

Mr. Percival.

of these parts not being accustomed to the dry food and requiring grain with it to work on. This was so quickly seen by the traders that the busy trade in karbi from the Nizam's Territory was not checked and no harm was done beyond the loss of money.

Q. 40.

The Sholapur District is of a convenient size and is divided into the right number of talukas. It is 4549.11 square miles in extent, and has a population of 7,18,000 persons. No change in the administration or the staff is suggested by the famine, nor in the relations between the Departments. The native subordinates showed great activity in relief operations; capacity and humanity varied with individuals, but were on the whole good. Relief was first given by opening small works all over the district about the middle of September. Supervision was insufficient and the numbers ran up till in January there were 76,000 persons on works under Civil Agency, and those under P. W. Department had fallen from 33,000 to 20,000. The Civil wage was then lowered and the small works gradually closed, but though the numbers on Civil works fell to 4,000, those under the P. W. Department never rose above 50,000. The ordinary Civil staff for the district consists of two Assistant Collectors and a Deputy Collector in charge of the Treasury. Under them are taluka officers and their establishments. In each village are a headman, an accountant, and village police and servants. The district police are under a European Superintendent. During the famine this staff was increased to five Assistant and three Deputy Collectors, so that there was one in each taluka. An extra mamlutdar or taluka officer was appointed in each taluka for famine purposes, with an establishment including subordinate medical officers, sub-overseers of works, and village inspectors. They were expected to move actively about their charges, to search out all cases of distress, and to carry out all the orders of Government for giving relief. The authority of the Collector over these establishments was complete. His discretionary grant for charitable relief of the infirm poor was unlimited. He was directed not to open new works without first obtaining the sanction of Government, but practically he had often to do so in anticipation of sanction. He was expected to keep Government thoroughly informed of all that was being done, and he received full general instructions. His work was under the direct supervision of the Commissioner of the division, who visited the district frequently; the works and poor-houses were reported on by the Sanitary Commissioner, and His Excellency the Governor was himself at Sholapur several times during the famine. With regard to the works under the P. W. Department, the Collector had to keep himself informed of the numbers upon them and of the probable requirements, and to apply for the opening of works where needed. The P. W. Department was strengthened

by several engineers. The Collector was also President of the Famine Relief Committees which were established in every town. The action of these Committees was independent of Government, but Government officers were leading members of them and watched their proceedings.

Q. 41. The arrangement by which the famine relief operations were placed under the head of P. W. D. worked very well.

Q. 45. Many small villages were entirely deserted in 1877, but they are all now very much as they were before. People are still returning, and the reduction in the area of cultivation cannot yet be judged. A considerable amount of inferior land will go out of cultivation for a time, but the return from such lands is so uncertain, that it is doubtful if this is to be regretted.

Mr. Ramsay, Nassick.—The only organized emigration was in the case of the

Q. 35. Musulman weavers of Yeola and Malegaon. These people are Mohims and came several generations ago from the north-west. Many of these were assisted with money from private sources to return to Hindustan. It is not known what has become of them. Work was found for most of those in need of it, but still large numbers moved off into Khandesh and the territories of the Nizam in search of some employment, leaving in many cases their families behind. Most of these have returned to their homes. I have no means of estimating the numbers of these people.

Q. 36. The masses in this country are so ignorant and so easily led as a flock of sheep, that very serious consequences might ensue unless Government interfered to regulate the movements of such wanderers. If left to pick up experience, no doubt numbers would die. A general exodus from a district where ample relief works were open, might easily be prevented with the agencies we possess.

Q. 37. The Bombay assessments have been pitched generally low with a view to meet the accidents of the seasons as they come. Thus in principle no remission is to be granted even in a bad year, as one good season is supposed to compensate for one or even more bad seasons. But in practice this is not found to work so smoothly as might be wished. Owing to his improvident habits, a ryot has nothing over at the end of a good year, and the next, if unfavourable, finds him destitute of resources and he is driven to the money-lender. Hitherto, as far as my experience goes in Deccan districts, there always has been some remission given every year for failure of some crop or other. During the past two years remissions have been discouraged and the system of postponement introduced. The system being quite new, we cannot well yet say how it will work. My own opinion, however, briefly is as follows:



However light the Government demand, there will always be a large number of persons in difficulties as to their rent when a bad year comes. Relief to some extent has to be given. In the cases of the more substantial cultivators who have large holdings, irrigate their land, and have a fair amount of stock, postponement of revenue is feasible, i. e. there is every prospect that the arrears will be recovered. With the poorer ryots I think that postponement is illusive and unsatisfactory. It is like hanging a stone round their necks which they cannot get rid of. Some remission must be given to this class, or else they should be sold up and allowed to descend into the class of labourers. But to postpone revenue without much prospect of ever recovering it is worse than idle, for it works actual mischief.

- Q. 38. I reply to this question only in so far as I have any personal knowledge. There is undoubtedly a very great disinclination on the part of the people to avail themselves of Government means of relief. In the first place the tests imposed are distasteful, natives preferring to work their own way at their own hours under little if any supervision. The maxim of a fair day's wage for a fair day's work is not understood or appreciated. Thus during the past season numbers temporarily emigrated in search of a precarious livelihood rather than work under the Public Works Department system. I can only attribute this to peculiarity in the temper of the people and not to any special want of confidence in officials and official arrangements. Natural indolence too has much to do with it. What the people want is work near home, no tests, and little supervision. They hate all rules, methods, systems, and punctuality especially. Bhils and other hill tribes, as is well known, earn a living by really very hard work, such as wood cutting for instance. But they prefer starvation to going to more regular though really lighter work on roads or tanks at fixed hours.
- Q. 39. No measures of this nature were adopted in this district by Government. But the Municipality of Nasick purchased grain from a distance and sold it at a cheaper rate to the poor. The operation was not on such a scale as to disturb the market. There can be no doubt that private trade ought to be interfered with as little as possible.
- Q. 40. I think our system of civil administration came out very well during the recent pressure. It must be remembered, however, that in this district the distress though severe never amounted to actual famine. My present relations with the Public Works Department in both branches are most harmonious and have always been so. There are 12 talukas each with a mamlutdar (tahasildar) at its head, who is a 2nd Class Magistrate. There are four Assistant Collectors, one Railway Magistrate, and a Huzur Deputy Collector at head-

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quarters. This staff has been found ample. The Subordinate Judges aided materially in organizing private charity. All did their duty according to their abilities. The relief works consisted of roads constructed under the Executive Engineer. But all plans were sanctioned and funds provided by the Collector, executive details being left to the Engineer. The whole of course was under Government supervision. Not having been in the district at the time, I cannot give further details. Just now there are some three storage tanks being constructed by the Irrigation Department. But I have no control whatever over these works beyond controlling the supply of labourers and seeing after their comfort and so forth.

Q. 42. Funds for works were provided from two sources—(1) Local Funds; (2) special famine grants by Government. Alike in both cases, the money available was expended and accounted for by the Executive Engineer. Frauds no doubt took place, but not to a very large extent. They took the form of payments on fictitious muster rolls. This was unavoidable with works hastily organized and numbers of new hands taken on to keep muster rolls and make payments. But there has been no actual conviction of any offence. Small sums only can have been illegally appropriated. All work was done on sanctioned plans and estimates, the professional sanction being given by the Superintending Engineer, while the financial control was exercised by the Collector or Commissioner according to circumstances in accordance with the standing rules as regards Local Funds expenditure. Taking the work done as a whole, I would say that the expenditure has been satisfactorily accounted for.

Q. 44, 45. As stated above, the distress in this district never amounted to actual famine. Two bad seasons of course have not been without their effect on the agricultural population, but nothing of this is apparent to the outward eye. Those who temporarily emigrated have returned. Not much land was thrown up, what was abandoned has been taken up again. The population has not sensibly diminished. Consequently the only effects of the pressure must be found in the general lowering of the agricultural status, and this must be more or less a matter of conjecture. It is certain that fresh debts have been incurred. Superfluous property of all sorts, including cattle, has been sold off and thus capital reduced. These results have been pretty extensive. But there will be no difficulty in getting in the revenue if good seasons ensue. Two or three good seasons now coming in succession ought to set the ryots up again in as good a position as they were in two years ago, but looking to their improvident habits, it is doubtful whether such would be the result in actual fact.

**Hon'ble Colonel Anderson.**—In my opinion all works proper should be under De-

Q. 2. partment Public Works officers. The only works which should not be under them are those of a trifling nature, in which infirm and aged people might be employed not far from their homes or place of relief.

Q. 3. Small works only expedient in the very opening<sup>2</sup> when famine is doubtful and numbers small. If large numbers have to be provided with work, the supervising organization will be strained to the utmost and must therefore be concentrated.

Q. 4. No other tests than those named appear feasible. I would at no time give work to those whose appearance did not give reason to believe that they had not means of procuring subsistence from their own resources.

Q. 5. One great difficulty in working the distance test occurred from the people misstating their villages. If large works are adopted, few people would be within such a distance of their homes as would enable them to go to and fro daily. If possible people should not be employed within ten miles of their homes. It is not expedient to require people generally to go too great a distance from their homes, say 30 or 40 miles; they dislike it exceedingly and will leave work and cause trouble in hunting them up when they have got into bad condition. This of course does not apply to selected gangs.

Q. 6. I have a very strong conviction that the Bombay scale of wages adopted in the late famine is full and ample, *if the people actually get it*, both on Public Works and for Civil relief. In the former the labourers in Bombay generally saved something, and as regards the latter, the money equivalent of 1 lb. of grain plus  $\frac{1}{2}$  anna, the infirm elderly people, who would form a large class of the recipients, were much better fed with this allowance than it is probable they had been in their own homes. This money, equal to 1 lb. plus  $\frac{1}{2}$  anna with no Sunday wages, I consider from investigation to be about equal, with grain at 16 lbs. per rupee, to two-thirds of the amount an ordinary hale labouring coolie would eat when on his ordinary daily work in ordinary times, and therefore sufficient for people of the kind who would come on this form of relief, which involves no work or only work of a very light kind.

Q. 7. When the numbers are very great, it is not possible to pay daily. But they should be paid at short intervals, not exceeding a week at most. Deferred payment means long running debt to the Bania, karkoon, muccadum, or some one else, and the diversion of a material part of the wages to interest. In Bombay, wages were I believe never paid in grain, and I should greatly doubt the expediency of such a plan or it being liked by the people. Fraud would be greatly facilitated in several stages, in the purchase of the

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grain, in storing it, and in the final disbursement. I have never heard of tickets being used for payment. In all cases requiring numerous payments of small sums, a difficulty always and at all times arises from insufficiency of small coin. A silver  $1\frac{1}{2}$  anna and  $2\frac{1}{2}$  anna would be very useful fractional coins for small payments; these might be square to distinguish them from the smaller round coins.

- Q. 8. An essential point for preventing frauds is the frequent change of the karkoons and muccadums when immense numbers of labourers are engaged. I can imagine no system to provide for absentees from roll call or for such as have worked part of a day, their payment will necessarily depend on the discretion or good-will of the muccadum, and it would as a rule be desirable not to recognize fractions of days.
- Q. 9. Civil relief wages should be given when there is a hospital, with any addition required by medical authority when there is one to order it, which of course he would do under due restrictions. Sick people duly passed as such should get Sunday's wages. All people seriously ill or for more than a few days should be sent to a hospital, which should always be in the vicinity of a large work.
- Q. 12. Huts 50 or 60 feet by 13,  $10\frac{1}{2}$  feet high at the ridge and 4 feet at the post plates, is a convenient size, with an opening at each end and two on each side. But much depends on the materials available. Cost must similarly vary with locality. Huts should be erected by the workpeople; the less able-bodied can do good service in much of this work. Huts should not be too close to one another or many massed in one block. Site of course on hard soil near water and though elevated not exposed to the force of violent winds; nothing renders a work more unpopular. On sanitary and police arrangements leave opinion to specialists.
- Q. 13. Would arrange bazaar purely by free trade principles, leaving it open to all traders to sell within fixed hours; they would come freely if fairly and reasonably dealt with. If they did not come, would examine reason assigned, and expect to find the solution of the difficulty. Traders should provide their own accommodation ordinarily; in special cases a small hut or two might be erected for them. Would forbid sale of manifestly unwholesome food on pain of expulsion from camp.
- Q. 14. A hospital in all cases of large works with large bodies collected. All the gangs should be inspected at least weekly. Sickly and weakly might be given light work in the camp, of which there would always be some to be done. Hospital huts should be similar to other huts, with double space allowed to each person. The Hospital Assistant should be under the professional supervision of the Surgeon

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of the circle, but entirely under the authority of the chief officer of the work.

Q. 15. Due admission must depend on the activity of the officer in charge of the work and his immediate subordinates to check rascality on the part of their inferiors, as also the classification and placing in gangs. The payment of advances would ordinarily lead to difficulty; it seems a matter which must be left to the discretion and arrangement of the head of the work, who might be able to secure small advances through headmen of gangs. Payments for broken periods of a day would be next to impossible.

Q. 18. The labourers will ordinarily be only too glad to go to their homes when the pressure is over and ordinary work becomes available, and will gradually discharge themselves. If there was any slackness in their departure, wages should be gradually reduced to a bare subsistence point. I am not aware that it has been necessary to give money to people on departure; they always had some small savings. The last class of people mentioned in this question would resort to their former mode of life, begging and living on their relations.

Q. 19. Desertion was not uncommon. Restlessness and wandering habits a common cause, without other adequate reason. I heard of one relief work in Canara becoming unpopular because the people of it were required to be in their quarters and out of the town after 9 at night, and to abstain from tom-toming in their quarters after the same time. It is difficult to see how desertion from relief-works could be guarded against, as it would be difficult if not impossible to discriminate between persons who had left from legitimate reasons and those who had left from mere restlessness with no proper means or plan for obtaining a subsistence elsewhere. Men may be properly moved to some distance towards the end of a famine to induce the voluntary lessening of numbers; they may certainly also be moved to utilize their services better. But great care should be exercised during the time of pressure in moving large bodies far, it may tend to their abandoning the works and spreading through the country, giving much trouble to reclaim them when fallen into bad condition. Two days' journey or 30 miles is as far as can be well managed. A move in threatening weather should be avoided or the people moved in batches of a few hundreds, who could get shelter, if need occurred, at a village on the way. Provision for halting *en route* is out of the question. The people, if living on works would always have the means of supporting themselves for a couple of days without special provision.

In Kuladgi last October the labour gangs on roads in the east of the Collectorate, over 50,000 in number, were paid off in the middle of September and told to go, if they wanted work, to a tank



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at Bijapur, or a tank in the north of the Collectorate, or to the Gokak works, all distances over 30 miles for the large majority of the people. Very few went, and those few soon left. There was reason to believe that numbers were on the roads, who did not need to be there longer, as rain had fallen plentifully, and agricultural operations had commenced to revive, and that only those who really required work would accept the move. This was true as regarded the large majority, but some proportion, possibly ten to twenty per cent., did require work still. The tank works were unpopular for one undoubted reason, that stricter supervision was reported to be imposed than was practicable on scattered road works. False reports too of cholera on the tank works were set afloat by interested persons, karkoons and muccadums employed on the closed road works. It was evident that whatever the people might do, they had no intention of going to the tank works. Some might go to their homes and find means of support there, and some would wander about in a purposeless way, looking for means of support but without any definite object in view; consequently search was made for people wandering about without work, and villages were examined with increased strictness and all people appearing really needy and asking for work were employed on relief wages for a week or two, when with the continued improvement in the season, they all or nearly all dispersed to their homes. It is evident that while a famine is in its intensity serious difficulty might result from attempting to move the people in large bodies to works which for any reason, good or bad, are unpopular. Still it may happen that such a move must be made, in which case the greatest vigilance in the country on the flanks of the line of movement would be necessary to reclaim people wandering away without means of subsistence before they allowed themselves to get into such low condition that their speedy recovery would be a matter of difficulty.

Q. 20. In all very large relief centres a Civil officer should be associated with a Department P. W. Officer. Professional duties should be entirely beyond his control or interference, but for all general management he should be responsible.

Q. 21. The combined employment of skilled labour in conjunction with unskilled labour is essential to the due turning to account of the latter, and indeed provides useful work for much unskilled labour. The wages need not be on the standard of ordinary times if lower would be accepted, as would probably be the case in times of general pressure on all classes.

Q. 22. On this point I only know that women were successfully employed in some of the relief works in Kaladgi in spinning. I have no particulars of the management noted down.

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Q. 23.

For all purposes of convenience a relief-house should be within a moderate distance of a town. An enclosure is indispensable. If no old building or enclosed space is available, a space should be fenced in with a dry thorn hedge. If space is available, 3 or 4 acres would be a convenient area and should accommodate 1,000 to 1,200 souls. Huts should be similar to huts for D. P. W. labourers above described. Twelve square feet sleeping space for each individual should suffice, as in fine weather many would sleep outside or under the lee of the huts, which should be placed diagonally to the prevailing wind. Trenches should be dug for latrines and filled in daily by some of the relief people. Number advisable to include in one poor-house uncertain, the larger the number the greater economy in control, but in districts liable to cholera, it would not be expedient to accumulate too large numbers in one enclosure. Possibly 800 to 1,000 should be a maximum number in such localities. The better and lower castes should be as far as convenient assigned separate huts and parts of the enclosure. Ordinarily it was found in Bombay in the last famine that the lower castes, who have few scruples, and children who at all times and especially in times of need are less tied by caste bonds than their elders, were the principal occupants of relief-houses. The able-bodied and adults remained at home or went on relief works.

Q. 24.

The conditions named should never be relaxed, otherwise the door is opened to endless fraud. By arrangements for segregation and cooking, all real scruples of people really starving could be met. Incurring extra trouble would be preferable to relaxation of necessary conditions.

Q. 25.

When once a state of famine is proclaimed, no discretion should be allowed to manifestly starving people, they should be kept within an enclosure by force. All vagrants and persons without subsistence should be interned by compulsion. Legislation should be provided to meet any difficulties unprovided for in the present state of the law. Such might be made to come into force specially at any time and till any time notified by Government. There would be no fear excited by such legislation if it occurred in quiet times in anticipation of being required.

Q. 27.

This very pregnant question I cannot attempt to answer in full detail; many of the points of detail are beyond my experience. I would however note that to children and sickly people food should never be given in the form of chupatees, which are often ill-baked and are always indigestible. Grain food should always be given to such classes in the form of pudding or stiff porridge. I found the greatest advantage result from changing from chupatees to pudding

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in these cases. It stands to reason that the food is more digestible in this form and therefore goes farther, and is alleviative if not entirely preventive of the diarrhoea so common among famine people, children especially. The ration of food should always be required to be eaten at the time it is served out, and should be given in two feeds a day to adults and three to children. The paupers should be required to do all the work of the relief-house with an addition of  $\frac{1}{4}$  to the ration of those from whom duties involving any amount of real labour are required. All should every two or three days at least in the warm part of the day be walked out to any wet nullah or river in the vicinity and required to wash. A barber should be kept in the relief-house. One can generally be procured for his food, and all men's and children's heads be shaved, and those of as many of the women as desire it, which many will do, or at least to have their hair cut short. The officer in charge of the relief-houses should test the weight of the rations daily. This is a point of great importance, as from fraud or error mistakes are very liable to occur. As to amount of supervising establishment I have no notes, but selected men among the paupers may be usefully employed on many minor duties of this kind, giving those selected for this purpose an additional  $\frac{1}{4}$  ration.

Q. 28. The hospital should be within the precincts of the relief camp, but separated by a fence. The person in charge of the hospital should always accompany the officer in charge of the relief-house in his inspections, (which can be best done when the people are seated to receive their food,) and can at once remove any requiring more than ordinary treatment or feeding.

Q. 29. The officer in charge of the relief-house should promptly send off to a relief work those fit and not required for the ordinary duties of the relief-house.

Q. 30. I have no experience of the class of Gosha women in relief. But I exceedingly doubt if any really belonging to this class would not have relations or friends able, if they tried to do so, to support them. Feeding them at home would open the door to much fraud, and in case of need I should be inclined to try if a separate ward could not be formed for such in a relief-house, with provision to meet any reasonable customs.

Q. 31. Relief in villages is open to much fraud. If a famine was prolonged I would bring all persons who could be moved to a relief-house, and thus reduce the numbers on village relief to the utmost, relieving none in their homes, except as a most temporary measure, who could possibly be brought to a relief-house. The circle inspectors should as far as possible see that all persons requiring relief are

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sent to the central relief-house, giving such temporary relief as may be necessary ; but this branch of their duties will require to be most carefully controlled to prevent fraud and waste.

Q. 32. So-called orphans and deserted children were very numerous in every relief-house in Kaladgi last year, but it was always suspected that the larger proportion of them had parents in the vicinity who had put them in the way of being taken into the relief-house and that they would be claimed when the famine wore off; this proved to be the case. Moreover well-fed children, really orphans or deserted, will be readily adopted by childless people of their own class. Some discrimination is necessary as to the persons by whom female children are thus allowed to be adopted.

Q. 33. Though an entire advocate of non-interference in the grain trade by Government, yet I think there are cases in which it might be desirable to purchase. First, in the case of inland districts with bad communications, after the rains have commenced, with the rail. If it was clear that famine must be prolonged some months after the setting in of the rains, it would be well, before matters had gone too far, to enter into contracts on the spot for delivery of at most, say a month's food for relief-houses and works at a certain price on a given date at named places or centres, or possibly to obtain possession of the grain at once and place it in store. This grain I would only make use of in extreme emergencies, if the local price rose beyond a certain point leaving a full profit to the dealer, taking all pains to make the dealers understand this, or in case imports should cease from stoppage of roads. This measure would be the more advisable or excusable in cases in which it was known that there were large local hoards which fear for the future locked up, and of course, when imports cease, become more tightly locked up than ever. In Kaladgi last August, from closed communications, and the stoppage of cart traffic, men's backs were the sole means of import for a month or two. Considerable panic arose, and grain rose to 5½ lbs. per rupee on the works notwithstanding that it was a matter of notoriety that enormous stocks, the accumulation of several years, were hoarded away in pits. When I was first there, from rain having fallen, grain was at 10 and 11 lbs. per rupee in the local markets. In remarking to some of the most intelligent of the people that these hoarders of grain would lose heavily if they did not soon open their pits, as in a month grain would be at 20 lbs. per rupee, they answered, then, when 20 lbs. is reached they say they will open their pits, as it will be plain that the general opinion is in favour of security in the future.

Any, even the slightest, appearance of interference in the grain trade or of forestalling any great advance of prices is a matter requiring

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ing the greatest delicacy and discretion in treatment on the part of the local officers. Still I think there are cases in which the command of a small supply might be of great use in regulating the market prices and preventing panic. When however a main line of communication was sure to be open during all weather, I would not interfere in the slightest way with the private trade in grain. Moreover I would under any circumstances do nothing anywhere having the slightest semblance of interference, present or future, in the commencement of a famine, for fear of deterring the full and early development of private trade.

Q. 36. I would not interfere with emigration unless there was reason to think that the emigrants would land themselves and the Government in trouble by their intended move. For instance if emigration commenced into a jungly district in November in order to obtain food for cattle, and there was a tolerable certainty that the emigrants would get fever there if they went before February, I would have them turned back, and proclaim that such would be the case through the patels of every village in the tract whence emigrants might be expected to come or through which they would pass. Once the Famine Act which I have above proposed was proclaimed, I would stop all miscellaneous begging in the streets at once, or as soon after as it seemed expedient to do so.

Q. 37. The land revenue assessment is based on the principle that good and bad years must be taken together, and that remissions are not necessary, and practically it will be found that for a long series of twenty or more years in most unfertile talookas with most precarious climate and uncertain rainfall neither remissions or outstandings of any but the most imperceptible amount have occurred in any year. These last remarks refer to parts of the Belgaum, Sattara, and Kaladgi Collectorates. In Dharwar, though in parts the rainfall is more uncertain than in others, no part can be called unfertile or of very precarious rainfall. Last year, which was a special one, some small amount was remitted before the policy of granting postponement instead of remission was adopted, and a considerable sum was left outstanding, of which much has been collected.

No specific rule has ever been laid down as to what amount of failure justifies leniency in collection, for the simple fact that, since the first settlement, remissions have become practically unknown.

We have in the south of Bombay no landlord class; some land is doubtless sublet commonly on Metayer rates.



