigation Company to appoint a Government officer specially as a commission to act as a sort of go-between between the Company and the ryots.

Q. 31. I do not think full credit is given to irrigation works for return obtained from the outlay. The indirect profit obtained by increase of land revenue is, I think, not properly taken into account. It seems to me, moreover, that the irrigation works are unfairly burdened with the entire cost of navigation, thus reducing the percentage which should be shown as due from irrigation. It will not be out of place, I think, to add some remarks made by the late Colonel J. C. Anderson, formerly Inspector-General of Irrigation for India, regarding this point:

Major H. M. Vibart—continued.

“In estimating the financial value of the Delta Works, the increase of revenue has been set against the actual outlay. As this includes the cost of aqueducts, locks, &c., designed for the use of navigation, and as the actual traffic is chiefly in cotton, salt, oil-seed, &c., from non-delta taluks, and their construction was chiefly sanctioned for the conveyance of troops, stores, &c., their estimated cost cannot be fairly charged against the revenue of the wet cultivation. If the cost of locks, &c., were cut out of the remunerative statement altogether, a much truer value of the Delta Works would be arrived at.”

Captain Brockman.

Q. 12. *Irrigation Works.*—There are no canals in Tanjore. The cost of maintenance of its rivers and the distributaries therefrom amount to about $1\frac{3}{4}$ lakh annually. The irrigated area is about 800,000 acres, giving a maintenance rate of $3\frac{1}{2}$ Annas per acre. I cannot state the average local value of the crops raised.

Q. 13. There is no water-rate in Tanjore except for dry land converted into wet. I cannot answer the remainder of this question.

Q. 14. There is always a tendency to waste water where it is supplied per acre. It would be impossible to supply water to every field by quantity.

Q. 15. Cannot answer.

Q. 16. No statistics of irrigation* have yet been prepared in Tanjore District. It would be advisable if details were given for irrigation under each distributary, with a view to regulating the supply from the main river at each head sluice. The irrigated area should be collated month by month by the Revenue Department, and the discharge at the head sluice, where such can be done, by the Public Works Department.

Q. 17. I consider it essential that drainage should precede irrigation, and not follow it. This was neglected to be done in the Godavari (District) Delta, but this fault is now being remedied. Yes; additional drainage is required for the purposes noted.

Q. 18. Yes. I remember that in the Godavari system of canals, canal water is granted free of water-rate for two years for flooding salt lands, and this privilege is frequently taken advantage of in lands near the sea-coast.

Q. 19. I do not think that prolonged irrigation in the case of the Godavari and Tanjore Deltas has any effect, where the land is properly drained, in damaging the land in any way. The lands produce as much now as they did twenty years ago from all accounts.

Q. 20. I cannot say.

Q. 21. There is no administration in Tanjore. The Public Works Department have no voice in the matter of minor distribution, and their attention hitherto has been confined to the regulation of the supplies at the points of bifurcation of the main rivers. The Revenue Department collect the dues. I think the responsibility of the Engineering Department should cease either at the head source of distribution where one village lands are affected, or at the subsidiary heads of distribution below the head sluice where more than one village are affected. I should make the village authorities responsible to the Revenue Department for the proper distribution in their own village limits. It would be a waste of power to make the technical department responsible for inter-village distribution,

Captain Brockman—continued.

or for the collection of the revenues. I would make the Revenue Officers, however, work so far in conjunction with the Public Works Officers as to show that the full area for which water has been furnished through the main head of supply through the year has been effectually irrigated, and the full assessment collected thereupon. In Tanjore, to effect this, the existing means of distribution would have to be scientifically recast and improved. In the Godavari, where the distribution is by means of improved forms of sluices and by screw shutter and gearing, this can be easily done.

Q. 22. I think the principle is recognised by the Civil Courts here that the power of utilising the waters of the deltaic rivers is vested in the hands of the technical department, who work *bonâ fide* in the interests of the Government as well as the cultivator. I do not think any law is therefore necessary here to define the powers of the Public Works Department.

