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*Proceedings of the Madras Government Revenue Department,
24th April 1877*

Famine Relief

No 587 Read the following letter from Surgeon Major W. R. CORNISH, M.D., Sanitary Commissioner for Madras, to the Honorable D. F. CARMICHAEL, Officiating Chief Secretary to Government, Fort St. George, dated Madras, 6th April 1877, No 243

I HAVE the honor to acknowledge the receipt of two Minutes dated, respectively, the 7th and 14th March 1877, by the Hon. Sir Richard Temple, Bt., M.C.S.I., in reference to my objections to the subsistence allowance of relief coolies being calculated on the basis of 1 lb of grain a day, and to submit herewith, for the consideration of the Madras Government, a memorandum in further elucidation of the subject

2 The Government of India, while giving every publicity to the "Minutes" above referred to in the Official Gazette of India, has not thought proper to give the publicity to my letter, No 115, of 13th February, to overthrow the arguments of which these Minutes were especially designed

3 The subject involved is the sufficiency or otherwise of an arbitrary allowance of food to maintain the health and strength of the laboring poor. It is a practical question of the highest interest to men of science, political economists, and social reformers in every part of the world, and in the interests of humanity generally I venture to express a hope that the fullest publicity be given to my own part in the discussion as well as to Sir Richard Temple's, so that the public, and scientific men in particular, may have the subject of discussion before them

ENCLOSURE No 1

A reply to Sir RICHARD TEMPLE'S Minutes of the 7th and 14th March as to the sufficiency of a pound of grain as the basis of famine wages

In a letter addressed to the Madras Government dated 13th February 1877 No 115 I felt it my duty to protest against a suggestion made by Sir R. Temple in his Minute dated 19th January that 16 ounces of cereal grain per diem would suffice for the maintenance of a laboring adult in health and strength

Sir Richard Temple thought that the sufficiency or insufficiency of this grant of food was a matter of opinion and recommended that a scale of payment based on the price of a pound of grain should be tried as an experiment in the various relief operations throughout this Presidency and the Madras Government had already acceded to the proposition and issued orders for the enforcement of a reduced scale of wages before I was aware that the subject had been before the Government. Under these circumstances there was a choice of courses before me. I might have held my peace and in the event of subsequent calamity have sheltered myself under the plea that the Madras Government had not done me the honor of seeking my advice before sanctioning the reduced scale of wages or knowing from long and painful experience the risk to the population resulting from inadequate food and nourishment and the general want of accurate knowledge of such subjects by most people I might have ventured unsolicited to sound a note of warning to the Government and to state my opinion in terms admitting of no misunderstanding. I chose the latter course and I am very glad that I did so as my letter has drawn forth two elaborate Minutes from Sir Richard Temple regarding the basis on which he calculated that a pound of grain a day would suffice for a laboring man and the subject can now be discussed purely on its merits by scientific men and the public at large quite irrespective of the official positions of the parties contributing to the solution of the problem of feeding a people with the least expenditure of life and money

I have of course been an attentive reader of famine literature to which Sir Richard Temple has been so large a contributor. His most masterly narrative on the Famine in Bengal and Bihar in 1817 lays down with clearness and precision the data on which the importation of grain was then determined and I need not say that I agree almost entirely with every word Sir Richard Temple then wrote in regard to the quantity and quality of the food supplies necessary for the maintenance of the health of the people of Bengal.

The only error I find in fact is one of an arithmetical and not of a physiological character. Sir Richard Temple based his calculations on 1½ lbs of grain per head being required for a certain period for a certain proportion of the population whereas 1½ lbs ought to have been taken for an adult and half the quantity for each child under ten years of age. The error was of course one on the right and humane side but involved the provision of more than 100 000 tons of grain beyond what was necessary according to accepted physiological data.