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The arguments in favour of remission and suspension relatively are as follows:—

If the settlement is on a proper and moderate base, bad years should be compensated by good; and except under the exceptional circumstances of a series of bad years, remissions\* should not be necessary, though suspension may be an expedient concession to the people, ease them materially for the time, and cause no ultimate loss to the State except that of interest.

Remissions are bad, in that once given, the people get to hope that they will be again given. Moreover a system avowedly involving remissions is more to the advantage of the Native officials than of any other class. It is impossible in the thousands of applications for remissions, when such are a part of the system, for any proper and trustworthy check to be exercised. The main check must rest in the hands of native officials who, all experience shows, are not to be trusted in such matters. In one way or another by corrupt means more money is taken out of the taluka than is foregone on the Government account. Thus the Government and the ryot lose, and the people and officials are demoralized. In the old system in the Deccan and S. M. C. before the Settlement, the revenue system received from the Mahrattas was one of a high unattainable nominal demand from which a portion was always remitted, partly by permanent remissions given before the cultivation of the year, and partly by casual remissions given at the Jamabandi on plea of failure of crops and for other causes. Crop inspections were always made previous to the Jamabandi, and on the results of this inspection the collections were made. Every pretext was resorted to for obtaining remission—deaths in family, house burnt, cattle died, &c. Let the European Assistant Collector, in charge perhaps of from 1,200 to 1,800 square miles, do what he might, it was an impossibility for him to keep up any personal effective check upon the detailed enquiries preparatory to remissions. Officers did exert themselves to effect what they could in this direction, but the more they tried the more they found that any approach to effective control was impossible.

No specific limit for recovering in future years can be laid down. Much must depend upon whether the years following that of suspensions are good or otherwise. But the year or two following a famine must necessarily be years of high prices; if the seasons are only reasonably good, therefore, little revenue should be entirely lost.

Q. 38.

The searching out of cases of distress theoretically can hardly be viewed as the duty of Government. But practically if no measures in this direction were taken by Government, much life would be lost.

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The persons employed upon this duty should be specially set apart to this work, and should be in the first instance obtained from the servants of Government, as there is more hold on them than on hitherto non-official persons. The miscellaneous departments of Government, all persons who can be possibly spared, should form the first recruiting field for these officers. The Survey and the Educational Departments are those which first occur. If their numbers are insufficient, the non-official class must be next fallen back upon. There are numbers of persons desirous of obtaining Government employment in every district, a selection from among them might be made, with a promise of future employment in case of satisfactory performance of duty. Able-bodied pensioned native servants still fit for sedentary work might be called in, and temporarily enable persons on active employment to be detached on relief duties requiring greater personal activity.

As regards the area assigned as the circle of each inspector, that must entirely depend on the density of the population and the distances of villages apart.

The duties of these circle inspectors should be to inspect with the village officers the entire population of each village in their circle every week or every other week, according to the circumstances of the time, and to require the village officers to send off starving people to the relief-houses or works. He must particularly search out starving children, as the people of the lower castes will often see their children starving sooner than be at the trouble of sending them for relief. A difficulty is often alleged as to the means by which infirm people are to be sent to relief camps. This duty should be imposed upon the village by law and be recovered rateably on each house if necessary, should the village officers not privately arrange to get it done as they always can if they choose. In rare cases the circle inspector should be allowed to give temporary relief on the spot with the concurrence of the village officers; all such cases should be registered and signed by both. On such cases the strictest check must be kept, and except in extreme and exceptional cases, the recipient be soon removed to a relief-house.

This extra establishment will not be required until famine is decidedly declared, and it is no longer mere scarcity.

Have never heard or seen any objection on the part of the people to accept relief. The nearest approach to it which I have seen has been the lower castes not sending their children to a relief-house when evidently in a starving condition and when they admitted inability to feed them themselves, simply too much trouble to send the children to a relief-house.

Hon'ble Col. Anderson.

Q. 40.

Wherever or on whatever duty native control existed without close and constant personal supervision by European officers, things went wrong, some natives went wrong from sheer incapacity when subjected to heavy pressure, some went wrong on less excusable reasons, and some who were most anxious and ready to exert themselves honestly and to the utmost personally and did in fact do so, were unable to obtain proper support from their subordinates or to coerce them into doing their duty. It struck me, and it was too a subject of common remark among the famine officers I met, that there was a general want of sympathy with the suffering poorer people and those of the lowest castes, or with what Government was doing for these people, on the part of the native officials, who are with very few exceptions Brahmins. Government ordered such and such measures to be taken for these people and they must be carried out, but they had no sympathy whatever with the orders.

Q. 41.

This question does not apply to Bombay, in which the Commissioner of Division is not a stationary officer.

Q. 43.

I consider the proper time for private charity to be when scarcity prevails and before famine is clearly on; and it should be administered privately. Government officers may aid usefully in a semi-official capacity. I consider also that private charity may act usefully at the close of a famine in "picking up the pieces," generally by giving relief to poor as in ordinary times, and perhaps in giving aid towards starting some again in life. During the currency of a real famine private charity is apt to clash with the general Government measures and cause a waste of power.

Q. 44, 45.

Details in answer to these questions must be learnt from the reports of the administrative officers. But from what information I have I doubt if any remarkable decrease in the occupied area will be found to occur. Many people have certainly emigrated and a good number have or had till very lately not returned. It is impossible that some persons cannot but have become much poorer than before, but the carrying trade, which was largely developed in the famine, was a resource to a much larger portion of the agricultural population than might have been expected. The best cattle were very generally saved from death by starvation, the loss in numbers of cattle was great, but it was principally among the worthless beasts generally fed by grazing, on which the people would not waste fodder.

**Mr. Robertson, Commissioner, Central Division.**—I have already stated that

Q. 1.

as far as it is practicable, all works should be under the Public Work Department, and that only the aged and those physically unfit for proper work should be employed under civil supervision

Mr. Robertson.

With reference to the latter part of para. 8 of the Resolution of the 16th May 1878, no person should be admitted to any work unless he has received an order for admission signed by a District officer. The District officer should examine all applicants for work, send all he finds fit objects for State charitable relief—

(a) if able to give a fair out-turn of labour, to a Public Works Department work, and

(b) the aged and those physically unable to give a fair out-turn of work, to some work under Civil agency.

I consider it is not a question of the class of labourers for either kind of work, but entirely a question of physical fitness.

Q. 3. My experience during the late famine has made me a very strong opponent of works under Civil Agency, and I would not open any such works unless compelled to do so as an emergency. Of course this does not apply to Civil Agency works for the aged and unfit. There are no advantages to be obtained by small works under Civil Agency ; they lead to wholesale fraud and confusion.

Small works under the Public Works Department may with advantage be opened when the intensity of a famine is a matter of doubt, and as a purely tentative measure, when people will not go to long distances as they require to be near home. At that time they long to hurry to their homes with the first good fall of rain. Again, small works may to a limited extent be opened when a famine is passing away, and as a means of employing the few who then require relief, but who will of their own accord move away on the first favourable turn in affairs.

Q. 4. I would not adopt any other tests. But in every case the District officer should be doubtful about granting a labour ticket to a person whose appearance, clothing, or whose ornaments made his destitution a matter of doubt. He should promptly enquire into the condition of the person in question, and admit him if he should be found a fit object for State aid.

I would do this equally at the beginning, height, and decline of the famine.

Q. 5. *The Distance Test.*—The distance test was laid down in Government Resolution No.  $\frac{40}{8}$  W. of 3rd January 1877, it being ordered that when a work under P. W. supervision is within 25 miles from a work under civil supervision, the District officer should refuse to employ people on the latter work. Of course this did not refer to the aged and those unfit to work on a P. W. Department work.

Again, Government Resolution No. 83 P, of 18th June 1877, ruled that when a large public work is under execution within a dis-

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tance of 20 miles from a work around any relief-house, all persons capable of travelling should be sent to such work.

I consider the distance test as one of the greatest importance; without it the Government would have to support crowds of people who are very well able to support themselves. When the District officers are careful to act up to the orders issued, no hardship can arise. Of course it was never intended that the test should be applied in a blind and unreasoning manner. Government Resolution No.  $\frac{235 \text{ E.}}{774}$  of 7th April 1877, is very explicit on this point. It was there observed—

“Although the distance test is a very valuable one, there undoubtedly may be numerous cases in which the strict (and possibly unreasoning) application of this test would inflict very great suffering, and the order which enjoins this arrangement provides for such a contingency by directing local officers to exercise discretion in applying the principle in practice.”

“It is impossible to draft orders to meet every case, but Government have a right to expect—an expectation which is fully justified in the very great majority of cases—that officers will apply general principles, clearly enunciated for their guidance, in a reasonable and discriminating manner.”

No, it was not enough that labourers should have to go some distance to and from the work. The distance was such as to make it next to impossible that a labourer could spend his night at home, be at muster in the morning, and work all the day through. The inhabitants of Z would have been refused admission tickets to the work at A, and would have been sent to the work at B or to one further off.

As a rule they would not be admitted on a work without a ticket. Still great care and after examination by the District officer of the people on a work was necessary to prevent the wrong people getting on a work. The tickets were not individual tickets, but probably one mukadam would be sent with a number of people from Z to A. When near the work, some of these would be induced by people at a village near to B to return to a District officer's camp for work, and then people from the village near to B would fill up their places in the gang going to B.

Still with due supervision by the District officer, by his continually visiting a work and mustering the people in rows, he was in most instances able, on making enquiries, to trace out such cases and thus ensure the due enforcement of the distance test.



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This distance test was found most difficult of enforcement in the Ahmednagar district along the line of railway, there the position of working parties was continually changing, and persons who had at first been working at a distance from their homes would find their work brought to the neighbourhood of their villages. If it was found that people who were working near their homes had originally entered the work at a distance, common fairness prevented their being discharged because the work had progressed and approached their villages. In all such cases the muster rolls would prove whether a labourer had been on the work under the distance test.

The test has been effectual and has kept away thousands who were not in such distress as to require State aid. If the test is not enforced, then every man in a village would turn out for employment, thinking he might as well live on State aid as spend his own funds. All such labourers were as a rule found to shirk their work, and many, on a fair task being enforced, would, even though the work was near home, leave rather than work.

I do not think the test has been too severe, or kept away people who were in distress. The Government Resolution No.  $\frac{225}{774}$  E, of 7th April 1877, gave the District officers full powers and left them a wise discretion which if properly used (as I invariably found it to be) prevented the rules acting with undue hardship.

I do not consider any modifications in the Distance Test Rules, as published by the Bombay Government, in any way called for.

Q. 6. *The Wage Test.*—This question is divided into two main heads :—

Public Works Wage.

Civil Agency Wage.

1st.—*Public Works Wage.*

When works were first opened, the following scale of wage was fixed by Government Resolution No.  $\frac{166}{792}$ , of 4th November 1876 :—

A man per diem.....	2 annas.
A woman do. ....	1½ „
A child capable of working...	1 „

I was at that time Collector of Dharwar, and finding the above scale did not suit, I recommended that the rate of wage should vary according to the price of grain, with a small cash payment for condiments, &c.

In Government Resolution No.  $\frac{196}{527}$  C, of 15th November 1876, it was ruled that the rates in Government Resolution of 4th November

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should be allowed if grain was procurable at not less than 8 seers of 80 tolas each, or 16 lbs. per Rupee.

Also that when the ordinary food grain was selling at less than 8 seers of 80 tolas each or 16 lbs., labourers should be paid.

*A man* to receive  $\frac{1}{2}$  a seer, weighing 40 tolas or 1 lb. of grain, or its equivalent in money, and in addition one anna in cash.

*A woman*  $\frac{1}{2}$  seer, weighing 40 tolas or 1 lb., or its equivalent in money, and  $\frac{1}{2}$  an anna additional in cash.

*A boy or girl capable of working*  $\frac{1}{2}$  seer, weighing 40 tolas or 1 lb., or its equivalent in money, or, at the option of the directing officer,  $\frac{3}{4}$  seer weighing 20 tolas or  $\frac{1}{2}$  lb., or its equivalent in money, and  $\frac{1}{2}$  an anna additional in cash.

This scale was modified by Government Resolution No.  $\frac{268}{1038}$ , of 13th December 1876, which ruled that when grain was not less than 18 lbs. per rupee, the scale of Government Resolution of 15th November should remain in force.

This wage, it is to be specially noticed, was for the six working days and no wage was paid for the Sunday.

My own experience is that the Public Works wage is amply sufficient to sustain life and to keep the people in fair working condition, especially if they come on to the works before they have become enfeebled and out of condition. This is, as far as I know, the opinion of most officers who were serving under me in the famine, though at the same time I believe one and all concur with me in the opinion that the wage was not more than sufficient and that the Sunday wage should have been granted. I have been unable to understand any valid reason for not granting the Sunday wage. Sunday was a day of marked privation to all who daily had large appetites and could not put something by for the Sunday.

Of course one day's starving in the week could not fail to have a bad effect. At all large works there were many hangers-on to the bread-winner, people who either could not or would not work, and who, till brought to a very low state of distress and emaciation, would not go to the relief-houses. Eventually these people came on our hands in bad condition, requiring all kinds of special treatment and extra expenditure. I feel, and have always felt, that had the Sunday wage been given it would have been of such aid that much of the extra distress would have been avoided or lessened, and that the Sunday wage would have been money well expended. I have never taken any steps to ascertain the quantity of food purchased. I know that except in very rare instances, all the cash that was received was expended on food. In

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places where during the season there had been occasional rain, wild vegetables sprang up and were obtainable, then the people by making use of these were in a few cases able to put by a few annas. The staple grains used all over the country are bajri and jowari. In each taluka there is a mamlatdar or head revenue officer, and he on a fixed day in each week supplied the officers in charge of the work with the actual market or bazaar rate of grain.

On all large works a number of people would arrive in bad condition, people still able to work but still in bad condition. Some, the strong ones, would rapidly improve, the weak ones very gradually, and in some cases with great difficulty.

For some time I have been led to believe that the slowness of recovery of condition was not owing to the insufficiency of the wage and food, but to the method of cooking. The people were not in a condition to digest and assimilate the hard chapatis they made.

This is a point of very great importance, requiring careful examination by competent medical officers.

I have heard that in Kaladgi, when the people were fed on jowari porridge, famine dysentery decreased and the dreadful foul smell always found where there was a collection of famine-stricken people, disappeared. This question calls for careful investigation.

With my present experience I would, as regards works under the Public Works Department, adhere to the wage rate laid down by the Bombay Government in Government Resolution No.  $\frac{186 \text{ C. W.}}{827}$  of 15th November 1876 and in Government Resolution No.  $\frac{208 \text{ C. W.}}{1038}$  dated 13th December 1876. But I would add thereto the Sunday wage.

And further as regards all persons coming on to the work in bad condition, they should be ganged separately and steps taken to secure that their food should be made up, not into chapatis but into porridge or pudding, till such time as they had improved in condition and were able to be transferred from the bad condition gang.

#### *2nd.—Civil Agency rates of wage.*

The rate of wage on Civil Agency works was laid down in Government Resolution No.  $\frac{23 \text{ E.}}{106}$  of 19th January 1877.

A man  $\frac{1}{2}$  an anna and the value of 1 lb. of grain.

A woman  $\frac{1}{4}$  anna and the value of 1 lb. of grain.

Boys or girls employed on the works,  $\frac{3}{8}$  of a seer of 80 tolas of grain, or, at the option of the directing officers,  $\frac{1}{4}$  anna and the value of  $\frac{1}{2}$  lb. grain.

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Children under 7 years of age received an allowance of  $\frac{1}{4}$  of an anna per diem but did no work.

Here also the Sunday wage was not permitted.

The work exacted was naturally light and the people managed to live on the rates. On the whole most officers reported that the rates were fair and reasonable, though all I think would have felt that a fair and much needed addition had been made, had the Sunday wage been given. This Sunday wage was in my opinion most essential, but Government did not think proper to concede it.

That the six days' wage was of itself not absolutely sufficient is clear from its having been necessary to permit exceptional treatment. Mr. Percival, the Collector of Sholapur, wrote :—

“ As a whole I think the civil rates, modified by grants of extra allowance to nursing mothers and with a little straining the point as to when boys and girls should be counted as men and women, and with payment as charity through the village officers to work-people temporarily unfit for work through illness, have proved quite sufficient to keep the people alive and in health, though not to fully satisfy their appetite or to keep their strength up to its normal point in an ordinary year.”

Mr. Norman, the Collector of Poona, wrote :

“ It seems to be the general impression, in which I concur, that Civil Agency rates have proved sufficient for the maintenance of the old and infirm and such persons as are incapable of performing a fair day's work.

“ 3. On the other hand it must be remembered that the orders of Government under which special allowances could be granted to all persons in need of such assistance, have been freely made use of.”

My own opinion is that the rates were sufficient to keep people alive, but not more than that.

Q. 7.

It is not desirable to pay wages daily, as such a system sadly interferes with work and entails the loss of a large portion of the working day. Wages should be paid weekly. On a large work certain gangs should receive their wage one day, other gangs the next day, and so on.

I cannot say, having had no experience, whether nominal rolls or tickets are the best, but I should be in favour of the muster rolls. On works under the P. W. Department the wages are, I believe, paid by the officer generally entrusted with that duty, viz. a subor-

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dinate officer of the higher grade; but under Civil Agency by the special relief mamlatdar, regular mamlatdar, or first karkun.

Regarding the question of supervision for checking payments, and of preventing laxity and fraudulent practices in the disbursement of wages, I need not refer to works under the P. W. Department, that will be noted by the officers of that Department, but as regards Civil Agency works, the only feasible system appears to be that which was adopted in this Presidency—

- (a) Muster rolls called over twice daily.
- (b) As trustworthy a supervisor or overseer as could possibly be obtained.
- (c) Payments made only by the higher native officers of the Revenue Department.
- (d) Constant and unexpected examination of the work and mustering of the people by the Assistant Collector or Special Famine Officer, by the Mamlatdar, and Relief Mamlatdar.

As long as there are not too many Civil Agency works in a taluka, these precautions have, I am glad to say, proved to be sufficient to prevent fraud.

Labourers have, when employed by Municipalities, been paid in grain. In a few cases under Civil Agency they were so paid at the commencement of the famine, but this was as soon as possible discontinued. Payment by grain necessitates the purchase of grain by Government, interferes with local trade, and tends to interfere with a satisfactory supply of grain to the districts.

I am not aware of wages having been paid by tickets, on presentation of which at a trader's shop food would be delivered. I certainly would not recommend any such system. The only advantage it can be supposed to have is to prevent any speculation of the labour wage by the understrappers, but these people would soon meet you there by a combination with the trader.

The system would be most distasteful to the labourer, he prefers dealing where and with whom he pleases, he loves a little bargaining, he sometimes may not wish to spend all he receives on grain, may like if he can to aid a relative, while again the system would interfere with trade by giving one or two dealers a preference of custom.

- Q. 8. If a person is absent at roll call, he would be entered in the muster roll as absent, and receive no pay. If only present for half a day, he would be so entered and only receive half day's wage. If



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absent when wages are being paid, a note to that effect would be made, and he would be paid at the next pay day.

Q. 9. In Government Resolution No. <sup>98 E</sup>/<sub>348</sub>, of 13th February 1877, Government approved of the Superintending Engineer's instructions to the Executive Engineer, Belgaum, and ordered them to have general application in all the famine districts. These orders were, that sufficient subsistence should be provided to the sick employed on relief works (1) who remained under the medical attendant at the works, or (2) who, when there was no medical attendant, remained in his hut.

Q. 11. Government as a rule has been averse to piece-work. I cannot see any disadvantages in the system applied to famine works; on the contrary, I see great advantages, such as decreased expenditure, decreased distress, and a far better outturn of work for the money expended. The famine wage, as I have already observed, is only just sufficient to support the individual. It is well known that native families hate being separated; a strong bread-winner would prefer to have his aged relatives with him and to support them by his own and his wife's extra labour than to be separated from them.

Upon a fixed task for famine labour being laid down, extra work should be paid for as piece-work. The result, I think, would be a great saving under the head of "Charitable Relief" and under that of "Civil Agency Works." If a man working by piece-work did not support his infirm and aged, then he should be struck off from the piece-work gangs, who should be held to be gangs with special privileges. A careful checking of measurements will be requisite.

Q. 12. The form of hut can be best stated by the officers of the P. W. Department. They might be arranged in echelon on the plan laid down by Dr. Hewlett, but with less space between the rows of huts. A camp on his plan took up far too much room, and was difficult of supervision. The distances between the huts might without any harm be lessened, and then Dr. Hewlett's plan would suit well. The cost per hut must depend on the price of materials at the time. During the famine grass was very dear, and bamboo matting had to be used in many places to save expense. As dry a site as possible, not far from water, should be selected for a camp. Latrine trenches should be dug, and a staff maintained to attend to them. The District Police Force will enrol such extra police as may be necessary, and attend to discipline, &c.

Q. 13. I recommend as little interference with the bazaar as possible; it should be under control as to its sanitary arrangement and form,

**Mr. Robertson.**

The traders will in most cases construct their own huts, but in some places this must be done by famine labour. There should be no interference with prices or with what they sell, except only as regards the quality of grain, no unwholesome grain being permitted to enter the bazaar. If a trader has a monopoly and fixes his prices too high, then the District officers should arrange to introduce a competitor. Of course, if driven to it, Government would be obliged to bring prices down to the market rate by itself selling grain, but Government should interfere only when absolutely driven to this step on any particular work. The traders should certainly be allowed to keep their shops open all day.

- Q. 14.** A hospital should be attached to all large relief-works. The officer in charge of the work should daily, with the medical officer, muster in lines as many of the labourers as possible for sanitary inspection.

The question as to how far the sick should be treated without being sent to hospital is one for the exercise of his discretion by the medical officer. It would be absurd to attempt to pass any rules on such a point. When a labourer is sick, and there is no hospital and his case requires medical aid, he should be sent to the nearest relief-house or camp, at all of which there are medical attendants.

The medical attendant should be subordinate, that is, an assistant, for medical duties, to the officer in charge of the work.

- Q. 15.** The system adopted during the famine was that all applicants for relief were examined, either by the European officer in famine charge of the taluka, or by the relief mamlatdar, or in some cases by special committees serving gratuitously (composed often of some members of a Municipality and the Sub-Judge). Enquiries were made into their circumstances, and if deemed fit objects for State aid, a dakhla or ticket of admission to a certain work was granted.

Every one knew well enough where he had to go to obtain employment. All village patels were warned where to send applicants. The system worked well, and I am not aware that there was any abuse, or that any bribes were demanded. In fact the position of the Native officers was such as to render the probability of their taking any such bribes most unlikely. If a District officer was of opinion an applicant was not fit to be placed under the Public Works Department, he was sent to a Civil Agency work till fit, and persons on Civil Agency works, found to improve and become fit for Public Works Department works, were at once transferred.

The officers in charge of the work would gang the people.

Advances were always made to new-comers after the first day or two days' work till pay day came round, such advance being deducted from pay due. Payment should not be daily.

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Q. 16. The Public Works Department can better answer this question. On Civil Agency works the muster rolls give the necessary information. The quantity and value of work done on Civil Agency works can only be told when an officer can be spared to measure it up.

Q. 18. During the famine when a work is approaching completion, the labourers are drafted to another work. When the famine is declining, far greater strictness is used in giving tickets for admission to works; but, as a rule, as soon as prospects brighten, all those who have hopes from the improved season, take the matter into their own hands and decamp. A good fall of rain has in one day led to as many as 2,000 to 3,000 people leaving a single work, even without the wages due to them, so anxious are they not to lose a favourable opportunity for preparing their lands.

The labourers are carefully mustered by the District Officer in famine charge of the taluka, and all who are cultivators are sent off to their homes.

Those who are sent to other works, or discharged to go to their homes, are given enough money to support them to their homes. No money has been given to start them again in life, but tagai advances have been made to cultivators to enable them to buy seed for sowing and to buy cattle to plough their lands.

Sholapur, Satara, Poona, and Ahmednagar.