Q. 23. In the Tanjore District the extension of irrigation is eagerly sought after, and is only limited by the average supply available in the rivers. Owing to the uniformly level nature of the delta, no difficulty or expense is experienced in converting dry lands into wet.

Q. 24. In the Tanjore Delta, owing to the construction of railways throughout its length and breadth, and the increased facilities for sending its grain to market, an increased rate to make good the deficiency might legitimately be charged on those lands the supply of which, by the construction of works of regulation and improvement, has been equalised and bettered.

Q. 25. As far as my experience in this district, where the landholder is most litigiously inclined and where prescriptive rights are constantly being asserted, goes, I have found that the Civil Courts recognise the landholder's claim to water-supply as a merely annual one, and terminating with the revision of his putta every year.

Q. 26. I would not put the *onus* of keeping up small tanks of the nature alluded to in good condition upon the cultivators, unless they were bound at the same time to make good all damage that might accrue from the breaching of their tanks. I would assess the land under them at dry rate to make it worth while to work under these conditions. The masonry works in connection with these small tanks should be kept up by Government out of the minor new works allotment.

Q. 27. I cannot say.

Q. 28. I cannot say.

Q. 29. The Public Works Department have nothing to say to the minor distribution of water in the Tanjore Delta, although this is an anomaly that should never have existed.

Q. 30. I cannot say.

Q. 31. I cannot say.

Mr. Rundall.

Q. 12. *Irrigation.*—On the Cauvery system the Capital outlay to end of 1873-74 amounted to Rs. 13,39,641; the annual cost of maintenance, inclusive of Public Works Establishment, both executive and administrative, amounts to Rs. 3,11,700 per annum. The

Mr. Rundall—continued.

total area irrigated is 924,735 acres, and the cost of maintenance is therefore $5\frac{1}{3}$ Annas per acre. The average assessment amounts to Rs. 3-13-0 per acre. The average net assessment is in round numbers $3\frac{1}{2}$ Rupees per acre.

I have no information to enable me to answer the last two clauses of this question.

Q. 13. In Tanjore the assessment is consolidated; there is no separate water-rate; the same system has been introduced into Tinnevely in the recent settlement of the villages under the Srivaikuntham anicut. There is, no doubt, a considerable waste of water in Tanjore; part of it is more apparent than real as the water run off the fields is picked up again. But the distribution arrangements are too imperfect to admit of each river being filled by turns in time of scarcity; it would not be practicable to charge for water by quantity.

Q. 14. I am not able to answer this question. A comparison of the revenue and assessment in Tanjore and Godavari shows that in the former district the average assessment of irrigated land is Rupees 3-13-0 per acre, in the latter Rupees 4-4-0.

Q. 15. I am unable to reply to this question.

Q. 16. In Tanjore there are no statistics of irrigation; there is no recent or scientific survey of this important district. Attempts are being made to work out the discharges of the channels, but the nature of the works themselves prevents this being done as accurately as is desirable, both river masonry works being designed to pass floods as well as the ordinary supply required for irrigation.

Q. 17. In these districts there is no evidence of mischief being caused by irrigation. Drainage and irrigation works should proceed concurrently. There are still many improvements in the drainage of the Tanjore delta to be effected.

Q. 18. In the Godavari large tracts of salt swamp have been reclaimed.

Q. 19. I do not think there is any evidence to show that prolonged irrigation damages the land, especially where the water, as in the Madras rivers, contains a large proportion of silt. Under tanks, where the water run off is clearer, it is usual to manure much more highly, and in Tinnevely the channel cultivation is highly manured.

Q. 20. All the Madras canals are inundation canals.

Q. 21. In Tanjore the canals themselves, and the major works, *i.e.*, anicuts and regulators, are in charge of the Public Works Department, the irrigating sluices are in charge of the Revenue Department. The distribution under all the minor irrigation works is in the hands of the Revenue officers, and had better remain so.