Even so late as January 1877 in a Minute written at Sholapur in Bombay Sir Richard Temple accepted without question the fact that relief wages in Bombay were calculated on the basis of 1½ lbs of grain per diem for an adult. It was only on his arrival in the Bellary District of the Madras Presidency that he appears to have undergone a conversion to the pound and a theory but Sir Richard has not explained in the Minute dated 13th January (to a portion of which I took exception) the grounds of his sudden change of opinion and as his views in 1817 and 1877 appear to me to be irreconcilable I can only quote them here in parallel columns in the hope that some attempt may be made to explain them.

Sir Richard Temple in 1817—(Bengal Famine)

This rate (¾ of a seer or about 1½ lbs per head for men women and children) at which grain should be provided was a summed after due consideration and discussion. The lowest diet provided in Bengal Jails for non laboring prisoners is equal to about 1 seer or 2 lbs. The ordinary diet of a laboring adult in Bengal is taken after statistical inquiry, to be 1 seer of rice besides ½ seer (about ½ lb) of fish pulse pepper, or other condiments. The diet prescribed for adult Bengalee emigrants on ship board and for Bengalee sailors always exceeds 1 seer a day in total weight and in some cases it reaches 2 seers a day. Many of the poor people for whom grain was to be provided would be laboring hard on relief works during inclement and exhausting weather. Not only the whole of the Government provision of grain consisted of rice which contains less strength giving qualities than wheat and some other grains. It was known that each bag of the expected consignments of Burmah rice would contain from 8 to 20 per cent of nutritious husk. In view of all these considerations I framed my estimates of total requirements on the basis that each person to be relieved would on the average require 1 of a seer (1½ lbs of grain) a day. In practice it was found that even to ordinary paupers who did not do any work, local committees had to

Sir Richard Temple in 1877—(Madras Famine)

The present rate of wages is fixed at 2 Annas per diem for an adult and proportionately lower for women and children. This rate is fixed upon the supposition that it will purchase 1½ lbs of grain per diem—a quantity which is deemed essential for a man while at work. There might indeed be a question whether life cannot be sustained with 1 lb of grain per diem and whether Government is bound to do more than sustain life. This is a matter of opinion and I myself think that 1 lb per diem might be sufficient to sustain life and that the experiment ought to be tried. Possibly the gangs might not perceptibly fall off in condition. After a week or fortnight's experience it would be seen whether they so fall off or not. If they were to seriously fall off then the point could be considered.

(11) The objection to the new scale which Dr Cornish states in detail is properly formulated by the phrase a full day's wages (that is something more than the 1 lb and the ½ Anna) for a fair day's work. But the phrase postulates that there is a fair day's work which is just what the vast majority of the relief laborers do not render. Therefore they are not entitled to it, and do not physically need the full day's wage.

give two thirds of a seer of rice daily besides one 1½ (¾ths of a penny) for the purchase of salt and condiments to women in delicate health and to persons reduced by previous hunger a still larger daily dole had to be allowed.

Being responsible for the general character of these estimates I feel bound to record my tribute to the utility of the census which had been carried out two years previously under Sir George Campbell—the first regular census which had ever been taken in Bengal. If the success of the prescribed plan of relief operations has in any degree depended on the framing of estimates if the estimates have in any degree enabled the Government to make a proper cast of the supplies and the resources necessary to encounter the crisis then it is to be remembered that these estimates could never have been framed had not that census existed.

(14) The scale laid down appear to me to be whole sufficient to yield the people that subsistence which alone Government can afford. We would gladly give more if it were in our power but we must content ourselves with saving life and cannot pretend to prevent all forms of distress.

(16) Having carefully inspected during my tour in this Presidency thousands of relief laborers I give it as my opinion that with very few exceptions which are not as a rule traceable to insufficient relief wages the general physical condition of the laborers as good now as in ordinary years.

(17) In conclusion it is not possible I submit to determine *a priori* on scientific data what amount of food is necessary to sustain the particular classes who come to our relief. The real point to be considered is whether in ordinary times they get more than 1 lb a day for a male adult. This is an economic question which can be determined by calculating the rates of wages in the rural districts not the wages of trained professional laborers employed by public bodies—not the wages of stalwart men of the professional class of workmen but the men of the lower physique and lighter frames such as that of the village poor—but the wages received by the laboring poor in the village of the interior and then by taking the prices of common grains in ordinary years. Now from inquiries made in various districts of the Madras Presidency I apprehend that the laboring poor in rural localities can hardly get more than 1 lb a day for a male adult in ordinary times.