Such advances, after the late famine, in the districts marginally noted, amounted to—

Sholapur .....	Rs. 95,267	0	0
Satara .....	„ 15,603	5	0
Poona .....	„ 58,743	0	0
Ahmednagar .....	„ 7,677	0	0

Total.....Rs. 1,77,290 5 0

Q. 19. Yes, people do desert largely from relief works, often for no apparent reason whatever, often because they do not like the locality, because they have been on some light Civil Agency work, and do not like a task as required under the Public Works Department. A case or two of cholera will drive many away. The tank work at Ashti in the Sholapur district is one that was notably unpopular. Yet, after enquiry made, no particular reason could be given. Probably the officer in charge was strict, but he most certainly was not severe.

As a rule I am averse to moving bodies of men to a considerable distance. It will certainly drive away those who ought not to be on a work and are not in absolute want of relief. I consider that proper and constant mustering of the people by the District officers on all works, both those under the Public Works Department and under the Civil Agency, will effect this far better, while the distance test

Mr. Robertson.

also ensures those who ought not to be on the works being kept away. If you desire to move men to a more useful work, this can only be done gradually. I can confidently affirm, from much experience, that they will not go to any *very considerable* distance. I made repeated efforts to send men from Sholapur and parts of Poona to the Dhond and Manmad Railway works, but they *would* not go. Repeated attempts were made to send men from the Sangola and Malsiras talukas in Sholapur to the Nira Canal works, and they would not go. On one occasion I sent a body of 500 men under a party of Police from Karmala and Malsiras to the Nira Canal works. They had then grain with them. Only a few arrived, the rest having deserted on the road, and those who arrived, I learnt on a subsequent visit to the Nira works, had after a few days deserted the works, not liking to be so far distant from their own district. I consider the difficulties, as regards the removal of large bodies to a considerable distance, are so great as to render any attempt at such a step in every way most undesirable.

Q. 20.

Whenever a work is a very large one, capable of employing upwards of 10,000 labourers, a Civil officer ought to be associated with the Public Works officer on the work. The Civil officer, in addition to his duties at the work, could take charge of a tract of country or circle of villages around the work.

As large bodies of applicants for work would naturally be attracted to the work, he could then receive and examine and give them passes of admission. He should, as often as possible, muster the people, note their condition, and report regarding it, remove all who have irregularly got on to the work, carry on the magisterial duties, see that the sanitary arrangements are such as they should be, and in fact carry on all work not connected with the professional duty of the Public Works officer.

Near all such works it is most advisable to have a relief camp for the infirm, aged, &c. This would be under the supervision of the Civil officer, aided by a medical officer, and he should manage the bazaar. He must never interfere with the professional work, and the engineer should not interfere with the management of the camp, the discipline of the labourers, the payment of wages, or the tasking, except when he finds on examining the people in gangs that they are falling off in condition, and there are complaints of overtasking; then he should give the Public Works officer his opinion in writing, if he considers the task is affecting the condition of the people. He should on examining the people have authority to transfer any person from Public Works Department works, either to a Civil Agency work or to the relief camp.

I hold that there ought not to be any friction between any two such officers if they are devoted to their duty, and each refrains from interfering with the proper work of the other as detailed above. Should any friction arise, it can be soon settled by the Commissioner of the Division and the Superintending Engineer of the Circle.

Q. 21. I apprehend the difficulty entertained is a purely imaginary one.

Q. 22. I have not been in charge of works.

I think cases may arise when it is necessary to help local trades, especially those of weavers. Other artizans will generally find sufficient employment (unless a famine is protracted over two or three years) to keep the wolf from the door. In the late famine such aid was given at Vita in Satara, at Yeola in Nasik, and at Sangamner in Ahmednagar.

Advances were made to the different weavers on security, the weavers entering into a bond to make over the worked up material or repay the advance to Government.

As a rule, the advances were repaid with fairness.

I think the better plan would be to give the raw material, taking it back when made up, and pay a fair market price for the value of the labour.

The system has been carried out to so small an extent that it is difficult to pass any opinion as to the best method of distributing the raw materials. I am afraid that any system introduced would prove unsatisfactory and lead to loss and speculation, and I prefer as far as possible to trust to outdoor labour.

**Mr. Bosanquet, Belgaum.**—As I have said in my answers to questions under Chapter II., I think in the commencement of a famine large central works under the Public Works Department are advisable. It will depend a great deal on the sufficiency of wages given to persons so employed what further kind of relief work becomes necessary. After a time, artizans, like weavers, who in consequence of the pressure of the times find no sale for their manufactures and who are unfitted by the habits of their life hitherto for earthwork, may require assistance by raw materials being given to them to work up. As the famine continues and private charity is less liberally given and relief-houses supported wholly or in part by Government are established, a certain number of persons will be found who are proper inmates for such relief-houses but who can do some light work. This light work may, in the case of many of the women, be spinning in-doors. The boys and men and a few women may be found capable of doing some very light out-door work, as clearing gutters, &c., work of little or no value, but which it is desirable for the people to be



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employed on in their own interest, so that they may not become demoralized by continual idleness. It might be a consideration whether the opportunity might not be taken advantage of for the young boys and girls in relief-houses to receive some kind of instruction in reading and writing. But the matter on which the Commission appear to be anxious to obtain an opinion is whether any kind of works known in the Bombay famine as "Civil Agency works" should be established or not.

One difficulty relief officers have to contend with is the unwillingness of people to leave their homes to go to a distance for labour. Speaking generally, this difficulty does not apply to strong, able-bodied men, but to those who are past middle age. These latter often prefer to remain half famished at home, and consequently after a time become fit recipients for gratuitous relief. It is for persons of this description only for whom it might be considered advisable to establish "Civil Agency works." I would prefer, however, if possible, to bring work conducted by Public Works agency within a certain distance of the homes of these persons, and to take every available means for inducing them to accept labour on such work, than to establish Civil Agency works. My objections to "Civil Agency works" are those pointed to in the margin of paragraph 2 of the questions of the Commission.

There are also certain persons who purposely let themselves down in physique in order to force the authorities to feed them gratuitously. When I say they let themselves down, I mean that they intentionally refuse to go on the works because they know that after a time when they become too weak to be able to work, and the authorities fear their contumacy may cost them their lives, they will get fed for nothing. I shall have occasion to allude to these people further on in question 25 of this Chapter.

**Q. 3.** I have above explained why I think that in addition to large central works under Public Works Agency, smaller works under the same agency may be permitted. I have also explained that I would if possible avoid works under Civil Agency if of a nature to require professional knowledge and supervision, works which, having to be estimated for beforehand, have to be tested afterwards in order that their value may be ascertained.

**Q. 4.** My opinion regarding the distance wage and labour tests will be stated further on. I would never at any period of the famine refuse to accept any persons as labourers, whatever their appearance, if they were prepared to do a fair day's work for a fair day's pay.

**Q. 5-10.** I may preface my remarks on these paragraphs by stating generally that I believe it to be a fact which cannot be disputed, that the

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application of the wage test was the great cause of the large mortality which occurred, and that the distance test when applied, except in the modified form spoken of at the conclusion of my 10th paragraph, also contributed in some degree to the same result.

- Q. 5. So far as I was personally concerned, the distance test was not applied in this district till the famine became very far advanced. It was sometimes, however, necessary for persons requiring labour to be sent 30 or 40 miles for it on account of there being no large work under the P. W. Department in progress within that distance. The Public Works officers can explain the manner in which the arrangement of sending labourers "to the end of the line" on canal and road work was carried out. In the month of May it was found that owing to a difficulty in providing sufficient supervision, the labourers on the line of road between Belgaum and Panchgaon, on the way to Kaladgi, shirked their tasks. It was found also that labourers appeared to prefer this work, on which from the cause just stated tasks could be shirked, to the work on the Gokak Canal, on which it was more difficult for this to be done. It was therefore decided by the Public Works officers of the two departments, after consultation, that it would be advisable to endeavour to draft a large number of men from the road to the canal, the distance between the two works being 30 or 40 miles. As it was not supposed that the labourers would go willingly from one work to the other, it was proposed that they should be given the option of going or of being dismissed altogether. In this way it was intended to transfer five or ten thousand labourers in gangs of 500 or so each. Unfortunately I was at a distance when this determination was resolved on, and on its being made known to me, the cause which led to it was not stated. As therefore the only object of moving the labourers appeared to be that, supposing some would prove contumacious and would refuse to go where ordered, their numbers would become reduced, I had no option but, pending further explanation, to deprecate the measure proposed. It is a matter of regret to me that owing to press of work I did not make a report on the subject to Government, who, I presume on all particulars being stated in the report from the Public Works Department, ordered the arrangement proposed to be carried out immediately, and took me somewhat severely to task for not having acquiesced in it in the first instance. Whether they would have come to a similar decision had the cause which led to the recommendation been kept from them as it was from me, I will not take upon myself to answer. On the occasion under notice, after a large number of those intended to be transferred had been dismissed for refusing to go where ordered, the project in regard to the remaining number was I believe abandoned.

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In June or July, when rain had fallen, Government sent instructions that pressure should be put upon labourers to induce them to leave the works. Bearing in mind what had passed in May as just explained, I determined to meet their wishes by endeavouring to concentrate the labourers on the canal work above alluded to. This work was favourably situated for the carrying out of such a measure, as the Gokak taluka adjoins all the talukas of the district except one, Bide, in which there was very little distress. The Commissioner however expressed an opinion that it would not be safe to carry out the measure in the most northern part of the district, and things there were therefore allowed to go on as they were. In some other places also labourers had to be engaged for roads which required repair. As the famine continued to press more severely in August and September, many people came into Belgaum in an emaciated condition, and the number of deaths at the relief-house at that place increased much. The experience of the famine has shown that persons who have long been in a starving condition are hopeless cases when attacked by diarrhœa or dysentery. I cannot state whether any cause of the mortality was owing to the application of the distance test in the manner explained; but had I the time over again, I should, in the absence of distinct orders for enforcing it, prefer to avoid it.

Regarding the latter part of paragraph 5, I believe if it was found to interfere with discipline if the homes of the people were near enough the works to admit of their returning to them daily, the labourers should therefore be kept far enough away from them to prevent this, but on the other hand if possible they should not be kept too far away to be unable to visit them between Saturday night and Monday morning. The test when applied thus has probably not worked injuriously in keeping away persons who were really in distress.

I may preface my remarks on the wage test by saying with all respect that I consider it to be objectionable in every way and altogether wrong in principle. If people are ready to work as they ought to do, why not pay them fairly? The wages allowed, as is well known, on the famine works throughout the Bombay Presidency were as follows:—

*On Public Works.*

Men.....	1	anna	+	1 lb. of grain.	} G. R. No. 268 C. W. 1038, of 13th Dec. 1876.
Women ...	$\frac{1}{2}$	„	+	1 „	
Children ...	$\frac{1}{4}$	„	+	$\frac{1}{2}$ „	

*On Civil Agency Works.*

Men.....	$\frac{1}{2}$	anna	+	1 lb. of grain.	} G. R. No. 33 E. 108, of 19th Jan. 1877.
Women ...	$\frac{1}{4}$	„	+	1 „	
Children ...	$\frac{1}{8}$	„	+	$\frac{1}{4}$ „	

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Children of people on the works under 7 years of age were paid  $\frac{1}{4}$  of an anna daily under G. R. No. 312 C. W. 1116, of 26th December 1876.

I have no hesitation in saying that these allowances were entirely insufficient, and that to their introduction is to be attributed the greater part of the mortality which occurred.

The amount of food which is necessary to sustain life in a healthy condition is not an abstract question which can be decided offhand for every individual. The question to be considered is what a person has been hitherto accustomed to. If a man has lived for years on say eight "breads" or chapatis daily, and you suddenly reduce him to four and keep him on that for months, you must reduce his physical condition to a very injurious extent and put his life in imminent danger. Soon after the famine closed, the allowance for each man in the jail was reduced as follows as an experimental measure :—

	Old rate.			Experimental rate.		
	lb.	oz.	dr.	lb.	oz.	dr.
Jowari flour .....	1	8	0	1	4	0
Toor dal .....	0	5	0	0	3	0
Vegetable .....	0	8	0	0	6	0
Salt .....	0	0	6	0	0	6
Oil.....	0	1	0	0	0	4
Fuel .....	1	0	0	1	0	0

In a very short time it was found that the prisoners became reduced in weight, and it became necessary to raise\* the allowance to the old rates.

\* See note below.

Now if persons having all the advantages prisoners have, could not live on the reduced scale just mentioned, how could it be expected that famine labourers could live on much lower rates, no wages being paid for the Sunday?

Even however supposing it was possible for the distressed persons to support life on the allowance permitted to them, this very low rate was objectionable, for the reason that many persons would not accept work upon it. They said "better starve at once and end our misery, than go for months in a starving condition." The consequence was that many people able to work persistently refused it. When much reduced by want they had to be received gratis into the relief-houses for a time, and when better had to be turned out again only to be re-admitted again soon afterwards. Of course the privations which such people suffered, no doubt a great deal from their own contumacy, produced in time a very injurious effect on their constitutions, and in many cases led to fatal results. I cannot however but regard it as something very like cruelty to expect people to work

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through a great part of the day and under an Indian May sun on a diet obviously quite insufficient. I may observe that, considering the appetites that growing children have, the allowance for those

\* I must note here that though works under Civil Agency were discontinued in this district at an early period of the famine, payment at Civil Agency rates was still given by the Public Works Department to labourers on works being carried on under their supervision who under Government orders were not entitled to the higher rate.

under 7 as above mentioned was certainly inadequate. As Civil Agency works were discontinued in this district at a comparatively early period,\* and as I did not have much opportunity for observing the physical condition of the labourers, I have little to say about their external appearance. They did not give me, as far as

I can remember, the appearance of persons in a starving condition, but it must be borne in mind that the external appearance of a person is scarcely a safe guide to go by in determining whether he is in danger of dying from starvation or not.

It is asked "what have you ascertained as to the actual kind and quantity of food purchased by labourers with their wage?" This question can be better answered by others; but I believe that sometimes labourers with the desire of saving and also with the object of assisting their infirm relations, lived a good deal on leaves and roots. The price of the standard kind of food was ascertained by the mamledars by enquiry in the local markets. My answer to the last sentence of paragraph 6 is, with all respect, that I believe for the reasons above explained the "wage test" as adopted in the last famine to be objectionable from every point of view, whether of justice, of humanity, or of good policy.

- Q. 7. Of course it would be best if wages could be paid daily, but there are two difficulties in the way of their being so paid. One is, the great amount of time that is lost in making daily payments, and the other, the difficulty of obtaining enough small coin for the purpose. If the labourers could be divided into gangs and each gang could be paid by piece-work, the value being calculated by a European officer, the difficulty of making payments would be much reduced. Twice a week is probably quite as often as the officers in charge of large relief works could arrange to make payments. If the measurements were made and the payments given by native agency, the European officer in charge of each work could check fraud on the part of the subordinate by personally measuring up the total work done.

Some of the questions in the body of paragraph 7 can be best answered by the Public Works officers, but I may state my opinion pretty clearly, that honesty in paymasters is not to be expected from subordinates receiving salaries of not more than Rs. 20 to Rs. 40 per



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mensem. The only way of preventing dishonesty and laxity with regard to payments would be either the adoption of piece-work payments, or by the payments, if possible, being made in person by the Executive Engineer in charge of the works, or by his assistant. I am under the impression that here payments were at one time made partly in money and partly in grain, but that such mode of payment was quite exceptional. The usual mode of payment was in money. When local traders have not the capital to enable them to import grain to sell to labourers, it may be well for Government to import grain on its own account in order to make grain payments. Wages were never paid here by tickets. I am not able to express an opinion as to this mode of payment. If it could be successfully carried out, one difficulty in making frequent payments to the labourers, that of obtaining sufficient copper and small coin, would be obviated.

Q. 8. If work were paid by measurement, there need be little cause of anxiety about the improper obtaining of wages by persons who have not worked. If that were not found feasible, the payment by gangs might be tried, payment being made to the persons selected by the members of each gang for the purpose. In the former case nothing would have to be done but to measure the work done and to pay for it accordingly. In the latter case, trustworthy officers might occasionally, in the course of the day, be sent round to count the numbers in each gang. I believe Mr. Palliser, the Executive Engineer for Irrigation, had some system of dividing the people into gangs on the Gokak Canal and paying for work by measurement, and that the system answered well.

Q. 9. Such people, when in hospital, should be given the food certified as necessary by the senior medical officer present. If there is no hospital and therefore no medical officer, they should receive the allowance of food given in the relief-house in the neighbourhood.

Q. 10. What steps are necessary to compel persons receiving relief, to work? If people were paid by cubic measurement of work done, it would be their own interest to do a certain amount of work. The blot on the system of making payments by time instead of by the work done, is that it becomes the interest of persons to shirk work as much as possible, insomuch that an industrious man gets nothing extra for his extra energy. The reply to the last question in this paragraph appears to be that no work should be given the value of which cannot be tested.

Q. 11. I am of opinion that on all public works, without exception, the people should receive payment for the quantity of work done at a fixed rate irrespective of the amount of daily earnings. This is the only just mode of payment, and when I have said this I have

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given the only reason which ought to have any weight. It is just not only to the labourer but also to Government, and protects the latter from imposition. I am not aware that there is a single disadvantage in making payments on this system. I believe the Executive Engineer for Irrigation, Mr. Palliser, carried it out quite successfully, and he can give details as to the manner in which it should be carried out, whether on a small or on a large scale. I do not see how such a system could be abused if carried out under proper supervision.

Q. 14. It was always an object here to get a medical officer for every work. The appointment of such officers must depend upon the supply, for there can be no doubt of the desirability, or I should say the necessity, of such officers being at every large work. Here we find an additional argument for large works, as the fewer works there are the more easy is it to ensure proper medical supervision on each. I believe the medical arrangements on the Gokak Canal were everything that could be desired. It is not therefore necessary for me to say more on this subject, as those who are so much acquainted with them can give all these details.

Q. 18. When the famine here was declining, the people left the works of their own accord. On a work being closed they were drafted to other works, being paid on the way by an officer deputed to accompany them. They were often however unwilling to proceed to a distance for work, and used to desert on the road. No difficulty was experienced, so far as I am aware, in dealing with labourers "who to the end continued in a physical state in which they were unable to support themselves." No such difficulty was brought to my notice.

Q. 19. On this subject the Executive Engineers will be able to give more accurate information than I can. I have already expressed my opinion that many persons were deterred from accepting work on account of the insufficient wages allowed. The same cause no doubt operated in leading persons, really in need of assistance, to leave the works in order to try their chance of getting a precarious subsistence by begging and by feeding on leaves and roots. There may be occasions when it is necessary to draft men from one work to another, but it would be well if arrangements could be made that the distances travelled should not be great. Such occasions should not I think be sought simply in the hope that the labourers will desert on account of the distance of the new work. In case of an epidemic breaking out on a work, there would, I suppose, often be no resource but to close it. The only feasible way of transferring labourers from one work to another is by placing them in charge of some person whose

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duty it will be to pay them daily. During a great part of the year there need be no difficulty about hutting. I know of no case in which more than 500 people were moved or attempted to be moved at one time from or to a Civil Agency work.

No Civil officers were in this district associated with officers of the Public Works Department in supervising relief works, and it does not appear necessary for me to say anything on this subject, except that I am not aware of any advantage to be obtained by such an arrangement.

Q. 22. I have already stated how weavers were employed here. When work was finished they were allowed the difference between the cost of the raw material and the estimated value of the material when made up. This I consider to be the equitable and proper mode of payment. As in earthwork so in this, value of work done should in my opinion be the only basis of payment.

Q. 23. The situation of a poor-house must, I imagine, depend on local circumstances. In this district the best building available for the purpose was obtained. In the town of Belgaum a large dharmshala was used for a long time. Afterwards in the rainy season a shed was constructed at a distance of a mile or so from the town. In other places usually some dharmshala or other large building was utilized for the purpose.

I should however here explain that the poor-houses in this district were as a rule simply places where food was distributed. It was not until the famine was far advanced that a certain number of persons remained on the spot. These were chiefly sick people who could not go away. Many of the ordinary recipients of gratuitous relief obtained assistance from other quarters as well as from Government. Consequently I have little or no opinion to offer regarding many of the questions put in this section.

Outside the town of Belgaum we had one large, capacious shed for feeding the people. Those for whom space could not be found inside the shed sat outside. After a time the enclosure was itself roofed in. A certain number of persons slept under the shelter thus afforded, but all those who were strong enough and able to find shelter elsewhere did so.

Q. 24. Inability to work on a relief work, and willingness to accept cooked food, are I think very proper conditions for admission to a relief-house, and I do not see any reasons why they should be relaxed. In the Belgaum relief-house, where from 1,500 to 2,000 were often fed daily, no caste was observed. All were alike. In regard to the question "willingness to reside within the enclosure," I have already

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remarked that here the distressed persons were never compelled to reside within the enclosure. The truth is the number of persons requiring relief was so great that the expense of erecting covered enclosures for all would have been very great. It was not therefore attempted. It appears to me very doubtful if the condition of willingness to reside within a relief-house is necessary or even expedient. In the town of Belgaum indeed in the relief-house established by the municipality all the people were kept under control and very nearly all were set work of some kind to do, either out-of-door work, as clearing gutters, or in-door work, such as spinning and weaving. This relief house was, however, on a very small scale. The daily number of recipients of relief never exceeded 326. A very large proportion of these were children. The number of persons, excluding children, who could do no kind of work, were eight or ten.

Properly speaking applicants should only be admitted when the patel or headman of their village is able to certify that they are proper objects of charitable relief, but we did not adhere to this rule here. When persons come in a famishing condition and ask for food, rules like this cannot be rigidly followed. The fact however of a man of any caste to speak of being ready to eat cooked food prepared by he knows not whom, is of itself a pretty sure indication of his being in want. When possible, European officers stood at the entrance of the enclosures and decided what applicants should be admitted. Otherwise the Local Committees undertook this duty. The system of tickets was carried out to a very considerable extent. Persons once admitted received a ticket and were then allowed to enter each day without question so long as they were allowed to retain it.

- Q. 25. I do not from my experience here think that compulsion to enter a poor-house is necessary in regard to persons who appear to be in a starving condition. I do not think that any compulsion would be required to be used in the case of such persons. When however it is asked whether compulsion is necessary in regard to vagrants able to work and declining it, I can have no doubt as to the answer to be given. Such persons should be allowed no option. If European vagrants are allowed no option under Act IX. of 1874, why should these persons be allowed any? Legislative authority should be available to treat as convicts all persons wandering about without ostensible means of subsistence who can work and will not. We were much harassed by many such persons here. I have expressed an opinion that one of the causes of persons refusing to work was the insufficiency of the wages allowed, but even with a more liberal scale of wages than was allowed by this Government, it is

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probable that there would always be a certain number of people who would steadily refuse work.

Q. 26. I would here respectfully refer to Government Resolution No. 193 E 677 of 28th March 1877, on a report of the Sanitary Commissioner on the rations allowed at the relief-house here under the superintendence of the Judge, Mr. Shaw. I have no remarks to add to this. Mr. Shaw visited the relief-house daily for many months, and I have no doubt the allowance of food given by him was right and proper. I may however observe that at the time this memorandum was written, the persons receiving relief got food in private houses also, as two or three of the Soukars here doled out food daily to all applicants.

Q. 27. Many of the questions asked in this paragraph concern minor details. Many of them are of comparatively little importance if proper supervision is exercised, and without such supervision general instructions regarding such details are to little purpose. Blankets and light cotton clothing as a small sheet were provided here for a few of the very sick, but not much expense was incurred in this respect. It would be a good thing if the aid of private charity could be sought in this branch of relief. If clothing is given too freely to all applicants who appear very scarcely clothed, it becomes an easy matter for those wishing to get new clothes to appear clad in a few shreds insufficient even to preserve decency.

If one light meal were given at the hour, say 8 o'clock, when it is expected the recipients of charitable relief should first present themselves, and if such meal were forfeited by late comers, there should be no difficulty in obtaining the punctual attendance of the greater number. There should also be mustering clerks or peons whose business it should be to observe during the day if any persons considered able to perform some light work and ordered to do it, are in attendance during the whole or greater part of the day. Defaulters could be punished by being cut a portion of their evening meal. Once a week would probably be quite often enough for the people to be called upon to wash themselves and their clothes, and if water were readily procurable, there should be no difficulty in enforcing cleanliness to this extent. I am told that the labouring classes here wash themselves and their clothes not more than once in one or two months. A hospital assistant should be present at the feeding times to observe all recipients of relief and to take notice of all those who are proper subjects for medical treatment. I have already stated the work which might be required of inmates of poor-houses. Out-of-doors light work, like clearing of gutters, and in-doors, weaving and spinning. Rope making is also a good employment. Cooking is too



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hard work for weak persons; but grinding, sweeping the enclosures, and fetching water or wood or grass are all suitable occupations.