Q. 22. I do not think a special canal law required for the management of the existing systems of irrigation here.

Q. 23. The extension of the use of canal water has not been slow, but the people are always ready to avail themselves of an increased supply.

Mr. Rundall—continued.

Q. 24. Considering that Tanjore has had new markets opened to it by the construction of railways, also that its irrigation has been systematically improved during many years, I have no doubt an increase of assessment might be imposed, though what objections to this may be started by the Revenue officers I do not know.

Q. 25. I cannot give any information on this point.

Q. 26. There are numerous tanks which it would be better to abandon as such altogether. The crops under them are certain to fail in a bad year, because wherever wet assessment is charged the ryot thinks himself bound to cultivate rice. The tanks I allude to might assist in raising a crop of other grain, but do not hold water enough to mature a crop of paddy. There are no Local Funds for irrigation works which are classed as Imperial works.

Q. 27. I am not able to give information on this subject.

Q. 28. I cannot afford any information.

Q. 29. No doubt improvements can be effected in the distribution of the water and the volume available can be made (especially when there is a general scarcity) to do more duty. Improved distribution works constructed on proper levels and with proper means of regulations are required. They are being introduced by degrees, but not fast enough for want of funds.

Q. 30. No.

Q. 31. I cannot give any information.

Mr. Trail.

Qs. 12 to 23 inclusive Refer to canals, of which there are none in this division.

Q. 24. I think it would be impracticable to charge an extra rate upon individual lands which have been benefited by having their water-supply improved. The ryots would simply give up their holdings. If a small extra rate were spread over the whole division, it could probably be carried out, but the general idea is that the ryots are already sufficiently taxed. The question, however, is more one for the Revenue Department.

Q. 25. Disputes about water are not unfrequent in this division, and are of various kinds. Sometimes, if it is proposed to repair a tank and to increase its capacity by raising the escape weir and bund, it can only be done by submerging ground which is cultivated by a tank lying down above the one which it is proposed to repair. Sometimes, the ryots object to the improvement or extension of a channel lying above their own channel, on the ground that it takes away from their legitimate supply. These disputes, however, are generally easily settled by the Sub-Collector. The most inconvenient rights in this district are those of the dasbundumdars, who hold lands rent-free under certain tanks on condition that they keep them in repair. The tanks seldom or never are kept in proper repair, and the result is that they are a continual source of danger to the Government tanks below, and they often breach, and, by throwing an unusually large amount of water into the lower tanks, cause them to breach too. It would be very desirable if their rights were bought up or removed in some way or other. As the dasbundumdars are supposed to do a service equal in value to the rent of the land which they hold rent-free, I do not see that

Mr. Trail—continued.

they would have any ground of complaint if Government said to them—“We will now charge you rent for your land, and repair our tank ourselves.”

Q. 26.

I certainly would not allow the repairs of petty tanks to be carried out by the ryots holding land under them. There are certainly far too many small tanks in this division, but the Department Public Works should be quite able to carry out all necessary repairs themselves, only I think that in order to save time in the sanctioning of estimates the Executive Engineer should have power to sanction petty repairs say under 100 Rupees. Much time would be saved in execution of works by this means, and the Executive Engineer should be trusted not to spend money on tanks which it is undesirable to retain.

Qs. 27 to 31.

Are for the Revenue Department to answer.

The present condition and future prospects of Irrigation in the Madras Presidency and the Works of Irrigation required to mitigate the severity of drought and famine.

- 1st.—Excessive rainfall resulting in disastrous floods ;
- 2nd.—Abnormal rainfall by which the difficulties in utilizing the element are somewhat increased ; and
- 3rd.—Deficient local rainfall or drought.