In his Minute of the 7th March 1877 Sir Richard Temple declines to enter into the purely professional arguments advanced in my letter further than to note that while no doubt abstract scientific theories of great value on the subject of public health are of modern growth the Indian population with which we are now dealing have lived for centuries in disregard of them. I must confess that I am not quite clear as to the meaning of the above extract. I did not put forward any abstract scientific theory but merely stated a fact that as the human frame in every race and climate disposes of a certain amount of nitrogenous matter every 24 hours a like amount must be taken into the body in food to restore that waste otherwise the tissues of the body will gradually disappear and that in my opinion 1 lb of rice containing from 68 to 80 grains of nitrogen and a small monetary payment of 6 Pies or 3 farthings would not suffice to enable a laborer to provide a sufficiency of nitrogenous food to restore his daily expenditure of tissue. In reply I am told in effect that abstract scientific theories are very pretty in their way but that the Indian people who disregard them manage to get on very well without them. But this manner of disposing of the subject does not seem to have satisfied Sir Richard Temple for in a subsequent Minute dated 11th March he endeavours to grapple with the scientific objections to his proposals.

I think however in dealing with this double reply it will be more convenient if I discuss the practical objections first. Minute here leaving the scientific arguments of the second Minute for the consideration of the Government.

Sir P. C. Temple objects in the first place that my data refer to the case of Europeans and that owing to the greater size and weight of the white skinned races the quantities of food necessary for natives of India cannot be decided by European experience. I am very sorry if I failed to make myself clear on this point because in paragraph 3 of my letter I expressly allude to an important statistical inquiry undertaken in India in the year 1863 regarding the nature and quality of the food of the various classes of the people of India. I took an active part in this inquiry as regards the Madras Presidency. I drew up the instructions for the medical officers who made the investigations in the various districts and I compiled the report in which the observations were submitted to Government and the Secretary of State for India. I not only did all this as regards the collection of facts for the Madras Presidency but for many months I made a collection of the various food grains, experimented with them practically in my own person as to the methods of preparing and cooking them and their digestibility and I further learned by questioning all sorts and conditions of men the average quantity of food they were in the habit of using. I did all this under a conviction that the statistical inquiry ordered by the Secretary of State was one of vast importance and I took unusual trouble to attain accuracy based on actual investigation because I was convinced that the heavy mortality in our jails was in a great measure due to bad and unscientific feeding and that the only chance of improving the existing jail diets lay in putting the evidence so clearly before Government that the deductions would be irresistible.

But this investigation was not confined to the Madras Presidency. A similar inquiry was made so far as I can remember by every administration in India and the results are no doubt available for Sir Richard Temple's guidance though in regard to many of the Provinces I never heard of the results having been published. I imagine that the Statistical inquiry alluded to by Sir Richard Temple in his Narrative and in which the quantity of grain per ault is said to be from 1 to 2 seers per diem, must be the one made in Bengal in 1863. I think it is much to be regretted that papers of this kind were not at the time collected and published as a standard authority on food supplies and Indian dietaries. There may perhaps be copies of my official report in the Government Office or in the India Office but I do not myself possess a single copy. My paper on *Food and Dietaries* published in Volume VIII pages 1-73 of the Madras Medical Journal embodies all the facts collected in reference to the nature and variety of food supplies and the quantity of grain habitually used by the people of Southern India.

It is not easy therefore to account for the mistake that my remarks had reference to the dietaries of Europeans when I was at special pains to point out that an independent investigation conducted by some twenty or thirty medical officers in the mofussil civil stations and checked by my own independent inquiries and observation showed that the minimum grain allowance of a man in health and in work was not less than 24 ounces and that it was frequently double that quantity in favorable seasons.