Q. 28. The arrangements for a relief work hospital and a poor-house hospital need not differ much if at all.

Q. 29. The officers present must be trusted to make arrangements for drafting to relief works inmates of poor-houses who have recovered strength sufficiently to enable them to go to a relief work. The medical officer present should always be consulted.

Q. 30. There were very few cases indeed of *parda nashin* women receiving relief in this district. I should certainly put a pressure on the relatives of such women able to support them to compel them to do so. I do not see how pressure could be used in respect to persons not related. If such women could perform some kind of light work, as of spinning, I should certainly give it. I should object to giving them food gratis if they could do something, however little, towards earning it. A week's supply of cotton might be given to them at one time to work up.

Q. 31. Persons of this description here were fed in villages by the village officers. The patel was responsible for bringing all such persons to notice, and the inspectors were also expected to visit from house to house in order to find them out. My assistants also sometimes visited each house for the same purpose. A register of these persons was kept at each village. In this part of the relief arrangements no difficulty was experienced. When circumstances are improving, if any such people remain, it is probable they will readily get assistance from their relatives or fellow villagers the same as in ordinary times.

Q. 32. There were a good many deserted children here during the recent famine, but as circumstances improved, many of them were claimed by relations. There were not more than a score or two here at the end. Of the few that survived and were not claimed by relations, most are now under the care of the Bale Mission in Dharwar. I have been informed on the best authority that the care taken of the children by this Mission is in all respects everything that can be desired. Three or four are under the care of the S. P. G. Mission at Kolhapur and five or six are in the Roman Catholic Institution at Bandora.

Q. 33. If the object of so purchasing grain were to keep a certain check on dealers, and arrangements could be made for keeping sufficient grain for the purpose in store, I think it might be expedient for an experiment to be made in this direction. Government might publish a notice that for a certain specified period grain would be procurable at certain specified localities at a specified rate in quantities not exceeding 2 or 3 lbs. at a time to all persons bring-

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ing a certificate from the mamledar or first karkun, or, if he could be trusted, from the patel, that it was required for the applicant's private use. The question is, however, admittedly one of great difficulty.

[*Note.*—As Mr. Bosanquet's opinions are at variance on some important points with those of most other officers, I thought it necessary to ascertain from him how far they are based on personal observation. I print below an explanatory memorandum which he has given to me. I have also had an opportunity of questioning him personally, and give below the substance of what he stated to me, from a note which I made at the time, which I read to him and in which he concurred.

Mr. Bosanquet said that the only large work he visited was the Gokak Canal, which he visited once, in April or May 1877. He did not on that occasion make any special observations of the labourers. He went there one morning and walked round. The people looked all right. He did not adopt any measures to examine the people; did not call them up for inspection. He did not observe any persons on the P. W. wage to show signs of famine, but concluded the wage was insufficient from knowing that a man cannot live on two breads a day. Did not bring the insufficiency of the wage to the notice of Government, because it was the subject of much public discussion by high officials. Began to hold his views more strongly when he saw the people dying. Did not take any case of a man who was dying in a relief-house and trace his history back to the cause of his becoming emaciated or sick. Is not prepared to state as within his own knowledge that the large increase of people on charitable relief in September and October consisted of people who had come off public works. J. B. P.]

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Mr. Bosanquet's memorandum, dated October 8th—

NOTE UPON THE WAGE TEST.

I have already, in my letter No. 2488 of the 19th September, stated some of my reasons for believing the wages which were allowed to have been inadequate. In paragraph 13 of that letter I have stated that so far as I had opportunities of seeing the labourers personally I did not observe them to have suffered in physical condition; but I have also remarked that I do not think a man's condition can properly be determined by his appearance only. I reserved my arguments on the subject founded on the diminution of the population till reporting on paragraph 25 of Chapter I. I have also yet to remark on another point connected with statistics, viz., the great increase of persons receiving gratuitous relief as the famine advanced in proportion to those on works.

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Before however coming to these points of the subject, I would wish to amplify what I have said about the danger of reducing a man's daily allowance of food, by stating what I understood to be the quantity of food usually consumed by the cultivators at Belgaum :—

## DAILY QUANTITY CONSUMED BY THE WELL-TO-DO CLASSES.

*Morning meal.*

2 breads of jowari, weighing 1 lb.

2 oz. dal.

4 oz. rice.

2 oz. vegetables.

 $\frac{1}{2}$  oz. condiments.*Evening meal.*

8 oz. jowari.

2 oz. dal.

4 oz. rice.

2 oz. vegetables.

 $\frac{1}{2}$  oz. condiments, salt, &c.

## DAILY QUANTITY CONSUMED BY LOWER CLASSES OF CULTIVATOR.

*Morning meal.*

2 breads, weighing 1 lb.

2 oz. dal.

 $\frac{1}{2}$  oz. condiments, salt, &c.

Ambil (a kind of gruel made from ragi).

*Evening meal.*

Same quantity.

Firewood is not alluded to above. The famine rations therefore were a considerable reduction even for the lower classes of cultivators, to say nothing of those who were better off, especially when nothing was allowed for Sunday.

I will now make remarks in regard to the diminution of the population. The following statement shows approximately what this diminution has been :—

Talukas.	Population according to Census of 1872.	On 31st July 1876.	On 31st July 1877.	Difference between columns 1 and 3.
				Less.
Belgaum .....	1,34,621	1,32,422	1,29,291	3,131
Bidi .....	78,875	80,078	78,006	2,072
Chikori .....	2,48,685	2,42,422	2,34,175	8,247
Sampgaon .....	1,31,504	1,31,679	1,25,804	6,675
Parasgad .....	1,20,691	1,16,658	97,362	19,296
Gokak .....	1,09,697	1,10,796	94,137	16,659
Athni .....	1,14,677	1,13,797	99,554	14,243
	9,38,750	9,28,052	8,58,329	69,723

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The figures for five talukas out of seven are for 31st July 1877, or before the famine had reached its height. It shows therefore a death-rate of only about 7 per cent. on the figures for 1876. As the great mortality did not occur till August and September, I think that it may fairly be presumed that 9 per cent. of the population succumbed to the famine. In Samppaon, which suffered less from the famine than any other taluka, the figures for 1872 and January 1878 show a loss of nearly 5 per cent., while in Athni, which was the most severely afflicted of all, the same figures show a loss of nearly 12½ per cent. I think this is a large mortality. The question is if it was unavoidable, in other words, if by somewhat more liberal expenditure in some branch of the famine relief arrangements, it might not have been lessened. I am aware that in a Government Resolution on the famine census it has been suggested that a part of the loss of population may be due to emigration; but knowing the attachment people of the cultivating classes have to their homes, I fear that if we had the means for ascertaining the real facts, we should find the loss owing to emigration to be very small indeed. The census of 1881 ought to throw some light on this subject.

I will now go on to the consideration of the weekly summaries published by Government in connection with this subject.

The following figures are taken from these summaries:—

Statement Week ending	Population of Belgaum District.	Affected of Belgaum District.	No. of people on works.	Average number of persons gratuitously relieved.
26th January 1877 .....	9,38,750	5,01,000	29,049	345
23rd February „ .....	.....	.....	18,000	508
30th March „ .....	.....	.....	25,000	685
27th April „ .....	.....	.....	29,000	2,258
25th May „ .....	.....	.....	45,000	6,782
28th June „ .....	.....	.....	25,249	8,153
26th July „ „ .....	.....	.....	22,097	6,070
30th August „ .....	.....	.....	26,059	5,832
29th September „ .....	.....	.....	22,444	*10,645
27th October „ .....	.....	.....	6,580	18,184
24th November „ .....	.....	.....	696	3,631
22nd December „ .....	.....	.....	.....	56

\* Collector's return incomplete.

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It will be seen that at the beginning of the famine the people, while not very ready to ask for gratuitous relief, flocked to the works. It is probable that in some of the first returns persons fed in relief-houses or private charity were not included; but private charity became exhausted about the month of May. It would have been expected however that after that the ratio of persons employed on relief works and those receiving gratuitous Government relief would have remained about the same, but it will be observed how greatly, in the latter days of the famine, the ratio of persons on gratuitous relief increased in proportion to that of those on the works. Where, I would ask, did the extra number come from? I fear the conclusion is but too obvious, that many of them were persons who had originally been on the works and who, whether from unwillingness to work on the ration allowed or on the insufficiency of the ration had afterwards become so reduced as to require gratuitous relief. It is fair to state that the numbers on gratuitous relief were much increased in the taluka of Athni after the visit of the Sanitary Commissioner Dr. Hewlett, on whose recommendation it was thought right to make provision for many children who appeared to be neglected by their parents. But I would observe that it appears to me to be more than probable that these special measures on behalf of these children would not have been required to the same extent had the wages on relief works been somewhat more liberal.

A note of the allowance given in the Municipal relief-house at Belgaum from June or July to October may not be considered out of place.

*Men on works.*

5 breads weighing 2 lbs., dal 4 oz., 2 lbs. of ambil,  $\frac{1}{2}$  lb. jowari.

*Women on works.*

4 breads weighing 1 lb. 10 oz., dal 4 oz.,  $\frac{1}{2}$  lb. ambil.

*Men unable to work.*

3 breads weighing 1 lb. 3 oz., dal 4 oz., ambil  $\frac{1}{2}$  lb.

*Women unable to work.*

2 $\frac{1}{2}$  breads weighing 1 lb., dal 4 oz.,  $\frac{1}{2}$  lb. ambil.

*Nursing mothers.*

5 breads weighing 2 lbs., dal 4 oz.,  $\frac{1}{2}$  lb. ambil.

*Children under 10.*

1 $\frac{1}{2}$  bread weighing 9 $\frac{1}{2}$  oz., 2 oz. dal, and  $\frac{1}{2}$  lb. ambil.

I believe that though the average number of persons provided for daily at one time exceeded 300, yet during the four months or so this relief-house existed, from about the beginning of July to the end



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of October, only two deaths occurred, both of children, one of which died soon after its birth. I will conclude my remarks with a few general observations. The famine, as far as it affected the people, did not reach its intensity till August and September. Considering the number of deaths that occurred and the fact that the famine may have been considered almost over by the end of October, the question naturally arises, what the mortality would have been if the famine had lasted another year. My own impression is that if some considerable relaxation of the rules regarding labourers had not been ordered, nearly all the labouring population would have died. By my use of the words "utterly inadequate," in my letter No. 2488 of the 19th September, it may be inferred that I think that the wage should have been very much increased. I think that it might with great advantage have been increased by one-half. This would have involved a considerable increase of expenditure, but one, I think, incommensurate with the relief which it would have afforded. I believe also that in the long run Government would not have lost as much by such increase as might at first sight appear, as I think it may be fairly affirmed that with an increased ration more work would have been obtained from the recipients of it. It would also have tended to keep in check the increase on gratuitous relief. It is, too, quite possible that the effect on the collection of the Government land revenue might have been favourable.

I may be allowed to observe that personal experience must have considerable weight in influencing the judgment. I think that any person who tries to modify his diet to any great extent either by the reduction of quantity or by alteration of quality, will find himself a sufferer. Let any man who has hitherto made animal food a portion of his diet, give it up altogether, he will soon find it necessary to take to it again. I have made experiments in my own case in regard to diet, and I am afraid with some disadvantage. If any one therefore after reading my remarks should feel a difficulty in concurring with my conclusions, let him personally try the effect of reducing his diet by exactly one-half, not more, and of persevering in this course for six months or a year, and I am assured he will find that his views become very considerably modified. I may be allowed to take this opportunity, the last I perhaps shall ever have, of stating my regret that it should never have occurred to me during the course of the famine to suggest that after the practice usual in jails, the relief labourers should have been occasionally weighed. This would have given a very correct idea of their physical condition from time to time, except in cases where they had other means of relief, as from charity of Saukars and others. Whatever conclusion the Committee may form from the facts I have stated in support of the

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opinions I have formed, the question of the diet required for relief labourers should, on the occurrence of another famine, be soon set at rest by this practical mode of testing it.

*Summary of the facts taken from public documents and statistics on which I base my conclusions.*

1. The very great difference between the famine rations and the diet to which the people for whom it was prescribed had hitherto been accustomed.

2. The rate of mortality so far as it can be gathered from statistics.

3. The ratio of persons coming on gratuitous relief, as compared with those on works, as the famine advanced.

4. The necessity which has been found for allowing a more liberal diet in jails, even for prisoners under simple imprisonment, than that which was allowed for labourers on relief works.

*Note to para. 12 of my letter 2488, 19th September.*

Since writing this paragraph I have ascertained that the diet for all prisoners has not been raised. The diet scale is now as follows:—

	Jowari.	Dal, tur.	Vegetable.	Salt.	Condiments.	Oil.	Fuel.	Animal food.
Extramural hard labour, including Gokak Canal labourers.	1 lb. 8 oz.	5 oz.	8 oz.	6 dr.	8 dr.	1 oz.	1 lb.	5 oz.
Extramural and medium labour .....	1 lb. 4 oz.	4 oz.	6 oz.	6 dr.	4 dr.	4 dr.	1 lb.	4 oz.
Hard labour under 3 months and simple imprisonment, females, and boys under 16 .....	1 lb. 8 oz.	3 oz.	6 oz.	6 dr.	4 dr.	4 dr.	1 lb.	...

Animal food is given once a week, and when it is given the dal tur is omitted. The last class of persons shown do not receive animal food.

The dal tur comes to about half a tinpot full. It is considered substantial diet to do instead of meat; oil is also substantial food.

It will be seen that the above allowance for the 3rd class exceeds the famine ration allowed even on works under the P. W. D.

## CHAPTER IV.

[*Note.*—As to practical usefulness of schemes of works previously prepared, see Sir Richard Temple's Minute on the Famine of 1876-77 in the Bombay Presidency, para. 29.]

As to schemes of works for future use, see

(a) For irrigation works, Sir Richard Temple's Minute dated May 16th, 1878, with programme of irrigation works calculated to protect an area of 2,041,526 acres at a cost of £5,045,000, of which £1,005,000 have been already spent.

(b) For railways, Sir Richard Temple's Minute of May 18th, 1878, proposing new lines 773 miles in length, at a total outlay of 4 millions sterling.

The proposals for providing the interest on the capital outlay are before the Government of India.—J. B. P.]

**Mr Hart.**—The schemes being prepared, examined, and recorded with provisiona

Q. 2. sanction, no difficulty can occur in having them ready for use on future occasions of famine relief work being required.

Q. 3. Irrigational and water supply works in the shape of canals, tanks, and embankments, are the most suitable. The works might be held to differ from those sanctioned ordinarily, inasmuch as the returns expected might be less, and indeed in certain cases they might be nil, being merely useful works an expenditure on which in payment for work done would be preferable to gratuitous relief, or the execution of less useful works for future famine protection.

I should give as a practical example of elements desirable still to be further investigated and elaborated—

The series of large storage tank sites under consideration in Kaladgi.

The Malsiras Canal from the Nira right bank.

The Sina Canal in Ahmednagar and Sholapur.

The Godavery Canal in Nasik.

Q. 4. I should advocate the absolute discretion of the Local Government in such matters when prompt action is so essential to success in dealing with a famine.

Q. 58. The previous answers dispose of this question, especially No. 2.

The responsibility of being ready with suitable projects should rest with the heads of the Public Works Department, and it is not for me to point out how this responsibility should be enforced.

- Q. 10. The answer to this question depends on the point from which waste is viewed, as a remunerative irrigation work I should say the danger was very great, but as a means of feeding the people without demoralizing them, I should say no!

The danger to the population of the absence of suitable projects is very great, and the Public Works Department could readily supply what is requisite from the projects specified if such at all existed. I can imagine no possible difficulty under such a supposition. I think the end in view could be secured as proposed.

- Q. 11. Yes, for example in the whole of Kaladgi collectorate, also in Belgaum with the exception of Gokak, and in the Indapur Taluka of Poona. In these localities suitable irrigational projects were not ready, and of course some delay would be necessary before sites for such could be discovered and even preliminary investigations carried out.

This Department is prepared, if supplied with sufficient funds and suitable establishment, to prepare more or less useful and paying projects in every corner of the country in which relief works are at all likely to be required.

**Major General St. Clair Wilkins.**—There can be no difficulty in the way

- Q. 2, 3. of keeping up schemes for famine works. Such works would not differ in character from ordinary works of utility which are brought forward for execution from time to time; but hitherto it has not been the policy of Government to undertake as famine work any other class of work than earth-work. Now very few public works are comprised of earth-works only, although, buildings excepted, most public works include earth-works. Canals, tanks, and roads are those public works in which earth-works comprise the bulk of the work; these works, therefore, are those best adapted for famine works. Nearly all public works have works other than earth-works, and it would not be advisable to prepare projects so far as earth-works only are concerned, and to leave out other works necessary to the completeness of such schemes.

In my opinion, if it were thought desirable that schemes for works should be kept ready for execution in times of famine, such schemes should be made complete in every respect, and include all works necessary for their completeness.

The prevailing opinion that masonry works are unsuited for the employment of the people because skill is needed in the construction

**Major General St. Clair Wilkins.**

of such works, and the cost of masonry work exceeds that of earth-work by reason of the materials used, is not, in my view, a sound one. I will take for an example a large public work now under construction, the wheeled carriage road at the Amba Ghat, which is to connect Kolhapur in the Deccan with Ratnagiri in the Konkan. This work, the construction of a mountain road eight miles in length, will cost Rupees 2,80,000, the whole of which amount will be expended on two items of work, namely—earth-works, Rs. 1,80,000; masonry works, Rs. 1,00,000. The cost of the masonry works, therefore, is to the cost of the earth-works, as 5 to 9.

Now, supposing this work to be started as a famine work, and the masonry work not permitted to be touched. At a first view it might be supposed, that out of fourteen parts nine would be available for famine work labourers.

A closer examination, however, would reveal that the setting aside of the masonry five parts would entail a considerable diminution of the nine parts earth-works. The five parts bridges, culverts, and drains, all require the earth-works of the roadway to be carried up to the formation level, or grade, of the finished road passing over those constructions.

Without the masonry works a great portion of the earth-works must be left unfinished; so that it may be said only a portion of the estimate of the earth-works of this large work is available as a relief work; the other portion, by which alone the first portion of the earth-works would come into any use whatever, must lie by to some future day when Provincial funds may be available for its execution with the masonry works. If undertaken the following year, how will the revenue of the country benefit by the postponement of the expenditure? If set aside for years, each yearly rainfall will resolve the banks and cuttings into their original configuration, and when at last the work is undertaken in consideration of the money already expended, it will be found that the cost of completing it does not fall far short of the original estimate.

Masonry works comprise two items, "labour" and "materials." Taking, for instance, what is called "rubble masonry work," and examining into a detail of the items which collectively unite to form that description of work, it will be found that where 100 cubic feet of rubble masonry costs, at an ordinary rate, Rupees 24, this amount is distributed as follows:—

Labour.....	Rs. 11
Materials .....	,, 13
	—
	Rs. 24
	—



**Major General St. Clair Wilkins.**

so that, with 5 to 9 the proportion of masonry works to earth-works in the estimate for the Amba Ghat road, the 5 parts are divisible into 24 parts, of which 11 parts represent labour, and 13 parts materials.

Reverting then to the Amba Ghat estimate of Rupees 2,80,000, no less than Rupees 2,25,834 are for expenditure on labour, and Rupees 54,166 only for expenditure on materials.

It will be found, on further examination, that the amount for expenditure on masonry materials is itself in reality only labour.

The Rupees 13, the price of materials for 100 cubic feet of masonry, is for the purchase or cost of

	Rs.	a.
Stone.....	7	4
Slacked lime.....	4	8
Sand.....	0	8
Sundries .....	0	12
	<hr/>	
	Rs. 13	0

These items all represent labour. The stone to be quarried and prepared; the limestone to be collected; the sand to be excavated. The charcoal required for burning the limestone represents labour; the powder for blasting, country made, represents local labour, and the only items which can be regarded as foreign to local labour are the purchase of steel for tools and possibly the Government fees for the forest wood of which the charcoal is made.

Hence it is no exaggeration to say that the Amba Ghat mountain road-work as a complete project with its earth-works and its masonry works would form an excellent relief work in its entirety. To adopt projects of this kind as relief works and to set aside the masonry works as unsuitable for execution during times of famine, is only to emasculate schemes for no sufficient purpose. Therefore I contend that the question put in para. 3 of Chapter IV. of these papers "Would the works differ in character from the ordinary works of utility brought forward for execution from time to time," should be replied to in the negative. Setting aside the construction of buildings, for occupation, which require a large proportion of skilled labour, all engineering works of general utility are suitable as relief-works.

If Government would sanction road projects in their entirety, setting aside, as indeed is done in ordinary times, the larger bridges, then I am satisfied that the results obtained at the close of a famine would be materially enhanced in value. The small drains and culverts would be taken in hand with the earth-works, which would be carried

up to them, and enable the road banks to be brought to proper grades, to be finished off the next season.

The most valuable piece of road-work carried out by famine labourers in the Southern Division is a length of three miles of ghat road on the Belgaum and Kaladgi road. General Kennedy approved of my proposal to carry out the masonry works on the Hunmunhutti Ghat. The old ghat road had gradients as steep as 1 in 10, and cart loads on the road had to be regulated by the tractive energy of a pair of bullocks working on such grades. An entirely new ghat road was made by famine labour in 1877, including the necessary masonry culverts and drains.

General Kennedy also approved of masonry drainage works in the fort of Bijapur, designed to benefit the new station to be established at that beautiful city. Unfortunately the Executive Engineers who had charge of the district works acted on general orders to relegate the people to tank work, and thus the drainage works fell through, barely touched. It was a great opportunity lost of turning famine labour to excellent account.

The completion of the road between Belgaum and Kaladgi as a properly embanked, bridged, and drained road would form a good scheme. The construction of a bridged and drained road from Gotoor on the mail road to Gokak would be a good scheme, and these could be easily added to if desired.

**Mr Hughes, C. E., Assistant Chief Engineer for Irrigation.**—In the year 1866

Q. 1. the Government of India called for the preparation of projects for irrigation works and laid down that one of the main objects to be kept in view was to select those works first for execution which are calculated to prevent the occurrence or mitigate the severity of drought and famine.

Subsequently this Government ordered the assembling of district committees composed of the Collector, the Executive Engineer, and senior Survey officers in each collectorate to decide upon the sites to be surveyed. On the recommendations of these committees investigations for several new schemes throughout the country were undertaken. Several projects were matured and submitted to Government, others were under survey or re-investigation, until in the beginning of 1873 orders were received from the Government of India prohibiting any large works other than those then in actual progress being undertaken, and directing that no new projects for large works were to be prepared or investigated until further experience had been gained of the results of irrigation works in the Deccan, and their remunerative character had been practically established.

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In 1874 a review of the progress of irrigation schemes in relation to famine aspects by Colonel Rundall, R.E., was communicated to this Government, whose views on the subject were invited, but under the stringent orders above referred to, this Government were precluded from making any proposals on the subject. The schemes investigated previous to 1873 were of the greatest possible value during the pressure in 1876 and 1877 in affording useful and profitable employment under strict professional supervision to many thousands of relief labourers. Eighteen irrigation projects were undertaken in various parts of the country for relief purposes. Of these, eleven were large schemes which had been investigated previous to the order of the Government of India of 1873. The remainder were small works, principally improvements to existing tanks. The practical utility of large irrigation schemes in affording employment to relief labour was publicly acknowledged first by Sir Philip Wodehouse's Government (G. R. No. 426 C. W. 1000 of 1877) and subsequently in the minute by His Excellency Sir Richard Temple on the Famine of 1876 and 1877.