P.M.G., P.W.D., No. 3411-A, dated
4th December 1874.
No. 475, dated 17th February 1875.
" 475-A " " " "
" 2780, " 29th September 1875.
" 2931, " 14th October 1875.
" 696, " 17th March 1876.
" 697, " " "
" 1976, " 2nd August 1876.
Chief Engineer's for Irrigation Memo-
randum, No. 262-I, dated 27th Nov.
1877.
Chief Engineer's for Irrigation Memo-
randum, No. 100-I, dated 30th March
1878.
P.W.D., G.O., No. 590, dated 22nd Feb.
1877.

nance of the works which secure that income." The condition and requirements of the Madras irrigation works are clearly and fully set forth in the papers marginally noted; but hitherto the repeated appeals of the Irrigation Department for a moderate and temporary increase to the ordinary grant, to enable them to place the irrigation works in an efficient state, have not been complied with.

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temporarily impounded by them would be utilized by the irrigation works further down the stream. Such flood regulators have been frequently suggested by eminent Engineers of great Indian experience, but nothing further appears to have been done than a few preliminary surveys and investigations: probably because the direct returns from such works cannot be properly estimated. The utilization of flood waters, which otherwise would flow wastefully to the sea during critical seasons of distress, is one of the most interesting and important problems to be solved in connection with the prevention of famine in Southern India; and, as the indirect benefit which such works as those suggested above would confer on the country generally must be admitted, it would be highly advisable to take up one or two of the minor rivers as an experiment; such as the Pooniar in Salem, and the Chitravati in the Bellary District, on both of which very favorable sites for flood regulators have been partially investigated.

(4.) In the third case referred to when the local rainfall is so deficient that the rivers dependent upon it contain no water, irrigation from such sources obviously becomes an impossibility for the time being. The records available however indicate that, although complete drought is sometimes protracted in limited areas, it does not continue for more than one season or so over any extended area of country. And it is evident that irrigation even when dependent on local sources, if carried out so as to utilize in an economical manner the water available as already suggested, will mitigate the severity of drought and famine during seasons of distress in proportion as the people are encouraged and taught to avail themselves of the means which nature has placed at their disposal. The argument that improved and extended irrigation, unless from an unfailing source, only tends to a dangerous increase of the population can be no possible argument against the irrigation itself, but is the exact reverse. It is better that improvident people should suffer for their improvidence, than that the country generally should be debarred from the benefits which nature grants.

(5.) As already suggested reservoirs as large and deep as practicable are one of the means of improving the irrigation of Southern India. But to say that all reservoirs should be made deep enough to contain a two-years' supply on the chance of the water being fully utilized once in ten or twenty years merely shows ignorance of the subject; for the cost of storing water is in direct proportion to the depth stored, and the evaporation in the Madras Presidency is so great that the loss from this cause alone before the water could be utilized would increase its prime cost many fold. By all means encourage the people to husband their resources; but it is infinitely more economical in every way that they should store grain in preference to water, and their money in preference to either.

(6.) Fortunately, however, for the Madras Presidency, its irrigation works do not all depend on local rainfall, and the irrigation under the rivers and their branches which receive a supply from the Western Ghats; the Godavari, Kistna, Cauvery, Periyar (to be diverted into the Madura District), and the Tamrapurni may be said to be permanent. The total irrigation from these sources may be taken at nearly* two-and-a-half millions of acres, about one-half of the total irrigated area of the Presidency, and when this is perfected there will probably not be less than $3\frac{1}{2}$ millions of acres of permanently irrigated land on which to depend, and if we take two acres of irrigated land as sufficient to support

* See Lists and Irrigation Map prepared in the Office of the Chief Engineer for Irrigation.

five of the population we shall have the means from these works alone of permanently supporting $8\frac{3}{4}$ millions of people, which is more than a quarter of the entire population of the Presidency according to the Census of 1871. It is difficult to arrive at the exact capabilities of an acre of irrigated land in supporting human life. The above conclusion that two acres are sufficient for five of the population has been arrived at by dividing the total population of the Presidency, 31,600,000, by the total area cultivated, 20,000,000 acres, allowing one acre of irrigated land (of which there are 5,000,000) to be equivalent to two of dry cultivation, and this would seem to agree with the actual production of an acre of paddy cultivation which is about 2,240 lb. of paddy, or 1,200 lb. of rice.