Moreover in regard to the proportion of nitrogenous to non nitrogenous food the reference I made to Sir Robert Christy's labor was simply to show the standard to which all successful dietaries should approach and I expressly admitted that in the food of an Indian people the proportions of 1 to 3 are but barely attained and the tendency is always to a smaller proportion of nitrogenous food. (Paragraph 4)

I referred moreover to the experience of Indian Jails (paragraph 5) in which practical food experiments on many thousands of prisoners have been going on for a long series of years under very strict tests as to supervision and observation with the view of showing that the food of a people was a more complex question than that of providing a certain quantity of grain.

The whole experience I wished to bring forward on the question of food and health was Indian experience and I am surprised that Sir P. C. Temple who knew so well in 1874 what the ordinary food of the people was should write as it were had never existed any periodical medical literature in India or that he should ignore the fact that every Indian medical authority

who has written on the subject of food for prisoners is opposed to his recent opinions. One might think from Sir Richard Temple's Minute that men like Leith Crichton, Bart. B. Strong, Mount Iawens, Livingstone, Forbes Watson, Mayer Lyons, myself and many others whose papers I have not immediately at hand to refer to had never thought out the subject of feeding in its practical and scientific aspects and that jail and other diets in India had been constructed without reference to the nutritious quality of the food grain or to the proportions of the various kinds of food. It must be abundantly clear to the Government that if this new theory of Sir Richard Temple's is correct viz that 1 lb of grain and a small money payment equivalent to 3 farthings is enough to keep a laboring man in health and strength while undergoing a fair daily task then every administration in India has been for years past inciting people to break the law by providing criminals with a dietary beyond their actual necessities and all the carefully recorded experience of the last thirty years as to the effects of food on health in Indian Jail must be discarded as worthless.

I shall have occasion to show however that the carefully built up experience of the past must be our guide in this matter in preference to mere opinions of a gentleman who apparently unconscious of the cruelty involved in his proposals would desire to begin a huge experiment on the starving poor of this country at a time and under conditions which would prevent the results of that experiment ever being tested and recorded.

What in fact was the proposition of Sir Richard Temple's to which I took exception? It was this: There might indeed be a question whether life could be sustained with 1 lb of grain per diem and whether Government is bound to do more than sustain life. This is a matter of opinion and I think that 1 lb per diem might be sufficient to sustain life and that the experiment ought to be tried. Perhaps the gangs might not perceptibly fall off in condition. After a week or fortnight of experience it would be seen whether they so fall off or not.

If it were not so serious a matter as a blind experiment on the limits of human endurance it would be amusing to note the method by which Sir Richard Temple here proposes to test the results. After a week or fortnight of experience he says it would be seen whether the gangs fall off perceptibly in condition. Now what are the conditions abroad in the country by which such an experiment could be subjected to the rigorous tests which would satisfy practical men as well as scientific men. Our relief works are scattered over many thousands of square miles of country they are but irregularly supervised and in no instances are the native supervisors qualified to state the result of any special system of feeding or payment a regard to the health of the people. To record the results of such an experiment with the accuracy required it would be essential to weigh every individual of a gang to enter their name and weights in a column and to repeat the weighing week by week for a period of several months to record the condition of each individual week by week as to number pulse tongue heart's action muscular power &c. An experiment of this nature might be carried out as regards a few persons under the constant observation of a medical man aided by careful assistants but it is obvious that the results of a large scale according to the tests proposed by Sir Richard Temple could never be obtained. Sir Richard Temple does not seem to be aware of the fact that a week or two of low living while doing much his high might still give no result measurable by the eye or by weighing.

There is nothing more remarkable in connection with these famine relief works than the sudden changes and fluctuations in the personnel of the gangs. The people in petition day may be away the next. The people fall ill and unable to work are replaced by others and there is never any certainty that two men going over the same ground within a short interval of time are seeing the same people. Any comparison of their observations or reports therefore can scarcely be gone into profitably while this uncertainty exists in regard to the identity of the individuals composing the gangs.