- Q. 8. Yes in almost every instance. In illustration of a case of the kind referred to I may cite the Shirsuphal Tank in the Poona Collectorate. The estimated capital outlay on this work is as follows :—

*A.—Direct charges.*

I. Works .....	Rs. 1,51,860
II. Establishment .....	„ 37,965
III. Tools .....	„ 2,861
<hr/>	
Total A, Direct charges ...	Rs. 1,92,686
<hr/>	

*B.—Indirect charges.*

Capitalization of abatement of land revenue on land taken up for the work.....	Rs. 5,000
Leave and Pension allowances .....	„ 7,593
Interest on outlay during construction .....	„ 4,178
<hr/>	
Total B, Indirect charges ...	Rs. 16,771
<hr/>	

Grand Total, A + B ... Rs. 2,09,457

The annual average net revenue is estimated at Rs. 5,255, or 2½ per cent. on the total capital outlay.

The value of the work executed during the famine is Rs. 96,220.

If this is deducted from the estimated total capital Rs. 2,09,457,

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it leaves a balance of Rs. 1,13,237, on which a revenue of Rs. 5,255 would give a return of rather more than 4·6 per cent., and would thus convert a work which if it had been executed otherwise than as a relief would not have paid the charges for interest on outlay, into one that would pay rather more than the rate of interest at which money can be borrowed.

The above is on the assumption that the charges other than the direct outlay on works would remain unaffected. If however it is assumed that the work is treated solely as a relief work until the cessation of the famine, and it is not debited with the establishment and other charges on account of famine outlay, the result would be still more marked. Thus in this case, assuming the capital account to be framed after famine work to the value of Rs. 96,220 had been executed, it would stand as follows :—

*A.—Direct charges.*

Works .....	Rs. 55,640
Establishment.....	„ 13,910
Tools .....	„ 1,113
Total A, Direct charges...	Rs. 70,663

*B.—Indirect charges.*

Capitalization .....	Rs. 5,000
Leave allowances .....	„ 2,782
Interest, say .....	„ 1,000
Total B, Indirect charges ...	Rs. 8,782

Total A + B... Rs. 79,445

on which a revenue of Rs. 5,255 would give a return of nearly 6½ per cent.

On this basis also the Ashti Tank in Sholapur, which the Government of India estimate may in the course of years return a net direct profit of from 3 to 4 per cent., would become a remunerative work if the value of work executed during the famine were excluded. The estimated capital outlay on this work is Rs. 7,98,938, of which Rs. 5,55,418 is for works. The value of work executed during the famine is Rs. 1,46,419, and excluding this, the total capital would be reduced to Rs. 5,92,339, as follows :—

*A.—Direct charges.*

Works .....	Rs. 4,08,999
Establishment .....	„ 81,800
Tools .....	„ 8,180
Total A, Direct charges...	Rs. 4,98,979

*B.—Indirect charges.*

Capitalization .....	Rs. 12,000
Leave allowances.....	„ 16,360
Interest .....	„ 55,000
Total B, Indirect charges...	Rs. 93,360
Total A + B...	Rs. 5,92,339

A revenue which would give a return of 3 to 4 per cent. on Rs. 7,98,938, would give a return of from 4 to 5½ per cent. on Rs. 5,92,339, or about the rate at which money can be borrowed.

- Q. 12. Excluding outlay on improvements to two old works, the revenue accounts of which are incomplete, the total capital outlay on twenty new works of irrigation in operation or partial operation was at the end of the year 1876-77 Rs. 1,14,95,077, made up as follows:—

*A.—Direct charges.*

	Rs.
Works .....	83,87,081
Establishment .....	17,52,614
Tools .....	1,72,005
	1,03,11,700
Add—Suspense Account .....	1,174
	1,03,12,874
Deduct—Receipts on capital.....	12,538
Total A, Direct charges...	1,03,00,336

*B.—Indirect charges.*

Capitalization .....	1,99,611
Interest .....	9,95,130
Total B, Indirect charges ...	11,94,741
Total A + B...	1,14,95,077

These figures include outlay on the water works of Poona cantonment and civil station, which form part of the Mutha irrigation scheme. Deducting on this account Rs. 6,75,636, the estimated proportionate cost of the water works, the total capital outlay on irrigation works to the end of 1876-77 is Rs. 1,08,19,441.

The yearly interest on this outlay at 4½ per cent. is Rs. 4,86,875.



The cost of maintenance during 1876-77, excluding maintenance of Poona water supply, was Rs. 78,253, as follows :—

Works .....	Rs. 1,739
Repairs.....	„ 37,660
Share of general irrigation establishment .....	„ 38,291
Tools .....	„ 563
<hr/>	
Total in P. W. D.....	Rs. 78,253

The acreage irrigated during 1877-78 was 24,389 acres.

The several corresponding rates per acre irrigated are :—

	Rs.
Capital outlay.....	444
Annual interest .....	20
Maintenance charges .....	3.21

It should be stated that these rates are most misleading because the bulk of the outlay is on works which have only very recently come into operation and on which the people have had no opportunity of becoming practised in irrigation or of experiencing its advantages. Also the capital outlay on works in partial operation invariably comprises the heavier portions of the work. For instance, taking the whole outlay to the end of 1876-77 as 108 lakhs, nearly 40 per cent. or 43 lakhs has been incurred on the Mutha Canals, which are designed to command 98,384 acres. The entire estimated cost of this work is 56 lakhs; the area under command of the completed portion to the end of 1876-77 was 20,955 acres; thus, for an outlay of about  $\frac{1}{3}$  the total estimate, the area brought within reach of the water is less than  $\frac{1}{3}$  of what it will be when the work is completed; the reason of this is, that the outlay to date comprises, besides the whole cost of the large reservoir which is to supply the entire project, the cost of several miles of canal in an incomplete state, beyond the point to which water had been admitted.

This explanation is similar to that given in para. 23, Part I., of the Annual Revenue Report attached, which also contains information as to the cost of the works per acre under command. This varies from 11 to 53 Rupees per acre, and assuming that ultimately  $\frac{1}{3}$  of the area under command will be irrigated annually, the outlay per acre irrigated will be from 33 to 159 Rs.

[Note.—For the comparative production of irrigated and unirrigated land, see the Crop Estimate Papers.]

Q. 13.

A statement (Appendix E of the Budget) showing the water rates in force on each of the new works in Guzerat and the Deccan is attached.

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The rates are generally arranged in four classes, according to the quantity and value of the water. Thus

Class I. comprises sugar and other perennial crops.

Class II. comprises eight months' crops, such as ground-nut.

The eight months' rate covers the eight months of irrigation commencing in June. A cultivator may raise two crops during this period for the eight months' rate.

Class III. comprises four months' crops, such as wheat, gram, &c.

Class IV. comprises monsoon dry crops, jowari, bajri, and inferior rice.

On most of the works there is in addition a special rate for irrigation for the four months from February to May, when the water is very scarce and consequently valuable.

The rates for Classes II., III., and IV. are the same on nearly all the works, namely Rs. 4, 2, and 1 per acre respectively. The rate for Class I., perennial crops, varies. On the first opening of a work it is generally fixed at Rs. 8 per acre, and this rate usually remains in force for five years, when it is increased to Rs. 10. On four of the works in Satara which have been in operation for ten years, and where the demand for perennial irrigation is greater than the supply, the rate has recently been raised to Rs. 18 per acre. On the Mutha Canal, in the vicinity of Poona, the rate is also Rs. 18. In these cases only half the rate, or Rs. 9, is chargeable for the first year on land not heretofore irrigated. On the Jamda Canal in Khandesh the rate is Rs. 16. On all the other works it is either Rs. 8 or Rs. 10.

The existing rates then are usually as follows :—

Class I. ....	Rs. 8 to Rs. 18
Class II. ....	„ 4
Class III. ....	„ 2
Class IV. ....	„ 1

The special rate for irrigation between February and May is either Rs. 6 or Rs. 4. Half rates are charged when the water is lifted on to the land, and half the perennial rate is levied when the supply is insufficient and wells have to be resorted to during the hot weather.

The average rate assessed under these scales on the 24,389 acres irrigated during 1877-78 is Rs. 3.42 per acre. These rates, more especially that for perennial crops, are generally regarded by persons familiar with the irrigation system of Northern India as exceedingly high, but they overlook the fact that in this Presidency, where the revenue system is ryotwari, the water rate charged by Government

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is the total charge the cultivator has to pay for the water. I find it stated that in the North-West Provinces, with a water rate of Rs. 5 per acre for sugar, cultivators pay for sugarcane about the following proportion—

Rent to landlord for sugarcane, say ...Rs. 16 per acre.
Rent to Government for canal water... „ 5 „

---

Total...Rs. 21 per acre.

A cultivator in this Presideney irrigating from one of our new canals would under similar circumstances pay—

Water rate from .....	Rs. 8 to 18 per acre.
Land assessment, say .....	„ 2 „

---

Total, from Rs. 10 to 20 per acre.

The rate of Rs. 2 for the land assessment is an assumed one, but the instances in which it is exceeded are not many.

Under the ryotwari system there are no “owners” as distinct from “occupiers,” and consequently no “owner’s rate.” Where separate water rates are levied for the use of canal water, there is no increased rent, that is, assessment on the land.

But the yearly value of land is increased by the construction of an irrigation work which brings the means of irrigation within its reach. The benefits which a work of irrigation confers on the land it commands are described at some length in the accompanying memo. by Colonel Fife, and the principle of enhancing the land assessment paid by the ryots in consideration of these benefits has been fully recognized by Government, but in the present state of the law it is only feasible to make such enhancement at the time of the revision of the land revenue settlement. The question of the method of fixing the addition to be made to the Survey rates on account of these indirect advantages has been considered by the Survey officers. The Survey Commissioner, in reporting on the subject, admits “the difficulty of making a regular valuation of the benefits accruing from the influence of irrigational works, but that there are indirect advantages of a certain kind and which are set forth in Colonel Fife’s report, must be admitted, and all that is required to be done is to take them into account in a general way,” and he considers that “in future the question of indirect advantages should be separately treated and a specific addition made [to the rates] on that account.”

These proposals have been approved by Government and have already been given effect to in the revision settlement of the land under the Palkhed Canal in Nasik and in the Settlement introduced

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into one of the villages transferred from the Nizam's government under the Bhatodi tank in Ahmednagar. Particulars of these cases will be found in paras. 179 and 292 respectively of the Revenue Report for 1876-77 attached.

Government in the Revenue Department have also ordered that—

“Survey officers should, in future, give notice to the holders of land in the vicinity of canals under construction or about to be constructed, in a district in which a survey settlement is about to be introduced, that on its completion they will be liable to increase of assessment not only when they take water, but also when they are benefited by the canal through percolation or other advantage.”

And also that—

“Where the rates have already been sanctioned and given out, no increased assessment can be imposed in consideration of the benefit conferred on the land by its proximity to an irrigation work. When future settlements are introduced, however, in places where there is a probability of a canal being constructed, due notice should be given that the rates will be liable to enhancement on account of indirect as well as direct benefits accruing from it.”

- Q. 14. Water rates on irrigated land under our new works in Guzerat and the Deccan are recovered by the Collectors in the same way and at the same time as the instalments of land revenue. Power is reserved to the Governor in Council by Section 29 of Act I. of 1865, to assess on account of water from works constructed by Government, and Government consider that this fully provides for the levy of water rates under Act I. of 1865 and Regulation XVII. of 1827.

No difficulty has been found in recovering dues for water rates except in the case of inamdars, to whom the powers above referred to do not apply. A case in point is described in para. 478, Part I. of the Revenue Report.

Special legislation to meet this case is requisite. In the meanwhile orders have been given that inamdars are not to be allowed water except under an agreement to pay the amount that is chargeable for the same.

We have no experience to show that water is used in too lavish a manner when the charge is on the area irrigated, irrespective of the quantity supplied. As a rule the supply, except for perennial irrigation, is at present so large in proportion to the demand, that the question has not arisen.

The system at present practised in Guzerat and the Deccan on our new works, it will be understood, is that of charging certain

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fixed rates on the area actually irrigated each season, which is ascertained by measurements or by inspection of the Survey numbers where they have been sub-divided for the purpose (vide paras. 281 and 282 of the accompanying Revenue Report). This system, apart from the additional trouble it involves, would appear to be in every way the most suitable, at any rate at first, where irrigation is not understood and the people are very unenterprising and unintelligent.

An alternative advocated by Colonel Fife, whose opinion is entitled to the greatest respect, is the distribution of the available supply in proportion to the area irrigated or the demand by each village. Taking a canal in Khandesh, which has been in operation for some years, for example, he proposed that it should first be determined how much water is ultimately to be passed off into each village channel throughout the whole length of the canal, making due allowance for any new channel which may hereafter be necessary. The people of any village to which it was intended to sell the water were then to be told the quantity of water to be passed into their channel arrived at as above, and that with good management it would suffice for certain areas of perennial, rabi and rice and other monsoon irrigation. An agreement was then to be taken from them to pay a fixed sum for the year for it, and the canal establishment were to take care that it was passed from the canal into the channel. The distribution of the water after it leaves the canal was to be arranged for by the people themselves. Each village channel would in fact become like one of the ordinary pāts or watercourses led from the rivers, which are so common in Khandesh.

Colonel Fife admitted that to attempt to introduce the sale of water to all the villages at once would probably result in failure, and to be successful the plan must be thoroughly understood by all, and some at least of the villages are very backward. He suggested however that the plan should be tried experimentally with one of the best villages as a beginning.

As regards the measurement of the water, it should be explained that the village channels on the canal in question are each furnished with a masonry head sluice or regulator, which is designed to admit of a measurement of the discharge being made. It consists simply of a sluice, opening from the canal into a masonry channel or race 100 feet long, of uniform section. The discharge can be regulated by raising or lowering the sluice, and the quantity can be gauged by multiplying the velocity along the masonry race by the sectional area.

In accordance with Colonel Fife's suggestion, the proposal was explained to the people on the Jamda Canal, and after some delay one



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village came forward and offered to take water for forty acres, paying at the rate of Rs. 6 per acre, on the supposition that not more than one-fourth, viz. 10 acres, should be sugarcane. This offer was accepted. The conditions of the agreements executed were, on the part of Government, that they would supply the requisite quantity of water; on the part of the people, that they would pay the fixed rate on the area named in two instalments, and that if by economy they were enabled to irrigate, with the quantity of water allowed to them, a larger area of kharif or rabi (excepting only sugar) they were at liberty to do so without extra payment. They also agreed to keep the channel clear. The agreement was for one year. This was in 1876-77. The result of the experiment was so far satisfactory that the same village applied for water on the same terms for an area of 65 acres in 1877-78, or an increase of 25 acres, but none of the other villages are at present willing to adopt the system and they do not appear to understand it yet.

This system relieves this Department of the necessity of annual measurements and of all minor distribution, and would considerably reduce the expense of maintenance. It also seems to me that if the people *could* be brought to properly understand the system, it would become extremely popular. I believe that one cause that deters people from irrigating the poorer crops is the fear that at the next revision of the Settlement the lands for which they have taken water will be permanently assessed at bagayet rates. The measurement of the areas and the careful record kept of the Survey numbers irrigated, doubtless tends to confirm these fears, whereas the system of selling the water at the canal bank must, it seems to me, tend to reassure them on this point. Also the arrangement is more or less of the nature of a bargain and leaves to the people the chance, at least, of a margin of profit in which the Sirkar does not claim a share. This, too, it seems to me, must commend the system to the people.

As long as the system is practised in only one village and the supply of water in the canal is greatly in excess of the demand, there are of course no difficulties attending it, but if it extends considerably, there will be difficulties in regulating the discharges during different seasons under varying heads. During the monsoon there can scarcely ever be any difficulties owing to the abundant supply in all the canals fed from rivers with ghat catchments. From the conclusion of one monsoon to the beginning of the next the supply gradually diminishes, and it would be necessary to lay down the average discharge for each channel for each month. This too would vary each season, and it would be long before people were able to arrive at an average on which they would frame their estimate of the value of the supply.

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Q. 15.

Our existing rates, which are not more than a third of those paid for irrigation from old works in Khandesh, could undoubtedly be enhanced at any time that such a step appears desirable. But the principle has been to keep them low to encourage the development of irrigation, and, all the works being new, to leave a large margin of profit to the cultivator to meet the expense attendant upon the conversion of dry crop into wet crop lands. These expenses comprise—(1) In all cases, the division of the fields into small plots by bunds, more careful ploughing and cultivation generally and manuring; and (2) in some cases, levelling the fields to fit them to receive a uniform depth of water at each watering.

Q. 16.

1.—The statistics of irrigation are recorded in a most complete form by the officers in charge of the works. These comprise registers of the discharge of the rivers and canals fed from them taken daily throughout the year by a carkoon and checked at least once a week by the subordinate and occasionally by the officer in charge. Statements of the areas irrigated and the nature of crops ascertained by actual measurement by a measurer on the canal establishment, ten per cent. of whose measurement is checked by the canal officer or the canal subordinate. A careful record of the rainfall on each canal is also kept. The accounts of the various works kept by the Examiner and the returns rendered by the Executive Engineers and Collectors under the canal rules give most complete details of the capital outlay, cost of maintenance, area irrigated, revenue assessed, remissions and realizations each year.

Revenue reports of the works are prepared annually by the canal officers, whose reports are embodied in a general report for the Presidency. A copy of that for 1876-77, Part I., relating to new works, is attached. (Accompaniment A)

2.—I think these reports are necessary and that the statistics they contain are of great value in tracing the revenue progress of a work, the causes which deter or foster improvement, and in controlling the management. The comparison of results on different works too is most valuable to individual officers, who would otherwise have no means of obtaining information of the experience on other works which might be applied with benefit to works in their own division.

3.—I cannot suggest any curtailment of the detail to which the report attached goes. In future reports it will be unnecessary to repeat the description of the completed works, but information in regard to the duty of the water per cubic foot of discharge on each work will be added where possible, and will be most useful for comparison of the degree of efficiency of the management on each work,

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and will also ultimately furnish data for use in estimating the return from projects proposed for execution.

- Q. 12. In the Deccan generally the country has a considerable cross slope and is intersected by very numerous natural drainage channels. Except in very few instances artificial drainage is not necessary in connection with irrigation. Land in the immediate vicinity of a canal sometimes becomes injured not by irrigation but by direct subsoil percolation from the canal. This occurs on the first opening of a canal and the evil gradually cures itself. The water of most, if not all, the canals carries during the four monsoon months a considerable quantity of fine silt or mud in suspension. This is deposited in the crevices through which percolation occurs, and in time stops them. As an example it may be mentioned that on the first opening of the Mutha Canal there was very considerable percolation in the first ten miles. The water rose to the surface some distance below the canal and flowed across the road which runs parallel to the canal and below it, in numerous small rivulets. These have now almost entirely ceased, although the head of water has been increased owing to a larger discharge being passed down for irrigation beyond Poona.

In one instance compensation has had to be paid for injury to land from this cause on the Mutha Canal. The plot in question is situated, as described above, immediately below the canal, and is damaged by excessive moisture due to percolation direct from the canal. The compensation was originally paid annually on a decree from the Civil Court, but ultimately, with the consent of the owner, the possession of the land was acquired by Government. The compensation awarded was heavy, but there is very little doubt that Government will gain by the transaction. A few open drains, which owing to the proximity of the natural drainage channels will be very inexpensive, will relieve the area of surplus water, and the land will become even more valuable than formerly.

As a set-off against instances of this nature, subsoil percolation very frequently greatly benefits land under a canal, enabling the cultivators to grow a better description of produce without taking water direct from the canal.

Instances of both injury and benefit to lands from percolation are given in paras 47, 48, and 49 of the Revenue Report, Part I., for 1876-77. The canal on which the cases therein described occurred is in Guzerat, where the land is much flatter than in the Deccan and the natural drainage is not so perfect. This is the only instance in which outlay for drainage in connection with irrigation has been necessary.

Q. 18.

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Q. 19.

The general effect of canal irrigation, so far as it has gone, has been to increase the area of the better class of crops, such as sugar and other garden crops, groundnut and other similar crops which cannot be cultivated without the means of irrigation, but this cannot have affected the area of the poorer crops, nor is it likely it will ever do so in this Presidency. The area within the influence of our works can never bear a large proportion to the area available for cultivation in any district, and in every collectorate there is a large area of uncultivated culturable land available for the cultivation of the poorer grains should irrigation encroach upon the area at present devoted to those crops.

In one instance it is reported that the construction of a canal has had a marked effect on the cultivation. The Krishna canal in Satara traverses a district more favourably situated as regards rainfall, soil, and population than that under any other of our new works. The people too are better off. The principal crops irrigated from the canal are sugar, groundnut, and wheat. The area of groundnut varies very considerably. This crop is sown in the early part of the monsoon, but in the cold weather irrigation is essential except during years of exceptional rainfall. It is stated that the people avail themselves of the protection or insurance the canal affords to cultivate extensive areas of this valuable crop. If there is not sufficient rain during the cold weather, they apply for canal water and secure a good crop; but if sufficient rain falls, they enjoy the advantage of a good harvest without paying water-rate.

Q. 20.

1.—A canal giving water only during the rainy season is useful principally in districts in which the people are familiar with the cultivation of rice. In other districts the short experience we have had would appear to indicate that such a canal will only be extensively useful during years of drought, more especially when failure of the latter rain occurs. If the early rain is sufficiently favourable, the people sow the crop, and there is an inducement to them to prevent its failing by taking canal water if the latter rain fails. If the early rain fails they will not sow. I believe there is a general prejudice against sowing without rainfall, even where water for irrigation is available.

As an example of the success of canals carrying a monsoon supply only, in districts where rice cultivation is practised, the Khari river irrigation in Guzerat may be cited. Full particulars in regard to these works are given in paras. 59 to 73 of the Revenue Report for 1876-77, Part I. These works irrigate an area of 8,448 acres of rice. 4,737 acres is Government land assessed at, on the average, Rs. 7-4-5 per acre. Of this Rs. 2-0-1½ is on the land and Rs. 5-3-6

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is on the water. The supply of water seldom lasts beyond the rice season, and the crops grown are almost exclusively rice, followed by wheat or gram.

2.—If the cultivation of rice could be introduced on the canals led from rivers fed from the Western Ghats in the Deccan, the monsoon supply would be enormously profitable. Every inducement is offered by low rates to the cultivation of this crop, and experiments have been made on several of the canals with a view to showing the people the feasibility of its cultivation. These experiments demonstrate that there is nothing in the soil or climate to prevent the profitable cultivation of rice, but the people are slow to adopt the cultivation of a crop which they have no practical knowledge of, and their general indebtedness makes them apathetic and disinclined for an enterprise which if successful would merely benefit their creditors and not themselves. I can conceive no other explanation of the fact of the enormous volumes of water which most of our new canals supply during the monsoon, being allowed to run to waste without practically any use being made of it.

Canals carrying a supply during the rainy season can be of great use in affording a supply to storage reservoirs situated below it. As an example I may cite the Matoba Tank in Poona, constructed as a famine work, and which is under command of the Mutha Canal. The tank is situated 28 miles east of Poona, in one of the driest districts of the Deccan. It has a limited catchment area, from which during favourable years a small supply may be available.

The Mutha Canal, which draws its supply from the Mutha river bed from a ghaut catchment, runs close above the tank. The canal during the five months from the middle of June to the middle of November carries a practically unlimited supply, and the water being required for only a limited extent of irrigation at that season, can be passed into the tank. By this means a certain perennial supply can be afforded to the land under command of the tank.

Suitable sites for works of this nature are however not everywhere to be found, and it would generally prove cheaper to store water on the main river above the point at which the main canal leads off.

Q. 21. 1.—The system of canal administration is described in para. 27 of the accompanying Revenue Report for 1876-77.

2.—The canal officer is responsible for distributing the water, and the Collector collects the dues on statements framed by the canal officer, *vide* Canal Return IV. of accompanying Canal Rules.

3.—No change in the present system is in my opinion desirable, and my reason for saying so is that it has been found to answer very



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well. There is generally a very good understanding between the officers of the two Departments, and complaints in regard to the management of the works are very rare indeed.

- Q. 22. 1.—See Rules appended. 2, 3.—A special canal law is in my opinion necessary for proper canal administration. It would legalize the present Canal Rules, and would clearly define the powers of the canal officer and give him powers which at present he does not possess. This is specially important in regard to the construction of distributing channels, in regard to which there are frequently difficulties. For instance A is desirous of taking water which B is not, but the channel from the canal or main distributary to reach A's land must pass through B's and B refuses to allow it, and at present Government or the canal officer is powerless to interfere.