(7.) The completion and extension of the Irrigation works under these permanent sources of supply is now recognised (even by the Government of India) to be essential for the well being of the Madras Presidency, and the energetic prosecution of these works can be safely recommended. The accompanying diagram of the

* During Year 1877.	Millions of Cubic feet.
Off-take utilized ..	168,186
Surplus in river ..	1,342,068
Total discharge ..	1,510,254

water in the Godavari river during the famine year 1877 compared with 1875 and 1871 (average high and low years) speaks for itself as to the capabilities of this river to furnish a permanent supply*:

for it will be seen that during the famine year only one-ninth of the water available was utilized.

(8.) The subject of communications is so intimately connected with famine prevention that a few remarks on the capabilities of the Madras Presidency, in regard to its water communications, may not be out of place in a paper relating to hydraulic engineering. The Irrigation Map of Madras, which has been prepared by the Chief Engineer for Irrigation, shows the extent and position of lands permanently irrigated, and also those tracts of country most likely to require aid from the more fertile districts during seasons of drought and famine, and the particular routes along which communications are most necessary can be easily discernible. Inland water communication, which is the cheapest, most capable of heavy traffic, and best adapted to the wants of the country, is however only feasible where the supply of water can be depended upon for the purpose for which it is required. Unfortunately the permanent supply of water throughout the Madras Presidency is limited to a few localities, and it is not difficult to indicate the particular routes along which inland navigation should be encouraged.

They are briefly as follows:—

	Proposed.	Completed.
Godavari..	518	442
Kistna ..	321	267
	839	709

1st.—The completion of the 839 miles of the proposed navigable canals in the Godavari and Kistna Deltas, of which 709 miles have already been finished.

2nd.—Widening out to a width suitable for steam navigation the entire length of the East Coast Canal (now known as the Buckingham Canal) to connect the grain fields of the Northern and Southern Deltas with Madras.

3rd.—Opening up water communication from the East Coast Canal with the interior:—

(a) By extending navigation from the Madras Irrigation and Canal Company's Canal at Cuddapah down the Penner by means of dams and locks as far as the proposed Somaishwaram anicut and from thence by a canal to the coast canal at Kistnapatam.

(b) Improving the Upper Godavari navigation.

and 4th.—Connecting the existing backwater navigation along the West Coast.

(9.) The extension of the Madras Irrigation and Canal Company's Canal to the coast will, of course, depend on the success of the Company in working their existing canal, and also whether the subject of flood regulators is really intended to be taken up in connection with the utilisation of the flood-waters of the Upper Kistna.

(10.) With reference to the improvement of the Upper Godavari navigation there is no doubt that its importance both to the Central Provinces and to the Northern Districts of Madras is great. And had a moderate amount been set apart yearly for the improvement of the river instead of endeavouring to complete all works required for opening it up at one time, there would now be a very great deal more to show for the money that has been spent on it.

Irrigation Administration.

(1.) In the Madras Presidency where the irrigation works are numerous and scattered over large tracts of country, their successful conservancy and further development must, in a very great measure, depend upon the system of irrigation administration, and it is absolutely necessary that whatever system is in force it must be administered by one head, whether consisting of a single individual or a collective body. The failure of the present dual arrangement in force in Madras is evidenced by the almost dead lock* which occurs in furnishing statistics of revenue, &c., on which to base financial measures and engineering proposals; and by the neglect to utilise during the first stages of the late famine the existing organisation of the Engineer Department (such as it was) on the irrigation works of the country.

* *Vide* Secretary of State's Despatches, No. 22, dated 20th December 1877, and No. 19, dated 26th September 1878, referred to in Proceedings of the Madras Government, Public Works Department, No. 993-I., dated 5th December 1878, and Government of India's letter, No. 622, dated 7th October 1878.

(2.) The impossibility (at least in the Madras Presidency) of combining in one individual the functions belonging to the Collector of the revenue and the Conservancy Engineer makes the unity of the governing body all the more necessary.