There is however a rough road course out of the results of the dietaries of wages which may commend itself to the common sense of Government. It is that while the numbers fall so and are supposed to be employed on relief works in the famine the Government are 907 316 they find

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the (between of March to 31st 1877) and that the numbers too weak for work requiring cooked food in relief houses had increased from 33 163 in the first week of March to 99 113 in the last week of the same month. From my recent inspection in Madanapally and Royachoti I found these helples and infirm people were increasing at the rate of more than 100 a day at each relief house and if they continue to increase as I think is but too probable the numbers to be fed in the Cuddapah District will probably reach 20 000 within the next two months instead of 3 94 as in the last week of March. I leave it for others to determine whether the policy of instituting a bare subsistence wage on relief works has or has not contributed to the enormous increase of the sick and feeble and of the gratuitous feeding throughout the distressed districts.

Sir Richard Temple is of opinion that the task work required of coolies who are paid on the lower scale is very nearly equivalent to a condition of rest and that the scale of food necessary for persons in a state of idleness will very well suit those who only execute light work.

The condition of the laboring class is very much in the several localities. Some have very little distance to go for labor and in such cases the collection of half a cubic yard of road material may not involve any unusual exertion. But even in these cases I have seen work being done when the ground was as hard as iron and with tools much too heavy for the strength of those who had to wield them. The officials of the Public Works Department have told me that in their contract rates no coolies would ever think of attempting work of this kind except when the ground had been softened by rain. In such cases the bodily wear and tear of moving half a cubic yard of material or executing 50 per cent of a Public Works Department task is considerable and especially in the case of weakly gangs.

I have seen moreover very wretched and enfeebled creatures in the gangs who have come distances of 4 6 and even 8 miles to their work, some of them dragging their children to and fro with them and I have no hesitation in stating that when these walking distances and carrying weights are taken into account with the day's work that the expenditure of force is far ahead of its replacement in the shape of food wages.

Sir Richard Temple states that his lowest scale of wages will permit in most instances of men buying 1½ lbs of grain in addition to condiments and some other nourishment but however this may be the case in the Bellary District or in certain stations on the line of Railway which I have not yet inspected it is not so in the upland taluqs of North Arcot and Cuddapah. At Goomukonda the other day the bazaar prices of rice was only 13 lbs the rupee and at Royachoti about 14 lb so that 1 Anna would not purchase even a pound of grain.

The mode of calculating the wages of the coolies too in some districts has practically the effect of reducing the earnings of men from 1 Anna 6 Pies to 1 Anna 5 Pies or 1 Anna 4 Pies and what with deductions for short work and the customary tribute to the gangsmen there is reason to fear that in a very large proportion of cases the laborers do not get anything like the whole of the reduced wage.

Sir Richard Temple has however made a most important concession to the famine laborers in consequence of my protest and it no other good has resulted I feel bound to thank him for the consideration given to the last paragraph of my letter in which I pointed out that a man must eat even if we give him no work on Sundays and that a subsistence wage ought not to be shared with young children. Practically there is now very little difference between Sir Richard Temple's wage rate and my own recommendations. I have contended and given reasons for considering that the basis of a pound of grain for a laboring man was unsafe especially when that wage was paid only for six days in the week and when helpless children had to share in the food. Sir Richard Temple admits the weakness of this portion of his scheme and by conceding additional help to feed the young has in point of fact yielded all that I felt justified in urging.

According to my observation though the ordinary wage rate of 2 Annas 1 Anna 6 Pies and 1 Anna for men women and children respectively may in some districts be too little to procure a sufficiency of nourishing food to keep up health yet in times like these the people are ready enough to work for such wages cheerfully and with a good heart getting payment for and doing work only on six days in the week. Whatever deficiencies in their food there may be they supplement in

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their own fashion by using articles that though not in general use may help at a pinch to sustain life such as the seeds of the bamboo tamarind &c the pith of the aloe plant and the leaves like the *Sethua Indica*.