At present no law exists for punishment for waste of water, for the surreptitious use of water, or for enforcing the minor distributing channels being kept in repair. Nor are there powers for assessing indirect irrigation. The Canal Bill which has been proposed will meet all these difficulties.

- Q. 23. 1, 2.—The causes which have operated to retard the extensive use of canal water are explained in the Revenue Report attached, to be the poverty, ignorance, and indebtedness of the cultivators, their extreme dislike of change in their long-established system of agriculture, the sparseness of the population, and, finally, the shortness of the supply during the hot season on some of our works. Another cause to which I have already alluded also I believe affects the extent to which the people irrigate the poorer crops. It is the fear that if they take the water the land irrigated will be permanently assessed at bagayet rates at the next revision of the Settlement. In many cases the Revision Settlement falls due within a few years, and from the people's point of view the fear is a natural one. It takes a long time to eradicate such an idea once formed. It is manifest that the assurance of the canal officer or even of the revenue officers on this point do not carry much weight, as the people are aware that they are not the officers who will re-classify their lands when the time comes.

The causes enumerated above exist on all our new canals. Any measure affecting the indebtedness of the people and tending to relieve them from their embarrassments, or placing a limit on the demands of the Sowcar, would improve matters, and on works on which the supply during the hot season is unreliable, the construction of storage reservoirs would remove one of the causes which prevent an extension of irrigation.

As regards the other causes, time alone can effectually cure them, and the improvement which has taken place during the last two

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years is a hopeful indication in this respect. The people have learned, at least to some extent, the benefit the canal is to them in a year of drought, and that by its means they can always insure their crop, and it is beyond belief that they will not hereafter learn to apply the water to improving the outturn of their crops, which would doubtless be effected even in years of good rainfall by judicious use of water.

3.—None of our canals can be said to have reached the state in which any further extension is not likely or is likely to be small. I ought perhaps to except the Rewari canal in Satara, an old work restored by Government which has been in operation some years, and on which the people show but little disposition to use any but the perennial water which they fully utilize. Like the Krishna canal this work is located in a district of favourable rainfall, and irrigation, except during unusual years, is not necessary for the ordinary crops, but in this case I believe that if the perennial supply were increased, there would be a proportionate increase in the area of other crops irrigated.

4.—As regards the difficulty of preparing land for irrigation for the first time, enquiries on the subject, made recently, confirm the opinion that for a large proportion of the land under our new works very little indeed is required to fit the land for irrigation of ordinary rabi and kharif crops. Generally the erection of small bunds dividing the fields into small plots, and in some instances a little rough levelling with a species of sledge in common use for the purpose, is all that is required and the expense is very trifling. In one instance a canal officer estimates that an expenditure of Rs. 5 to 10 per acre would suffice to bring one-fourth to one-sixth of the generality of land under command of new works into a fit state as regards levels and ploughing for permanent irrigation.

For perennial crops and the best sort of rice the expense is greater. In the case of experiments in rice cultivation made some years ago, the expense of preparing the land varied on different canals, from Rs. 3 to 20½ per acre, the average being Rs. 14. This includes in some cases the cost of ploughing and transplanting and was the actual cost to Government, and it may be assumed that the work was most thoroughly done. As a rule the formation of watercourses is not a considerable item of expense, as in most cases the canal or branches constructed by Government bring the water within each village boundary, and minor branches constructed by the people cannot be very long nor can they involve any heavy work.

The difficulties in this respect no doubt to some extent retard the extension of irrigation, but they are being gradually overcome.

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On some of the works, owing to the sparseness of the population and the low rate of land assessment, the people undoubtedly find it pays them better to cultivate a large area without irrigation which costs them but little trouble and from which they reap a light crop, in preference to resorting to irrigation for a restricted area, to which they have to devote a large proportionate amount of labour and care. See paras. 160 and 262 of the Revenue Report attached.

5.—The Land Improvement Act (No. XXVI. of 1871), and the rules passed under Section 18 thereof, provide fully for advances being made for the preparation of land for irrigation; but as far as I am aware no advantage has ever been taken of it on lands under command of our new works. Wherever the people allege the cost of the preparation of their fields as a reason for their not taking water for irrigation, they might be encouraged to apply for advances. I think that under Rule II. of the Rules published at page 874 of the *Government Gazette* for 1873, the canal officer might be empowered to receive applications for advances and also to make the local enquiry necessary for advances under Rs. 5,000. I would make provision for a fixed annual sum for each work in the Irrigation Budget and would debit the amounts to the capital accounts of the works, crediting the recoveries to the same head. I have no reason for supposing that even then the privilege would be extensively taken advantage of, but it seems to me desirable to simplify the process for obtaining small advances. The canal officer can always encourage a cultivator to apply for an advance, and it would be a great matter if he were empowered to aid in obtaining it under the Act and not be obliged to refer the applicant to another department, the officers of which might not be within immediate reach, and who might not take the same active interest in expediting a decision on the application. I would leave the power of granting a certificate for the advance in the hands of the Collector as at present.

6.—As already stated, I think the shortness of the supply during the hot season does affect the progress of canal irrigation on some of our works. Irrigation is most profitable where crops can be grown in a regular rotation, the basis of which is the area of perennial irrigation. The most successful of our works are those where the perennial supply is most reliable, and I think it certain that the total area of permanent irrigation will increase only in proportion to the area of perennial crops irrigated. By permanent irrigation I mean irrigation independent of the rainfall. During years of drought of course a larger proportion of inferior crops will be irrigated, but in the next favourable season a rotation of which perennial crops form the principal factor will be reverted to. The

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experience on old works in Khandesh as well as that on our new works suggests this opinion. On this subject I would invite attention to para. 163 of the Revenue Report attached. On the other hand, if the people could be brought to change their system of agriculture and resort to rice irrigation, a perennial supply would be of far less importance.

Q. 24.

1, 2.—On the grounds that—

- (1) Irrigation works are essential to the general prosperity of the country, which without them is exposed to constant vicissitudes from capricious rainfall.
- (2) Facilities for works exist only in certain favoured localities, and that to ensure any appreciable protection to the country generally it is necessary that all facilities where they exist should be turned to account irrespective of whether the people on the land affected are desirous of irrigation or not.
- (3) That the construction of such works benefits the country generally, and in a more direct and proportionately greater degree the people who hold the land under the immediate protection of the works,

I think that both a light general rate on the whole district and a proportionately higher rate on the lands which directly benefit are justifiable. But in the latter case I would levy the rate only on the land for which water is available, and I would exempt such land as is actually irrigated and for which water rate is paid.

3.—Were it possible to meet the general want of the protection afforded by irrigation works by constructing them only where the people expressed themselves as desirous of irrigating and paying for it, there would of course be no justification for levying any charge other than that for the actual use of the water on works constructed elsewhere. But this is not the case.

In the words of a recent report by a survey officer of great experience :—

“ Should it happen contrary to all economic law that the ryots refuse to be enriched by resources placed at their disposal and thereby render great schemes unprofitable, and as they are likely to be thrown on Imperial charity in seasons of drought like what India has recently passed through because of the absence of such works which cannot possibly be provided for at a moment's notice, they should be compelled by the legislature to pay a moderate insurance rate, say 2 per cent. on the capital expended, even if they do not take the water provided. The insurance to be rateable on all the land

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commanded, and remitted in each case of demand for water at canal rates. This benevolent compulsion will, I am convinced, in due course of time be admitted as one of the greatest boons ever conferred on an agricultural community *incapable* of helping itself."

Q. 25. 1.—The only instance that occurs to me is the Khari irrigation sluices in Guzerat. The prescriptive rights of the "Kalamundi villages" on this work are of long standing and are jealously guarded. An account of them will be found in paras. 59 to 73 of the Annual Revenue Report attached. 2.—No interference with these rights is, I think, desirable. The lands of the villages in question have a right to sufficient water, or, when the discharge of the river is insufficient, they are entitled to the whole supply. 3.—But there is nothing to prevent surplus water over and above the requirements of the Kalamundi villages being appropriated as Government think fit.

Q. 26. 1.—I would invite attention to the description given in para. 103 of the accompanying Revenue Report for 1876-77 of the system existing in Khandesh and Nasik for the repair of small irrigation works. The Patfalla Fund therein alluded to was instituted with a view to relieving this department of the maintenance and petty repairs of the numerous small works of irrigation. For years the fund was collected and large balances accumulated and 'very little expenditure was incurred. Ultimately this Department had to resume the work and to execute all necessary repairs from money furnished by the Patfalla Fund. The system as now administered answers admirably, and in the last Annual Report on the Fund the Commissioner spoke in high terms of the efficient state to which the works have been brought.

2.—I would urge that the system should be applied to the tanks in Guzerat and Dharwar. In the Dharwar Collectorate there are in all 3,023 tanks of various sizes, irrigating a total area of 1,05,776 acres. Petty repairs to these works have hitherto always been executed by the people, but where a work falls into serious disrepair, Government step in and do what is required, a contribution being generally made towards the cost by the people. Complaints are sometimes made that the works are seriously deteriorating, and although taking the tanks as a whole there are facts that disprove this, the present arrangement cannot be considered satisfactory, and it would doubtless be better if some recognized system for the proper maintenance of the works were introduced.

As in Khandesh I would nominate a patkari or chowkeydar to the charge of each tank, whose duty it would be to generally superintend the distribution of the water according to existing custom, and to at once bring to notice any damage that might occur to the works.

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is most useful, and this difference of opinion is of course apt to run by departments, each thinking their own line the most useful, irrigation officers advocating irrigation works, road engineers roads, &c. But the month or two before famine commences, if properly made use of, should suffice to dispose of all these differences of opinion.

In anticipation of possible need a forecast of the most useful works required in each Collectorate for the following two or three years should always be made and then reviewed by superior authority some months before any prospect of their being required occurs.

Q. 12. Apart from canals under the Irrigation Department, minor irrigation from streams by means of dams constructed by the people themselves is very common. Tank irrigation is also very common in Dharwar. I should say that on the average the value of the crops below such works in the case of irrigation lasting up to February and admitting of a second crop being taken is not less than four times that of dry crops and probably somewhat more. No general rate can be laid down since irrigation differs much; in some cases it only lasts up to the close of the rains and so on for different periods up to perennial irrigation, which alone allows the most lucrative crop, sugarcane, to be grown.

Q. 13. The rates on canals and tanks constructed by and now under the Irrigation Department are fixed by them, and I leave them to answer for their own works.

In the case of all old tanks and channel irrigation from streams by means of dams constructed by the people themselves, the Settlement Department fixes the rates, which vary in different districts and parts of districts according to local circumstances, which so exceedingly vary that it is impossible to define any general rule of rating. In Dharwar for instance in some parts in lands under tanks, cocoanut and areca palm cultivation flourishes, and there the rate per acre runs as high as Rs. 15, of which about Rs. 13-8 would be due to water. On rice land irrigated from tanks in Dharwar the portion of the assessment due to water would range from Rs. 1 up to Rs. 8, according to whether the irrigation admitted of sugarcane being grown in these lands or not in triennial rotation, or whether one crop of rice alone could be obtained, or whether a second crop of grain or pulse could be obtained after the rice.

Of rents proper, that is cash rents, we have not much in the south of Bombay. Half gross produce is the common rate of sub-letting, and there is less sub-letting in irrigated land than in dry crop land, but in the former the proportion of gross produce given sometimes exceeds half. It is exceedingly difficult to obtain any accurate



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information from the people about the terms in the occasional cases of cash rents which do exist; as a general rule the information given is wrong, the people prefer to keep affairs of this nature to themselves, and cash rents when paid are often mixed up with a payment also of some portion of produce.

The point in this question as to whether a proprietor whether paying land revenue or not should not pay water rate if the yearly value of the lands are increased by irrigation canals constructed and maintained at the public expense, will in Bombay apparently in the main refer to holders of inam villages, though in principle it will apply to all lands. If such persons use the water, they should of course pay for it whenever they use it without waiting for revision, but the using it must, in my opinion, remain optional.

As regards lands paying revenue to Government and lands entirely or partially free from payment of revenue but situated in villages administered by Government, I would provide that after a year or two of trial a landholder should be required to state whether he accepts water for a certain survey field permanently and finally, fixing the supply which he should receive, namely up to such a month in each year. The water assessment in this survey field would then become a permanent portion of the land revenue debited against it, and all inspection and measurement of crops, &c. would be obviated. When an irrigation work is brought into operation on land hitherto unirrigated, the lands susceptible of irrigation and desired to be irrigated should be divided up ordinarily into survey fields of about three acres and defined by boundary marks, these survey fields being shown on the map of the village. This renders it easy for the holder to bring field after field under irrigation and water rate permanently as his means and convenience admit. There must always, in case of a new work coming into operation, be a preliminary period of three or four years allowed to the people to accustom themselves to irrigation and to find out what lands it suits; during this period areas actually irrigated each year must be measured off for assessment of water rate. For the first year of these introductory years water should be allowed free and then go on gradually increasing rates. The scale of rates for each year should be given all publicity before the first year.

As regards inam villages the above course would hardly be feasible, as it could not be worked without the consent of the inamdar, which would rarely if ever be given. In such villages the simplest course would be to allot a certain supply of water at a certain lump payment agreed upon with the inamdar and leave the detailed management of it to him. As regards permanently settled tracts,

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one or the other of the above courses would equally apply according to the area of each estate.

The charge that agriculturists use more water than is necessary is commonly made. I doubt the entire truth of this charge. Too much water does more harm than good. Ryots know how much water they practically require. Doubt possibility of giving out water in detail by module. Contract system not practicable except on a large scale, such as supposed in case of inam villages above, and above all not compulsorily.

Excepting on canal works, water rates in Bombay are fixed under the Settlement, and for the period of the Settlement, and can only be increased under the terms of the guarantee if Government should improve the water supply on irrigated lands, or if additional land is brought under irrigation from Government water.

- Q. 17. Too little canal irrigation in Bombay to justify any decided opinion, but in one case, below Madak Tank in Dharwar, an increase of fever is alleged as a result of increase of irrigation, and on the Krishna Canal at Karar continuous irrigation with the canal water is said to damage the land. Further experience will be required to ascertain the truth of this. Both works are of comparatively recent date.
- Q. 19. No material change in Bombay in this respect during last ten or even twenty years.
- Q. 20. Much doubt the utility of a canal giving water only during rainy season. First, the people would not, as a general rule, take the water till it was too late; they would hope always for rain to-morrow. Secondly, water would be of little use on undulating ground, and no one would be at the enormous expense necessary to level his land for the occasional resort to irrigation.
- Q. 22. The system as regards all old works is for the people to hold charge of the distribution of water, which is arranged according to certain known shares and rules. This system works without any difficulty whatever, and complaints are not very common. The check on this system is the opposition of individual interests. Any additional land brought under irrigation must pay additional assessment. The moderation of the rate will induce a desire to extend irrigation as much as circumstances will admit, but no man will silently see himself deprived of full water for the irrigated area he already has. Therefore unless the supply of land susceptible of irrigation is less than the supply of water, there is every reason for reasonable economy in the consumption of water resulting.
- Q. 23. Regarding the cause of the slow extension of irrigation, in the first place much more labour is required for irrigated land. Cer-

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tainly in a tract where much irrigation prevails, as in the west of Sattara, Belgaum, and Dharwar, and in the west of Mysore, the population will range about double that of the open plain districts with little or no irrigation, notwithstanding that the tracts where irrigation prevails always contain a large proportion of hilly and jungly lands which count for nothing as cultivable area.

Secondly, irrigation without manure is of little use, and the conditions of dry crop cultivation tracts will not afford the supply of manure necessary for any extensive area of irrigated land. The change of those conditions, increase of population, &c., must take a considerable time.

Thirdly, unless the land happens to be naturally level or nearly so, great labour or expense must be incurred in levelling which must be a work of time. I can see no way in which this difficulty can be overcome except by time.

Fourthly, the people are very slow to change their habits of cultivation; a people accustomed to dry crop cultivation will not suddenly or without the lapse of a considerable time generally adopt irrigated cultivation, even admitting that all other conditions are favourable.

Fifthly, the people especially dislike any system in which they have not the control of the water themselves.

Sixthly, all land is not suitable for continuous irrigation in its natural state, and time is required to modify the natural qualities of some by artificial admixture. A general idea prevails that black cotton soil becomes deteriorated by continuous irrigation unless large quantities of foreign matter are annually introduced to destroy the cohesive tendency which it acquires.

I much doubt if cultivators would care to hamper themselves by taking advances from Government for the purpose of levelling their lands, their own labour and means will effect this gradually and as fast as the other necessary conditions will advance so as to allow any great extension of irrigation.

Shortness of supply in the hot season would of course materially affect the progress of canal irrigation, in that it would render the raising the more valuable crops requiring perennial water doubtful, and therefore the people would be deterred from going to the expense of levelling and terracing their land. The difficulty would of course have no application to naturally level tracts, such as abound in the north of India and in Madras, but are rare in the centre or south of Bombay.

Q. 24.

I do not think that a special rate applied on a limited protected area would be successful or just. It would not be successful because

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unless the rate was a heavy one it would be unproductive in amount, and if a heavy one it would produce the most intense dissatisfaction.

It would not in my opinion be just, because it would be absolutely out of the power of many cultivators at once or at any early time to make use of the water. Some might want means to buy the additional cattle required for cultivation, some might hold undulating land costing much to prepare ; therefore the compulsory rate would hit them very unequally compared with those holding comparatively level land. In fact a dozen differences of circumstances may be imagined for different individuals which would render the incidence of a sensible compulsory rate most unequal.

I would meet the case by a general rate of insignificant and imperceptible incidence, the total produce of which would amount to a very considerable sum, much above what could be provided by local compulsory rates of considerable weight. I estimate that an additional famine insurance cess of six pies per rupee of assessment would, in the Bombay Presidency, excluding Sind, give about 10½ lakhs a year ; such a tax would be almost imperceptible in its incidence and would be immediately productive. This cess should be of course leviable on all lands and villages, whether inam or Government.

The produce of this tax I would devote to a fund for first construction and providing interest of the capital expended till a work began to pay itself. Moreover I would not limit the expenditure of the proceeds of this tax to works of irrigation, but would expend it on all works offering a fair probability of proving remunerative to the extent of 4 per cent. or even 3 per cent. in the case of irrigation works, which would generally be obviative of famine, under which category I would include railways quite as much or even more than irrigation works. As soon as any work originally started on this fund paid over 4 per cent., at least half the surplus receipts should go to credit of the fund.

Q. 25. Does not apply in my experience.

Q. 26. This is very much the case in the Dharwar Collectorate, which is the only Collectorate in the south of the Bombay Presidency possessing any considerable number of tanks. But it is only of comparatively late years that any great amount of tank repairing has been taken up by Government. It was common there for Government to undertake the repair of no tank unless the people provided about half the expense without any claim to relaxation of liability to water rate ; many tanks were repaired and improved on these terms.

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Many of the tanks are so small that they only water a few acres, comprised often in the holdings of one or two holders of land. I am inclined to think that the best course as regards tanks in Dharwar is to leave them to existing arrangements, the Irrigation Department repairing them when large, or when a sufficient amount of present or prospective revenue is involved to make it worth while, and to leave the minor tanks to individual efforts. Between the very small tanks and the large ones which it is the undoubted duty of the Irrigation Department to repair, there is an intermediate class say watering from 20 to 50 acres. I am inclined to think that the repair of these had better be left to private arrangement between the cultivators holding land below them and the authorities, and that if the cultivators will supply a part of the expense of repair, Government should provide the remainder. The cultivators may hang back for a time, but as the tank gradually deteriorates and the supply of water becomes insufficient, their own interests will ordinarily sooner or later induce them to provide a portion of the funds required. Finally, if the landholders would not provide any portion of the necessary funds for repairs and the tank became utterly inefficient, and consequently they found cultivation unremunerative, they might resign the land in question, which would then revert to Government, and the sale value of the land after the tank was repaired would in many cases fully recoup Government for the cost of repair.

No legislation for the repair of tanks can be carried out without an immense deal of Government interference, and it would be advisable to obviate the necessity for this as far as possible, since any Government interference against the general will of the people will certainly be resented by them, and prove difficult to work without extreme unpopularity.

The only kind of legislation which it appears to me might prove advisable would be that necessary to coerce a recusant minority of the cultivators under any tank, the majority being willing to contribute to repairs and to enter into terms possibly for the future payment of increased water rate in consideration of improvements in water supply to be made, while a minority refused to join in any such agreement. In Bombay much land is inam partially or wholly exempt from payment of land revenue. Inamdars are often lazy people content with what they can draw from their land and averse to any expenditure on improvements. That the objections of a few of this class of people should stay improvements which the remaining holders of land desire and are willing to pay for, is a real hardship on these latter.

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Q. 27. Only refers in Bombay to holders of inam villages. There are no obligations on them to keep up existing works. Their own interest is their sole guide. As a rule I think they do little or nothing in the way of improvements.

Q. 29. In all old works the people manage the distribution of water themselves. As a general rule every cultivator holds more land than he irrigates, and there is nothing to prevent his extending his irrigated area as far as the supply of water will admit; each person has certain defined rights as to the time during which he may enjoy the flow of water from the tank channel, and self-interest will induce him to make the most of it as far as his means will admit. For it must always be remembered that water is not the sole need for irrigated cultivation, which requires much more labour and more manure than unirrigated, and one or both may not be procurable or only to a partial extent.

Q. 30. No experience of Irrigation Companies in Bombay, but am distrustful of them and their advantages. If a work would clearly pay well, Government should undertake it. There are few works which would beyond all doubt pay a substantial dividend, though for indirect advantages it might be expedient for Government to undertake them. It is clear that no company would undertake any irrigation work without a guarantee of a minimum dividend which is more than likely to become a heavy charge on the State revenues. The security of the dividend is also apt to induce carelessness in the management of the Company and troublesome bickering with Government, as of course the Company will always try to make out that grand schemes of theirs are prevented from coming to good by obstructions thrown in their way by Government.

Q. 31. This is in the main an Irrigation Department question. As regards the latter part of the question there can be no difficulty in Bombay in ascertaining the portion of the revenue due to water on irrigated land apart from that on the soil alone, since the means exist for at once ascertaining in reference to any field what the assessment of it would be if it was cultivated without irrigation as simple dry crop land, exactly in the same manner as the assessment of any dry crop field in the same village is ascertained, the same soil data being recorded for each.

The above is the last question of Chapter IV., but a few points occur to me which though not specifically touched upon in any of the questions are within their general scope, and therefore on them I desire to offer a few remarks.

The indirect advantages of irrigation are more than once referred to without any specific mention of what they are.



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It has often been remarked and even long ago before the Survey Settlement, that a village in an essentially dry crop country which happens to have a good proportion of irrigated land, whether from well or tank, has more backbone in it than a purely dry crop village. This applies not only to Government villages but to inam villages. The people are generally better to do. This cannot be solely from the superior productiveness of the land, for an additional assessment is paid on irrigated land which before the Survey Settlement in Government villages, though very unequally imposed, was very generally pitched at a very high rate, and in inam villages not under the Survey Settlement is always so. Much is, I believe, due to the greater certainty of return, and to the habit of pretty continuous labour rendered necessary by the use of irrigation. The habits induced by the necessities of irrigation are more or less extended to all other lands, to the great benefit of the cultivators.

Another undoubted indirect advantage is the certainty of being able to procure fodder for cattle in even a season of almost utter failure of rain. No season, not even that of 1877, in Kaladgi (always a district of limited rainfall) is utterly without rain, but it comes when it is not wanted, and may do little or no good except so far as it may supply means of irrigation. The year 1877 happened to be the second of short rainfall, and partly from that cause, and partly from the nature of the fall which did occur, the ground at a very few feet below the surface was most unusually dry. A fall of several inches in a few hours will do little or nothing for the wells, while the same fall spread over days instead of hours will do much. A heavy fall spread over a short time does however greatly affect the supply of water stored in the sandy beds of rivers, and even when the wells proper are dry those well-like constructions (called boorkees), common in the Deccan on the banks of streams, will be worked with success. Villages in Kaladgi last year with many boorkees obtained a sufficient supply of fodder to save all their really good cattle.