(3.) The Board of Revenue (if it is to continue an institution of the land) should as its name implies be held responsible for the irrigation administration of the Presidency; but it must be reconstituted with a due proportion of the professional element. Whatever other changes may be considered advisable in the constitution of the Revenue Board, the addition to it of the Chief Engineer for Irrigation as a member, and his assistant as one of the Secretaries is necessary, and would cause little or no extra expense to the State.

(4.) The Revenue Board having been reinstated as the responsible head of the irrigation administration, it would be necessary to define the limits of the executive charges. These should be conterminous with the jurisdiction of Collectors except in the deltaic districts where the existing arrangements of divisions might remain, or be even somewhat strengthened. The areas of a few of the present districts, such as Bellary, Madura, Salem, &c., are probably too extensive for a single executive charge; but as they are also admitted to be too extensive for the charge of a Collector, the natural suggestion to make is, that these districts should be re-arranged.

(5.) The Executive Engineer in charge of a district should be considered purely a Conservancy Engineer, to keep in thorough order all existing irrigation works including the construction of the necessary escapes and other masonry works connected with them. And he should not be required to investigate elaborate schemes of irrigation, although it would be his duty to suggest all necessary extensions and improvements, the cost of which would be beyond the local power of sanction. The local power of sanction should be fixed at a sum not less than Rupees 2,500 for original works, and for repairs any amount within the limits of the grant made to the district. The system of Kudimaramut or customary labor must be revived, and an act to facilitate the conservancy of rivers and channels should be passed and the Conservancy Engineer, at least in the more important irrigation districts, must be entrusted with magisterial powers to enable him to enforce the conditions of the law. By this arrangement, he would be more intimately associated with the Collector of the district, and would hold a recognised position in its administration.

(6.) The investigation of all projects likely to cost more than the amounts within the local power of sanction should be conducted by an entirely separate staff of Engineers and Assistants, &c., whose salaries would be debited to the projects on which they are employed. And until matured projects are well in advance of the labor available for carrying them out without the enhancement of rates, this extra staff should be strong in numbers. Besides the investigation of new projects, this extra staff would be employed in grouping and estimating for the repair of the ordinary irrigation works of those districts which are most behind hand. The execution of the repairs being carried out as already explained by the local Conservancy Engineer and any extensive new work by a special man, either directly under the Conservancy Engineer or independently as may be most convenient.

(7.) Executive Engineers of the special staff would be eligible for employment as District Engineers and *vice versa*. But Executive Engineers in charge of districts and divisions or special works will alone be in account with the Examiner of Public Works Accounts.

(8.) To ensure discipline in the districts and the intelligent investigation of projects there must also be Superintending Engineers. These officers should be responsible for the sanctioning of local estimates and be the medium of communication between the Executive Engineers and the Board.

(9.) To sum up, the foregoing proposals may be stated to be briefly as follows:—

1st.—The more intimate association of the Revenue and Public Works officials, without which the interests both of the Government and the ryot must suffer.

2nd.—The placing under one responsible head the irrigation administration of the Presidency, by which the Chief Engineer for Irrigation will be in a position to collect and furnish all necessary statistics without in any way being relieved of the responsibility which must always attach to the chief adviser to Government in irrigation matters.

3rd.—The entire separation of the duties of the Conservancy Engineer from that of the investigation of projects, by the provision of a special staff for the investigation of projects, and to assist in grouping and estimating for the repairs of existing irrigation works in those districts which may be behind hand.

4th.—The revival of the system of Kudimaramut and the passing of a law to facilitate the conservancy of rivers and channels and empowering the Conservancy Engineer to carry out the conditions of the law.

(10.) All these proposals might be carried out without any increase to the cost of the existing department, and with hardly any alteration in the present location of the district officers. And if it be decided to make the cost of the special irrigation staff a permanent charge against the department, a very efficient staff could be provided from the Rupees 1,15,152, the amount by which the cost of the Public Works Establishment has lately been reduced in accordance with Proceedings, Madras Government, Public Works Department, No. 3,674-W, dated 18th September 1878.

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