Beyond doubt therefore the practice of irrigation does increase the wealth of the people and tend to preserve that wealth from the evil effects of a bad year. The wealth of the people is the wealth of the Government, and therefore it is not advisable to calculate returns on too close figures when considering the propriety of sanctioning money for the extension of irrigation. Four per cent. is looked upon as the natural minimum return for money invested by the State. But as regards money expended on irrigation, Government should be, in certain districts especially liable to drought, content with a certain return of even  $2\frac{1}{2}$  per cent.,

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and trust to the difference being made good indirectly, first, by the increased ability of the people to consume other tax-paying commodities; and secondly, by the extra security given to the ordinary land revenue by the general improvement in the condition of the people; and lastly, by the obviation to some extent of the possible necessity for Government incurring heavy expenditure in exceptionally bad years.

The next point to which I would advert is the kind of irrigation work which would probably be most successful in the Deccan, a country in which the population is not dense, neither are extensive areas suitable for irrigation to be found within a small circle, conditions which evidently point to spreading the possibility of irrigation over a large area and against concentrating it.

There are two forms of large works—1st, dams across rivers with channels leading away from the river on one or both banks. These works have the advantage of absorbing but a small area of useful land, and of ordinarily being certain of a supply of water. The objection is that they are exceedingly costly, and in order to diffuse the irrigation over an area sufficient to contain the labour and land to turn it to account, an immense length of channel must be constructed.

The second class of large works are storage tanks, which may be fed by a channel from a river or be fed by damming up a stream in an appropriately situated valley. The objections to these works are, first, that they are very costly; secondly, that they invariably cover a very large area, and that, in most cases of the best land in the country, land which would in any ordinarily bad year give some crop; thirdly, they are open to the same objection as channels from rivers in regard to the great expense of making their subsidiary channels of a length to sufficiently diffuse the irrigation power. No large work in the Deccan has up to the present time ever paid, and the annual accumulation and addition of interest to the original capital must be fast putting them into a worse financial position.

The kind of irrigation which is in every respect most liked by the people is that from wells and boorkees or well-like erections on the banks of streams. The latter are the most certain, as the beds of streams will hold water in years when the wells are dry. One "mote" or waterbag is reckoned as capable of irrigating five acres of ordinary crops, supposing the lift of water to be of ordinary height, say not exceeding six or eight yards. At present the people can obtain funds for sinking wells from Government under the Land Improvement Act; that Act however is, I believe, but little operative from reasons readily to be appreciated.

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It appears to me that advances might be made for sinking wells by mutual agreement between the cultivator and the Government, the latter advancing the money and the former agreeing to pay a certain sum annually as a rent charge on his land. My impression is that Rupees 12 a year would be readily paid on a well which would water from four to five acres. Such a well might in most situations be constructed for Rs. 200 to Rs. 300, on which Rs. 12 would give from 6 to 4 per cent. return. This sum might be secured on the land as a first charge similarly to the Government revenue. The payment of return for expenditure on works of this nature would be immediate, the benefits of irrigation would be diffused over as wide an extent of country as possible, and the greatest good would be done for the smallest expenditure. Five hundred wells would be got for 1 to 1½ lakhs of Rupees, which would irrigate 2,500 acres of land. In no way could the irrigation of such an area be secured at any approach to that expenditure from large artificial works.

The sole difficulty and no small one would be in the construction of these wells. The people could not be trusted with the money and the construction themselves. The work would require to be carried out under close supervision. As regards the comparative ease with which water is obtained from these and from large artificial works supplying water by flow, the ryot would prefer to have water under his own control, to use when he chose by lift, to having it supplied by natural flow at any rate of assessment at which he is likely to get such irrigation. If such wells could be constructed and a payment on the capital expended of 5 per cent. secured, 3 per cent. might be considered as interest and 2 per cent. as the sinking fund to pay off the original expenditure, which would afford a far more certain return for money directly and indirectly than is likely to be afforded by any large works whether tank or channel in the Deccan, and do far more immediate as also probably permanent good. The great advantage would also be obtained of avoiding the investment of large sums in one locality, any adequate early return on which must be a matter of doubt. A well or boorkee could be constructed in a very few months, and the next year should see the return for the capital expended coming in without difficulty or any administrative supervision of the area irrigated.

I am fully sensible of the difficulties in the way of properly supervising the construction of a great number of small works. Still by dividing the tracts to be dealt with into small circles, this might probably be got over. If the works were well and solidly constructed in the first instance, large repairs need not be necessary during a long lapse of years. Small repairs should be executed by

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the landholder. I would provide him with the first work and leave him to keep it up without further aid from the State.

It may be said that the people would refuse to accept such works and to pay what would in fact be an additional assessment of Rs. 2 to 3 an acre. Irrigation would be supplied to them in the form they are most accustomed to; if they would not accept this, it appears to me hopeless to expect that they will accept irrigation from large and expensive works which would, to make them in any way remunerative, require average rates to be paid of probably at least treble the above amount, accompanied with the great objection in the ryot's mind of not having the water under his own control.

As regards the comparative advantages of irrigation works and railways as preventatives of the effects of famine, the following appears to me to be the state of the case.

Production even in the worst districts is in ordinary years much in excess of the requirements of the existing population, and with the improvements in cultivation which time and increased population will bring about, will meet the wants of a considerable addition to the present population without the aid of extensive irrigation. There is therefore no immediate need for adding to the produce of the country generally or of these bad districts specially.

Railways will enable surplus produce to be exported to a much greater extent than the present communications and means of carriage will allow; even the worst districts freely produce exportable articles, some wheat, oilseeds of several kinds, besides the commoner kinds of grain which, with cart carriage, will not, from its bulk in proportion to value, pay the cost of any distant export. Oilseeds especially are in constant demand to an unlimited extent for export to Europe. An improvement in railway communication would therefore immensely increase the wealth of the people and enable them to resist hard times to an increased extent.

Railway communication would also supply an existing want, while irrigation would be a doubtful remedy, as it is very uncertain how far the people are in a position to avail themselves of it when offered, and therefore how far the construction of large works would in most situations approach to repaying the State the heavy cost of construction. It would be hard to find any reasonably well selected railway which would not pay  $2\frac{1}{2}$  per cent. net at an early date after construction. I think no large irrigation work in Western India has ever yet given such a return or holds out any prospect of doing so at any early date, notwithstanding that some of the few constructed are in exceptionally favourable situations.

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When famine was actually on, irrigation would do comparatively little to obviate the pressure as regards human food, the extra quantity locally produced would affect prices little though the supply of fodder would be of inestimable advantage towards saving cattle. On the other hand with a railway within 40 or 50 miles of any place and with a good sound road passable in all weather within 12 miles of every place, it would be absolutely impossible for the extreme pressure of famine to exert itself, as prices must be kept down.

There is no want of food in the country for a much larger population than it carries, and a general short supply is practically impossible; but the food is not at all times in the place where it is wanted; it would appear to be the evident primary policy not to increase the quantity of food but to increase the means of transfer from one part to another. If in providing those extra means of transport we not only obviate the worst effects of occasional famines, but also foster the general wealth of the country in ordinary years, we are adopting two certain modes of averting the worst effects of famine.

It may be said that many of these proposed inland minor railways would pay little beyond the cost of working. Even if this proved to be the case it would be no argument against them compared with irrigation works. In the first place it remains to be seen if very large irrigation works will pay more, and secondly these minor railways would act as feeders to the main trunk lines under Government guarantee, and a considerable proportion of what the minor railways carried, at perhaps little beyond the cost of conveyance, would be afterwards carried for a much longer distance over the trunk lines to the great benefit of the Government treasury.

The matter may be summed up as follows. We have already somewhere or other always more produce than we require for internal consumption, and more than we can find the means of exporting. Before taking measures to increase the quantity of that produce, primarily turn attention to adding to the means we have for conveying the surplus away to the place where it is wanted. Extension of irrigation may be, and doubtless is, of great local utility, and may be advantageously carried out with caution as to embarking large sums on single schemes. But under present circumstances, for the general benefit of the country in all times and in all seasons, the extension of irrigation cannot compare with the extension of railways.

**Mr. Erskine, Commissioner, Northern Division.**—I do not believe that many

**Q. 24.** of the irrigation works on a large scale can ever pay the charge of interest on capital outlay, but in my opinion the real remedy would be to discontinue constructing these large and costly works except



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where a large perennial supply of water could be assured, and to be content with smaller ones and with the encouragement on a large scale of the construction of wells for irrigation purposes.

It has always seemed to me that far too little has been done in the matter of constructing wells; I believe no works would pay Government so well, and the outlay would be so soon repaid that the enormous sums required for the large irrigation works would never be required and the money might instead be devoted to railways. I do not of course advocate wells as a panacea for all evils; there are parts of the country where the water bearing stratum is so deep that the water is practically useless for irrigation purposes; there are other parts where wells rapidly turn brackish, but there are also large areas where wells could be sunk almost anywhere and water be found, and the water so found remains ready for irrigation purposes when the running streams and small rivers are dry. In many parts of the country wells scarcely need to be built up, but taking all parts together if we allow Rupees 300 or even 400 as the cost for constructing each well, then for Rs. 5,00,000, which would not go far in an irrigation scheme, 1,250 wells could be built, which, if we assume that each waters 4 acres, and that Rs. 5 per acre is charged, allow 6 per cent. on outlay, or, if Government desired that the cultivators should own the wells and repay the capital with interest, then I am certain that in many parts of the country the cultivators would be ready to take up any number of wells constructed in their fields and to repay the cost with interest within a very limited time. Wells diffuse the benefits of irrigation in a way canals cannot do. Every village may have its wells, whereas but a few can be within the range of canal water. Besides this, the well-to-do cultivators would be those who would wish for wells, men who would be prepared to pay for them and thus return at once the capital to Government to be expended over and over again.

I do not for a moment wish it to be supposed that I am opposed to irrigation works on a large scale; such is not the case; but the question "will it pay" should be asked in the case of each, and when the answer is unfavourable, then I would condemn the project and resort to wells, not leaving it to the cultivators entirely to build their own, as has hitherto been done, but by offering to build them for them (or with assistance from them) on favourable terms, strive to increase the number of wells as much as possible. Large works in a country like the Deccan rarely pay. Wells I believe would pay quickly, and hence my desire to see their construction promoted. I am aware that the cost of irrigating land from a well is very much greater than the cost of irrigating from a canal; indeed in many parts



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the cost of irrigation from wells is said to be as high as Rs. 30 per acre, and yet it pays. This is undoubtedly strange at first sight when we consider the difficulty that has been experienced in getting water from canals utilized, but it must be remembered that from a good well perennial irrigation can be secured, and this is what is really liked, and wherever perennial irrigation can be secured from canals there too I have little doubt that the water will soon be eagerly sought for.

Let there be large irrigation works by all means where they will pay, but instead of burdening the finances of the country with the cost of many unremunerative works of this class, I should prefer to see only a few well selected ones carried out, and railways constructed as a protection against famine, in preference to increasing the number of irrigation works that do not pay. A railway always increases the value of property in its neighbourhood and stimulates production, and if canals followed railways instead of preceding them, there would be a much better chance of the latter proving remunerative.

I may mention that before the introduction of the present survey system, if a cultivator wished to construct a well he made an application to the Collector who granted him permission, and at the same time a guarantee that no extra assessment would be levied for a fixed time (often as long as thirty years). At the expiry of this period a water rate was imposed. Since the introduction of the revised settlement nothing has been charged on newly constructed wells.

- Q. 25. The only instance which I am aware of in the Northern Division in which prescriptive rights in the use of water have grown up, is in the case of certain alienated lands irrigated from the Khári river, which has from time to time been improved by Government. What occurred in the case of these lands was thus described by a Committee appointed in 1874 to make enquiries concerning the Khári river, situate in the Kaira Collectorate:—

“In 1868, *i. e.* after the Summary Settlement under Act VII. (Bombay) of 1863 was carried out, and Sanads issued according to its provisions, Mr. Rogers, then Revenue Commissioner N. D., in his No. 2670 of June 21st, 1867, ordered that an extra cess should be levied from all holders of alienated lands which had benefitted by the improvements in the river Khári. The cess was calculated by the Survey Department, and submitted to the Collector of Kaira for imposition.

“30. Suits were immediately filed by many alienees against the Collector for the purpose of putting a stop to the new cess. The

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Legal Remembrancer was consulted, and that officer at once advised Government to allow judgment to go by default. This was done, and, in addition, Government ordered all collections on account of the new water-rate to be returned to the alienees.

“31. Such being the case, we are of opinion that without legislation it will be impossible for Government to levy any extra cess from holders of alienated lands who have previously used the water of the Khári, even in the event of Háthmati water being supplied annually.

“32. As regards those alienees who have hitherto not enjoyed water rights on the Khári, we are of opinion that, if an extra supply enabled them to irrigate from the stream, Government could not levy an extra rate unless the alienees asked for the water; and if the extra supply ran through alienated hands *en route* to Government numbers, the only method of preventing alienees using the water would be to buy up a sufficient space of ground on both sides to remove the stream from the actual possession of the alienees, unless payment were made for its use.

“33. We are further of opinion that legislation, having for its object the taxation of Summary Settlement sanad holders who may benefit by improvements in the Khári water supply, will be beset with difficulties inasmuch as it will be almost impossible to define their original rights.” I do not think it would be worth while to buy out these rights. A very large sum would have to be paid, which in my opinion might be more profitably expended in other ways.

In many of the rivers and streams in the Nasik and Khandesh districts the water is fully utilized for irrigation, dams having been constructed; prescriptive rights to the use of the water exist in such cases, but Government has always exercised the right of deciding whether a new dam may be constructed or not; of late years, however, but little has been done in the way of constructing small dams. As I have already observed, when disputes concerning the use of the water from these dams arise, they are in the first instance decided by the revenue authorities, and their decision is generally accepted, if not, those discontented can sue in the Civil Courts. No change of system seems required.

- Q. 26. In most places the villagers keep the tanks to a certain extent in repair, but of late years in some localities they have exhibited a disinclination to continue this system, and apply to have everything done for them. The old rules of 1855 in force for regulating repairs to all irrigation works will be found at length at pages 318 to 320 of “Circular Orders of the Revenue Department, Bombay, 1860.” Rules 12 and 13 are as follow:—

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"12. Repairs to irrigational works, whether required to save them from immediate destruction or great damage, or to prevent their gradual decay, are to be regarded as of an emergent nature as soon as their necessity becomes apparent, and should be executed at once by the Executive Engineer's department if possible, or if not, by the Collector's department, under advice from the Executive Engineer; or if this also be impracticable, by the Collector's department, with whatever means may be procurable. The Chief Engineer of Public Works, to whom each such case should be reported, will audit bills for all necessary expenditure on account of it, submitting quarterly reports to Government.

"13. The necessity of repairs to irrigational works should be reported by the servant in charge, if any, or if there be none such, by the village authorities, to the nearest Public Works officer, and also to the mamlatdar of the district, each of whom will report immediately to his superior, so that the earliest means may be taken to settle how repairs are to be executed. Orders to enforce this rule should be issued by Collectors and Executive Engineers to their subordinates, and any infraction of it on the part either of village or district officers, or of the subordinates in the Department of Public Works, should be treated as grave misconduct."

No means exist of compelling villagers to repair tanks, &c.

In parts of Nasik and Khandesh the cultivators of lands irrigated from dams, pay a voluntary cess of one anna on each rupee of assessment on irrigated lands, and from this fund all petty repairs are executed. I am not aware of any similar system being in force elsewhere; the people usually repair the channels themselves and trust to Government repairing the dams or other masonry work. The system I have referred to as in force in a part of Nasik and Khandesh is I think a good one, but all depends on how it is worked. If the money is well spent the people are pleased and pay readily, if they think their interests are being neglected they refuse to pay, but while at Nasik I always found them very reasonable. This voluntary cess is however only paid as its name (patfalla cess) implies, for clearing and repairing pats or channels, not for the dams, which are repaired by Government, and as the rates of assessment have been fixed on the understanding that the works are to be kept in good condition by Government, I do not think the cultivators could equitably be called on to pay for repairs unless their assessment was reduced, an arrangement I would not advocate.

How small tanks should be dealt with is a much more difficult question. When not used for irrigation purposes the villagers and Local Funds can generally do what is needed, but when used both

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for village purposes and for irrigation purposes the case is different. In such cases the villagers should be required to contribute in money or labour towards repairs, but whenever the tanks are mainly used for irrigation purposes, they must I think be kept in repair by Government or the irrigation revenue will suffer.

In some parts of Guzerat many of the old tanks are said to be filling up and some are much out of repair, and much correspondence has passed regarding them. I much doubt however whether any workable system could be introduced by which those who benefit by the water could be compelled to carry out all necessary repairs. Were it tried, rates would in consequence have to be lowered, and I think the higher rates and repairs carried out by Government agency is preferable.

- Q. 27. I am not aware of any instances in which superior landholders in the Northern Division are bound to maintain tanks or other irrigation works. There is nothing in the agreements of the talukdars in Ahmedabad binding them to keep up such works. Where such works exist, self-interest has apparently been relied on to induce them to see that the works are kept in a fairly good state.

In the foregoing remarks I have briefly referred to the various paragraphs to which my attention was called except such as could manifestly be better answered by local officers or those who had some experience of famine districts. The Northern Division has had wonderful immunity from actual famine, though there have been seasons of great scarcity and consequent suffering among the poor. The northern part of the Presidency (excluding Sind) is now traversed by the B. B. and C. I. Railway, and with this aid to the importation of grain, and with the long line of seaboard, there should never be any great difficulty in pouring in grain, even should unfortunately a famine occur. One part only is much cut off, namely the Panch Mahals lying to the north of Baroda, and a railway for this district is for many reasons much needed. The railway has been constructed as far as the western frontier on the river Mhye, but there it ends without any real terminal station. It should undoubtedly be at once carried on to Godhra and towards Dohad also, and eventually further. The line I have no doubt would pay, the branch up to the Mhye does so now, and it would be the means of creating or rather perhaps encouraging a through trade with Central India, which is now strangled by bad roads and heavy transit duties. Such a line would not only remove all chance of suffering from famine in the Panch Mahals, but would if prolonged towards Ratlam render the grain supplies of Guzerat available in the event of scarcity in the direction of Rajputana or of

Indore and Central India generally. The embanked road from the Mhye to Godra has been constructed with the object of its being utilized for a railway, and the line could be quickly and cheaply constructed, and would do a vast deal for the good not only of Panch Mahals, but of the province of Guzerat generally.

**Mr. Propert. Khandesh.**—It is difficult to estimate the number of persons likely to seek relief in an extreme case. The population of the Kaladgi Collectorate is about 8,16,037. Kaladgi was more heavily afflicted than any other Bombay district, and I find that the greatest number of persons on relief-work at one time was 1,23,277, or about one-seventh of the population. This would give a total of about 1,43,000 persons for Khandesh, where the population is about one million, supposing the province to have reached the condition of Kaladgi; although had rain not arrived late last season, judging from the condition into which the country was falling, I should not have been surprised at seeing 2,00,000 persons seeking relief. Circumstances however might alter these numbers very materially; for instance, if an extreme famine were to arise after two or three years of scarcity, so many people in all probability would be unable to withstand the visitation that we might be called upon to assist at least a quarter of the entire population. In such matters, however, it is difficult to form an estimate of any value.

If road or tank schemes be carefully prepared and sanctioned beforehand, there would I think be no difficulty in selecting portions to be taken in hand according to the severity of the scarcity or famine.

**Q. 11.** There has been no difficulty, as regards Khandesh, in finding suitable works during the recent pressure. Some schemes were ready to hand, having been sanctioned as ordinary works in past years. Others were carefully prepared, and at the present time, in roads and tanks alone, we have a sufficient number of schemes to employ any number of labourers for at least a year or two. Nine relief-works out of ten must surely consist of roads or tanks, or works in connection with such. A tank is, I think, the most convenient sort of work for relief purposes, inasmuch as earthwork alone will often suffice to complete the project. Roads are also good, but unless Government are prepared to sanction expenditure on metal and masonry work as well as embankments, road projects carried out by relief gangs will never be of any permanent use. At ordinary times Local Funds cannot afford to complete long lines of communication, the commencement of which has been forced upon the district by sheer famine. It is, I think, a mistake to suppose that metalling and the construction of small culverts (I mean those actually necessary for traffic) will not employ relief labourers. All

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masons require coolies to help them, while stone-breaking or moorum-digging afford the means of exacting really hard labour. At any rate some attention should be paid to the completion or partial completion of works before fresh ground is broken, in order to ensure their utility hereafter. Large bridges should of course be not thought of.

Q. 12. Tabular form will show capital expended, &c.

Capital expenditure, including establishment.	Yearly Interest.	Annual cost of Maintenance.	Acreage Irrigation.	Several corresponding rates per acre irrigated.		
				Capital	Interest.	Maintenance.
Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
15,00,000	67,500	6,500	5,950	252	11 26	1.1

The above expenditure represents only the new irrigation schemes, for which capital accounts are kept. The old native páts or canals, bandharas or weirs, of which there are hundreds in the province, and from which a revenue of about Rs. 77,000 is derived, are left out of consideration at present.

The local value per acre of the chief irrigated crops as given by Captain Elphinstone of the Khandesh Revenue Survey at the time of the last settlement was as follows:—

Name of Crop	Total value per acre	Profit per acre.
	Rs.	Rs.
Sugarcane .....	240	115
Plantains .....	62	36
Rice, best kind .....	60	30
Vegetables .....	50	27
Gram .....	16	11
Wheat .....	32	24
Jowari and Bajri .....	21	14

Of the above, the first four cannot be grown without irrigation; the mean value of the others is approximately as follows:—

	Total value per acre.	Profit per acre.
	Rs.	Rs.
Gram .....	10	6
Wheat .....	20	12
Bajri and Jowari .....	10	6

*Note.*—I am not satisfied with the above figures, but cannot decide at present.



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Q. 13.

There are two systems of assessment—

(1) That settled by the Revenue Survey. This is a water rate per acre irrespective of the crops grown, varying from Rs. 5 to Rs. 18 per acre. The former rate is levied in the case of water supply lasting only through the cold weather, and where the bandhara or weir is not permanent. The higher rates are levied in the case of an ample perennial supply, first class soil, and permanent weirs.

(2) The rates on new irrigational works. These vary from Rs. 10 to Rs. 15 for perennial crops, and from Rs. 2 to 4 for rabi, rice, and garden crops. Rupee 1 per acre for monsoon crops, such as millets, oilseeds, &c. The above rates represent the increased rent on irrigated over unirrigated land. In the case of Khandesh, proprietors are represented by a few jahagirdars, who as a rule pay Government a quit-rent yearly. Government however may be considered as almost the sole proprietor of all lands irrigated by the new projects. In districts where proprietors are ordinarily to be found, if they pay land revenue, I should say that the water rate might be imposed in addition to the ordinary revenue demands. In the case of permanent settlements and proprietary land not charged with revenue, I should think that legislation would be necessary to enforce payment of water rate.

Q. 14.

The canal revenues of Khandesh are recovered by the Revenue Department upon statements prepared by the Irrigation officers. No difficulty has been experienced in applying the rules. Water is certainly used by agriculturists most lavishly. The supply of water by measurement would in all probability check waste, and it is intended that eventually arrangements for measurement should be made. The mere raising of the water rate will encourage rather than prevent waste. Assuming that all our new water rates are levied according to the crops grown, I do not think that any general rise in the rate would throw the poorer crops out of cultivation. If however the rates be levied irrespective of the crop grown, any rise in the same would certainly tend to prevent the cultivation of the poorer crops. Water is not at present charged for by quantity, and it would not be desirable to introduce the system until the people have further learned the value of water. No contract exactly corresponding with that mentioned in the question has been as yet tried. I do not quite see how, as long as the crop rate is strictly enforced, a contract could be made with bodies of cultivators at anything like terms favourable to both parties.

Q. 15.

The crop rates on the new canals and tanks have been purposely fixed at a low figure in order to induce irrigation. They could certainly be raised so as still to leave a fair margin of profit, but it is questionable whether it would be politic to introduce higher rates

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until the demand for water becomes more steady and certain. With regard to the Bombay Presidency, as the water rates were imposed since the commencement of the thirty years' revenue survey leases, and in addition to the ordinary land assessment, there would be no legal objection to raising them at the pleasure of Government in the case of those persons who demand water; but no compulsory water rate could, I think, be imposed without legislation upon all lands capable of being watered by a tank or canal until the expiration of the survey leases. The same remarks apply to lands held by jahagirdars or proprietors. Of these however there are very few.

Q. 17. There is no evidence as regards my own district to show that sickness, or injury to the land, by raising the water level has been caused by canal irrigation, nor have efflorescent surface salts been produced. In the case of Khandesh the natural drainage is ample. The Superintendent of the Government Farm at Bhadgām considers that drainage in Khandesh would be a great mistake under any circumstances whatever.

Q. 18. Noxious salts do not appear to exist in any quantity in the lands of this district.

Q. 19. The general effect of continued canal irrigation has been the extended production of a more valuable class of crops, and an improvement in the value of the crops formerly grown without irrigation. The new irrigation works of Khandesh have been opened too recently to allow of the preparation of statistics. Prolonged irrigation undoubtedly requires the free use of manure and a strict adherence to a proper rotation of crops. If these conditions be fulfilled, reduced production would be unlikely.

Q. 21. Canals are in charge of the Irrigation Department, and are administered according to the Canal Rules of 1876 (Bombay Presidency). These should be consulted. Water is distributed by the Irrigation officers, and the dues are collected by the Revenue Department. It has been found, with the assistance of subordinates, quite possible and convenient to combine the functions of the Engineer in charge of the works, and the technical business of the water-supply, with the duties of water distribution and canal revenue assessment, and as a matter of fact the Executive Engineer for Irrigation does without difficulty perform all the above duties. The realization of the canal revenue however is undertaken by the Revenue Department. The arrangement is, I consider, equitable, inasmuch as the latter Department has special facilities for the collection of all kinds of revenue, which the Irrigation Department certainly has not.

Q. 22. The canal administration is carried on in the Bombay Presidency by means of a code of departmental rules. There is on

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special law on the subject. As far as I am aware, the rules work well, and I know of no actual necessity for a special law.

- Q. 23. The slow extension of irrigation may be accounted for in various ways:—(1) Conservatism; (2) absence of energy; (3) want of capital; (4) fear of consequences, irrigated land being expensive to prepare, and irrigated crops being expensive to raise; (5) condition of indebtedness. If a cultivator be overwhelmed with debt, he cares little for the value of his crop, provided he can feed himself therefrom, as all spare grain or other result of his labours is bound to go straight to the family Saukar.

The steady use of canal water will of itself put the cultivators in a better position, and irrigation will eventually be adopted by all those within reach of the water. The receipts from the new Jamda Canal, situated on the Girna river, in the centre of Khandesh, have for years been very disappointing, in consequence of the disinclination of the cultivators to avail themselves of the water. Last year, however, *i. e.* 1877, the demand for water suddenly increased to such an extent that a full supply was not obtainable, in consequence of the partial failure of the monsoon along the course of the river. All the existing new canals in this province are still but partially used. The annual demand for water however seems likely to increase.

The sub-division of fields as regards marks is performed by the subordinates of the Irrigation Department. The process of levelling and the construction of watercourses are undoubtedly difficulties in the way of poor cultivators, but the sudden demand for the Jamda Canal water at the close of last rainy season clearly showed that irrigation was actually possible to some extent without any very great amount of preparation. Pecuniary advances are given to cultivators from the Revenue Department, and these are quite sufficient to enable them to prepare land for irrigation, as well as to carry out any other improvements. Shortness of supply during the hot season has frequently been experienced, and must affect most prejudicially the progress of canal irrigation.

- Q. 27. I cannot imagine a case in which the holders of land in no way under the influence of a canal could be equitably made to pay extra rates simply because a canal exists in the district in which they happen to reside. A special rate might be charged upon land *really* protected by an irrigation project, but such protection should be fairly *proved by facts*, and not merely *estimated upon paper*. My objections to the first proposal are framed upon the glaring injustice of such a measure. If it be clearly ascertained that irrigation projects are not likely to yield any return whatever, I do not consider that they should be sanctioned at all by Government.

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Under the most favourable circumstances, irrigation cannot be considered anything more than a mere attempt to supplement the natural rainfall, and considering that drought, if at all general, cripples severely the resources of the irrigation works themselves, I should be very sorry to see large sums of money expended on these projects, the real value of which is, I fear, too frequently over-estimated by the sanguine author of the scheme. Each irrigation work should, I think, stand or fall on its own merits entirely; it would be most impolitic to impose a permanent heavy tax upon land in general for the support of a few schemes which, except under special circumstances, are likely to suffer in seasons of insufficient rainfall. In the above remarks I do not, of course, allude to tanks and canals constructed under emergent circumstances, as famine relief works; it may be often necessary to construct such a work in order to keep the people of the district from starvation, and may subsequently be considered desirable to complete the project, and thus protect a tract of arable country, although the prospects of revenue may be to a great extent hazy.

Q. 25.

If by claims or prescriptive rights over water is meant a right on the part of any private individual to take water free, I may say that I am not aware of any such right or claim in the case of Khandesh, except as regards small inam holdings given for service or otherwise. In such cases it will be occasionally found that as the land is situated within the "thal" or area originally set apart for irrigation, the owner has a right to the free use of water; but claims of this kind are few and insignificant, and I consider no action regarding them to be necessary. Village communities have, of course, well established rights to the use of water flowing from the particular bandhara or weir belonging to such village, but payment is levied for the use of the water. Village rights were determined years ago, and it would (for instance) now be next to impossible to raise or lower the old established weir without giving rise to a crop of civil suits. This "right" to all the water drawn off from a certain weir rather tends to confuse arrangements, when as at the case at Mukti near Dhulia, a large tank has been constructed in order to supplement the general water supply of the river Panjra below the site of the tank itself (such water supply having for some years past been gradually decreasing). The water from the tank flows over all the weirs to be met with between the tank itself and the mouth of the river, consequently it is difficult to increase the irrigated area of any one village without giving all other canals *en-route* the benefit of the increased supply. Such rights as I have mentioned cannot of course be bought out, in fact there is nothing to buy, as the receivers of the water pay all that is demanded of them. The only question is how should the increased supply of water from the Mukti tank be paid

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for by the occupiers of irrigated land under the various weirs or bandharas, into and over which the tank water actually flows.

As regards the Mukti tank, it has I believe been decided that as so much extra water is now available the additional supply ought to represent a money value, but as yet no steps have been taken to fix the manner in which the increased value should be actually realized. The matter is under consideration, but its solution is far from easy, inasmuch as, as I have before stated, the entire contents of the new tank find their way, *not into new canals*, but into and over weirs which have been in existence for hundreds of years past.

Q. 26.

In the case of *small* tanks, the consumers of water should certainly be encouraged to undertake the duty of carrying out all ordinary repairs and conservancy, making application to the irrigation officers only in cases of real difficulty. As regards large tanks the above arrangements should I think apply to the minor distributions only.

I do not think the obligation could equitably be held to attach without corresponding relief, and the best form of relief would be a comparatively low rate of water assessment. In no case could cultivators be expected to carry out any but the most simple repairs, and silt clearances. If the villagers neglect to bear their part, the repairs should be executed by Government and the cost levied from the ryots; but to make such procedure legal legislation would be necessary. I think however that even without the assistance of a law it will generally be found that if Government officers were firmly to refuse to carry out such repairs as ought in justice to be executed by the cultivators themselves, the latter would give way, and eventually carry out the order given rather than suffer injury to accrue to their irrigated crops. As yet I do not consider that the respective responsibilities of Government and the ryots with reference to the repairs and improvements to canal works, have been determined with anything like sufficient clearness. In many villages of Khandesh the occupiers of irrigated land pay of their own free will a cess called *patfalla* in addition to water rates, and the proceeds of this fund are expended by the canal officers on repairs and improvements of an emergent nature. The levy of the cess has not been legalised, consequently we cannot enforce payment in the case of those who refuse to subscribe. It might perhaps be well to make the '*patfalla*' a legal demand, but I fear that if this be done, we shall eventually find the fund debited with expenditure on works the cost of which ought in reality to be borne by Government itself.

Q. 27.

As regards Khandesh, in a very few cases only are zemindars or other superior landholders in possession of tanks or canals or



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distributaries thereof. The water rates leviable on the *new* canals are taken direct from the cultivators in alienated villages, but in the taluka of Baglan which formerly belonged to Khandesh, but is now included in the Nasik Collectorate, I believe that Jaghirdars themselves pay the water rate leviable in the case of their villages in a lump sum to Government, such payment not being in full but according to the proportion of the ordinary revenue of the village usually paid by the Jaghirdar. In *all cases* the responsibility of ryots in alienated and Government villages with respect to the repairs and improvements to their channels is the same. In the case of special repairs and improvements to old canal works in Jaghir villages, it is usual to call upon the Jaghirdar to make good the proportion of the expenses falling to his share, the amount being fixed according to the proportion of the entire village revenues ordinarily paid by the Jaghirdar under his settlement.

In describing the irrigation works of Khandesh, I have not taken into account the various canals which have existed since a period anterior to the introduction of British rule.

These canals are chiefly fed by weirs or bandharas situated on the rivers Panjra, Khan, Borái, and in a few cases, the nalas flowing into these rivers. Within the present borders of Khandesh there are about ninety old canals, irrigating over 10,000 acres, and producing an annual revenue of about 77,000 Rupees. The water rates leviable on these canals were fixed at the introduction of the Revenue Survey Settlement for a period of 30 years, in each case, and are calculated on the acre, not according to the crop grown, as previously stated under question 13. The extent of land irrigable under these is not subject to increase, as any attempt to make one bandhara more effective than another without the construction of a new tank or lake would interfere with the existing rights of some other body of cultivators. The annual revenue is therefore not to any great extent fluctuating. The mean water rate in the case of the old canals is certainly higher than that levied on new irrigation works. It is of course impossible to judge of the remunerative qualities of these old bandharas and canals, as the cost has never been ascertained. Engineers however agree in thinking that but a very small proportion of them could fairly be put forward at the present date as remunerative works, supposing that they had to be constructed *de novo*.

Mr. Ramsay, Nasick.—The canals under the Public Works Department are administered by the Executive Engineer for Irrigation, the distribution of water is regulated by paid subordinates of his department. The dues are levied by the Collector, who is supplied with statements showing the sums due and by whom. The other village channels

Q. 21.



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may be said to be administered by the people themselves in accordance with ancient custom. In some talukas a voluntary cess is paid which goes to defray cost of silt clearance and petty repairs. In some places Government pay for the repairs; they are executed by the Irrigation Department on the requisition of the Collector. All the water channels and anicuts are coming more and more under the care of the Irrigation Department. Disputes as to water are settled by the Collector or by suit in the Revenue Court of the mamledar. Recourse must if necessary be had to the Civil Courts in the last instance.

- Q. 22. I have shown above what is the system actually in force; we have no Canal Act; water supplied from canals under the Public Works Department is granted under written agreement passed by the ryots, who only pay for what they get; nothing can seem fairer in theory. The old irrigation canals are under the Collector, and the land that can be irrigated is assessed by the Survey Department and the assessment is levied whether water is availed of or not.

The Public Works canals are not popular with the people. The chief causes of complaint are that difficulties and formalities are thrown in the way of obtaining water; that the subordinate canal officials are corrupt and have to be bribed, that the canals are often closed suddenly for repairs and water cut off. It is difficult to say how far these complaints rest on a substantial basis; but the fact remains that they are made, that the people believe them to be real, and that consequently water is taken with reluctance. I should be glad to see the entire administration of all the canals made over to the Collector, professional work only being done by the Engineer under his direction. We have no Canal Law and I do not think any wanted; the only difficulty lies in the unwillingness of the people to take water, and that exists only in the case of canals under the administration of the Public Works Department.

- Q. 23. Some of the causes retarding the extension of the use of canal water have been given above. The remarks were intended to be of a general nature and not specially applying to Nasick District. Here, as a rule, the ryots are ever ready and willing to avail themselves of the means of irrigation; progress at present is limited by the amount of water available; numbers of wells are being sunk every year, and this form of irrigation is almost without limit; but there is little room for extending canal irrigation, all the available streams being already indented on. The supply however can be improved and failure prevented by building storage tanks at the head waters of rivers and streams so as to keep up a constant supply; such works are now in progress; ryots are not discouraged by having to spend

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money or labour in preparing land for irrigation; they are fully alive in this district to the gain to be obtained. To sum up, it may be said that the supply of water to existing irrigation works may be improved, but there is not much room for extension save in the way of wells, and improvement in this respect is rapidly advancing. Irrigation would only be extended by new works on a large scale on some of the large rivers which are not now used for irrigation, but it is doubtful how far such works would be financially successful or possible. They could only be undertaken by Government. It is all a question of finance. The whole of India could be covered with irrigation works, but only such as will pay can be constructed.

Q. 24. Any such impost as that suggested in this question would, I think, be most injudicious; it would provoke a universal outcry, and I think with reason. As regards this district, the people, as I have already observed, are fully alive to the benefits of irrigation; they take water freely and pay for it willingly; but they never could be got to see the justice of paying for some prospective improvement of problematical value. Such an impost would, I believe, lead to much land being thrown up, and would certainly defeat its own object. No fiscal consideration of any sort could in my opinion justify such a course; water can only be charged for when actually supplied. The ryot would be much better left to his own resources than "protected" in the way suggested.

Q. 25. Barring canals under the Public Works Department, of which there are but three in this district, the use of water is regulated entirely by ancient custom, which has existed from a period long anterior to British rule. Only tradition exists as to their origin. Very few disputes arise in this respect. Where such have occurred, it has often been owing to ill-judged interference on the part of Government officials. Disputes as to the right to and use of water are brought in the Revenue Court of the mamledar, who can restore or confirm possession pending an application to the Civil Court, but such applications are rare in my experience, and it is remarkable how well the people manage their own affairs when left alone. I should be sorry to see any interference with the existing system; over-legislation and petty interference with the concerns of the people are rapidly undermining our position in India.

On the rivers on which irrigation works now exist it would not be practicable to construct new weirs or anicuts, as that would materially affect rights already existing, but in fact the field is already fully occupied, and all we can do is to improve the water supply at its source by storage tanks. This might admit of fresh land being irrigated without trespassing on existing rights.

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Q. 26.

There are very few tanks in this district used for irrigation purposes. When land so irrigated is especially assessed for the benefit of the Imperial revenues, it is a clear matter of principle that repairs and maintenance should be provided for from Imperial resources. Tanks in Guzerat are repaired out of Local Funds, but this is an abuse. The rates might be lowered in consideration of the ryots effecting the repairs, but the difficulty would be in getting them to combine and contribute equally to the work. In this Presidency as far as my experience goes such repairs can always be undertaken by the local officials, and there would be no hitch in this respect as regards mere ordinary earth-work; as regards works requiring some professional skill it would be otherwise. In connection with the question I might mention the cess alluded to above voluntarily paid by the ryots in some of our talukas for clearing silt in and making repairs to water channels. This cess rests on old custom and shows that the people can be got to repair irrigation works at their own cost. The money so collected is mostly expended by the Irrigation Department, and is allotted at the discretion of the Collector. But I think it would be hopeless to try and induce ryots elsewhere to introduce such a system of voluntary taxation. I may add that the income from this source is falling off, and there is no law whereby to enforce payment. I would strongly deprecate any legislation with a view to organizing any such cess.

Q. 27. No obligations such as those here referred to exist. Jaghirdars are generally willing themselves to maintain irrigation works within their own villages; they prefer this to Government interference, and I think they ought to be supposed to know best their own interests.

Q. 29. As stated above, the water supply is regulated by ancient custom and very few disputes arise on the whole. Government canals, within my experience, have only been started where no other such works previously existed; or else the action of Government has taken the form of repairs to existing works or of storage tanks to improve the existing supply; in either case the actual distribution of the water has remained as before with the people themselves. In most villages where there are canals there is a hereditary officer termed a "patkuri," who regulates the supply of water; he is supervised by the patel and those who have an interest in the water. The system works far better than that of our Government canals under paid subordinates of the Public Works Department.

The amount of land that can fairly be irrigated by the existing supply of water has been calculated by the Revenue Survey Department, the whole of this area has been subjected to water rate

assessment, and Government need look no further. Each man looks after his own rights, and, as stated above, very few disputes arise on the whole. There is no occasion for any change of system; no man can take water to which he is not entitled, as the other villagers would not permit it. Government gets the full value of the irrigated land in the shape of enhanced revenue.

**Mr. Spry, Kaladgi.**—There was considerable difficulty during the recent pressure

Q. 11. in finding suitable relief works throughout the district, because no schemes had ever been prepared before the famine; we were therefore driven to take up any work that we could that would afford immediate employment; hence a great deal was spent upon roads which would never command much traffic, and which it would be impossible to keep up hereafter.

Q. 25. No customary claims or prescriptive rights in the use of water from tanks, &c., have grown up in this district.

Q. 26. The tanks in this district are not so small or numerous that Government could not carry out their supervision and maintenance. I do not think it would be expedient to impose upon cultivators, who benefit by the water, the duty of carrying out repairs, &c. on irrigation works. The only instance that I know of such an attempt being made (not in this district) resulted in a dead failure and the work being ruined. There is no local fund for the repair of such works, nor do I see how one could be established when Government charge enhanced rates for the use of the water.

Q. 27. No obligation rests on zemindars or others to maintain tanks or other irrigation works.

**Mr. Norman, Poona.**—The extension of the use of canal water has been slow—

- Q. 23.
1. Because of the difficulty and expense of levelling and preparing the land for irrigation.
  2. Owing to the scarcity and cost of manure.
  3. In poor land in a good season a fair crop is obtained with but little outlay, and for ordinary grain crops the usual rains are sufficient.
  4. Owing to the poverty of the people, most of the ordinary cultivators not being in a position to provide the capital for the additional expense of wet crop cultivation.

It is difficult to say how these obstacles are to be removed. Advances under the Land Improvement Act can and would be given for levelling and improving land, but good security is required and this is precisely what many of the cultivators cannot furnish. The procedure under the existing law is moreover tedious and complicat-

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ed, which, no doubt, deters many from applying for advances. If the procedure for small advances could be simplified and if it became known that Government were prepared to advance freely, more applications would, no doubt, be received. The difficulty with regard to manure will, no doubt, in time work its own remedy, for the people are fully aware that irrigation cannot be carried out without its free use, and they will arrange accordingly. In Poona there is an increasing demand for the night-soil collected in the city, which is deodorised and sold to cultivators.

Irrigation will, undoubtedly, slowly but surely increase, and I have every reason to believe that all good land under a canal will, sooner or later, be cultivated with wet crops. None of the irrigation works in this district have reached the state in which the further extension of the use of water is likely to be small. In the smaller tank works shortness of supply will affect irrigation in bad seasons.

My own opinion with regard to irrigation works is that no work should be undertaken unless there is an almost positive certainty that the returns will be sufficient to cover all expenditure, including the charge of interest on capital outlay.

The present system of constructing works, which are never likely to pay, must result in heavy charges which the finances of the empire are not in a position to bear. In answer to a previous question, I have already stated that in a surveyed district, which has been settled under the Bombay system, no additional rate can be levied on the land without a breach of faith. In times of famine it may be and no doubt is necessary to undertake large public works for the support of the people, and irrigation works are the best description of work that can be devised, because they may, to a certain extent, be expected to protect the locality in which they are constructed from a similar calamity. But such works are usually enormously expensive, and it appears to me that it would be hopeless to attempt to make the district pay the interest on the capital expended. A famine is a terrible calamity and its effects are felt by all classes of the community. I see no reason why the agriculturists and land owners should alone be singled out to bear the cost of works destined to protect the country from such calamities. I think the whole community may fairly be called upon to bear the burden, and the best mode of taxation I can suggest is an income tax.

**Mr. Moore, Satara.**—When projects were ready, such as those in the Mán and Q. 11. Khutau talukas, there was no difficulty whatever. In Khanapur and Tasgaon, the other two bad talukas, there was a difficulty because

**Mr. Moore.**

no projects had been framed. In Khanapur we had to resort to the improvement of the Karad Bijapur road, and in Tasgaon we put the people to work on the improvement of town roads.

- Q. 24. On the land protected certainly but not on the district. I would impose no conditions. There should be a general minimum (three months) water-rate, which people should pay, whether or not they take the water, and the usual four, eight, and annual rates.
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### POOR-HOUSES AND RELIEF CAMPS.

**Mr. Hewlett, Sanitary Commissioner.**—I have the honour, in obedience to letter No. 149 P from Colonel Merriman, R.E., C.S.I., Secretary to Government in the Public Works Department, to submit the following answers to the questions asked by the Commission concerning the sanitary and medical arrangements in poor-houses and relief camps, but I can only answer them in a very general way, as of course my inspections of these places were periodical and not continuous.

Q. 1, 2.        These paras. do not fall within my province to answer.

Q. 3.        I believe that a large proportion of the persons seeking relief voluntarily at the relief camps had not suffered privation to any injurious extent before arrival. It must be understood that by this I refer to camps where labourers were congregated in contradistinction to those relief camps where only reduced paupers were huddled and fed at the expense of the State. The action taken by this Government in opening relief camps early when it was evident that a famine was impending, saved the great majority of the labourers from falling into a reduced state, and comparatively few of them suffered from disease consequent on privation. Many of the persons on Civil Agency works, however, especially in the Kaladgi district, were much reduced, and had suffered from privation before coming on to the works, but the large majority of them recovered. Improvement began as a rule within ten days after arrival, especially on those works where daily payments were made, but many required special treatment at first. Far different, however, was the condition of persons admitted into poor-houses, and relief camps solely established for the shelter of paupers where no labour was exacted. Most of these on first arrival bore traces of disease induced by privation and from having been obliged to eat indigestible and innutritious food. The famine was sore in the land, and these poor creatures, even when they had procured food, had been able only to obtain it in insufficient quantities, and as they too frequently had been forced to sell their cooking pots, they for some time previous to their arrival had eaten raw and uncooked grain or badly pounded jowari. This practice induced diarrhoea and dysentery, and in cases where proper food had for a long time not been obtainable, organic changes in the alimentary canal took place, so that very many of the people after arrival at the poor-houses were unable to digest even the most nutritious food when given to them.

Mr. Hewlett.

Cases of advanced disease from the above causes were very commonly met with among the fresh arrivals at poor-houses, and persons suffering from scurvy, ragged ulcers, and other complaints induced by want of proper food, formed a large majority of the poor who were either sent by the District officers or the Police, or who came voluntarily to the poor-houses and camps. Cases of simple anæmia too were very common. At an inspection such persons could be at once picked out from their physical appearance. Oedematous feet and legs, dropsy, a pale blanched appearance of the integument and mucous membranes, were at once noticed among the prominent symptoms. A very high mortality among those who suffered from these diseases was the inevitable consequence. The condition of the children and young infants at the breast who accompanied their parents to the poor-houses was as bad as it could be, for it was often found that they either had been fed with inappropriate food, or that they had in very many instances been entirely neglected by their parents. The aged and infirm also suffered greatly, and I have no doubt that much mortality among the very young and the old was due to wilful neglect on the part of their relatives.

Q. 4. The scale of wages of labourers at the labour relief camps and the allowance of food for men, women, and children at poor-houses and pauper relief camps, were as follows :—

*On Public Works.*

The rates were at first fixed at 2 annas for a man,  $1\frac{1}{2}$  anna for a woman, and 1 anna for a boy or girl old enough to work ; but subsequently in November a sliding scale was authorized by which the rate of wages increased when the staple food-grain became dearer than 16 lbs. for a rupee. In December it was ruled that the scale should also decrease when the price of grain fell below 18 lbs. for a rupee, and that

A man should be paid at the rate of 1 anna + the value of 1 lb. of grain.

A woman do. do.  $\frac{1}{2}$  do. + 1 do.

A boy or girl do. do.  $\frac{1}{2}$  do. +  $\frac{1}{2}$  do.

In addition an allowance of 3 pies was given for every child under 7 years of age. The rates as above for labourers under the P. W. D. were finally fixed on 19th January 1877.

*Civil Agency Works.*

The Civil Agency rates were fixed by Government Resolution No. 33 E 103, dated 19th January 1877, and were as follows :—

A man was paid at the rate of  $\frac{1}{2}$  anna + the value of 1 lb. of grain.

A woman do.  $\frac{1}{4}$  do. + do. 1 do.

A boy or girl do.  $\frac{1}{4}$  do. + do.  $\frac{1}{2}$  do.