The actual wage receipts of a family of man wife and four children on the old and amended new scale of wages is given below —

Ordinary Scale		RS A P
Man	6 days at 2 Annas	0 12 0
Woman	1½	0 9 0
2 Children	1	0 12 0
2 Children under 7 years of age		
Total per week		2 1 0

Sir Richard Temple's Amended Scale		RS A P
Man	7 days at 1½ Anna	0 10 6
Woman	1½	0 8 3
2 Children	1	0 10 6
2 Children below 7 years relief grant 1 Anna		0 3 6
Total per week		2 1 3

From this comparison it will be seen that in the case of a man with family of four children two of whom are workers and two non workers he is actually better off by 3 Pies per week under Sir Richard Temple's modified reduced wage than he was when working six days in the week for ordinary wages. Mr West C.E. in the charge of the Cheyar embankment works informs me that to meet the views of the district authorities and to avoid the appearance of competition in the labor market he has reduced his rates from the ordinary 2 Annas to the modified scale of Sir Richard Temple's and paid for the Sunday and that practically his disbursements per head averaged just the same as before.

The great financial saving therefore of ever so many lakhs of rupees is not likely to accrue from the introduction of the new scale of wage. It has given intense dissatisfaction to the laboring people who could not or would not comprehend its terms. It has opened the door for abuses of various kinds and it has not tended to economy in disbursements.

In some gangs near Cuddapah the other day I saw several women laborers encumbered by three or four children under age who had been brought to secure the pittance granted under the recent modification of the rules. The children are of course much exposed all day and distract the mother's attention from her work. The present system can be good neither for the mother nor the children nor is it economical to the Government according to the experience of Mr West who has tried both systems and according to the typical case I have given.

Sir Richard Temple asks if I will admit that a pound of grain a day is sufficient to maintain an adult native of India in a state of rest. In reply I have to state that I do not know of any cereal grain which would give a sufficiency of albuminous matter in a pound weight to replace the daily waste of nitrogen from the adult native body and consequently I am unable to admit any such proposition. The evidence adduced by Sir Richard Temple in regard to this matter is in reality no evidence at all. Sir Richard says that in the Vellore Relief Camp Dr Fox and Captain Harris were agreed that men had so improved on 1 lb of grain but when I came to inquire into this matter I found that the evidence rested on general impressions and not on periodical weighing and individual record of weight from time to time.

I even in the weight test some caution is necessary for many of the people who come into camps appear to be filling out and fattening when in reality they are getting dropsical and in a fair way to die. I can easily understand that the people in the Vellore Camp did better on 1 lb of grain per diem than they did on 1½ ounces which was the scale in use until a few weeks ago when Dr Fox urged an increase.

I have thought it safer and more prudent in this matter to fall back on our experience in dieting non-laboring prisoners and to recommend 30 ounces or 1½ lbs of cereal grain beside small vegetable condiments for adults fed in chief camps and this allowance is now sanctioned by Government, and should be I think a minimum allowance considering how much the poor creatures have to suffer before they can be brought into a state to do a day's work. In a paper recently caught to my notice by Surgeon General G. Smith I find that at Nellore Surgeon Major A. M. Roberts on a weighing of coolies on relief works and that their average weight is below that of a European soldier in jail. Thus —

Men	Women	Children
109 1 lb	92 3 lbs	10 1 lb
94 3	77 6	46

The weights appear to indicate extreme wasting but the weighings will be continued and reported on from week to week.

In the last paragraph of his Minute of the 7th March Sir Richard Temple states his belief that the laboring poor in Madras in rural localities can hardly get more than one pound of grain a day to a male adult in ordinary times. The inquiry on which his belief is founded was made I apprehend by Sir Richard Temple himself in the course of his rapid journeys through the country.

But I would submit to any impartial person whether inquiries made in this way to satisfy a foreign conclusion can be compared in value with the careful statistical inquiry undertaken calmly and deliberately in the years 1857 and 1858 and which inquiry furnished the basis for all our subsequent arrangements in the dieting of the people under circumstances where the cannot have any voice in the choice of their own food. Most people in India are acquainted with the sort of an ass a high official personage will get in reply to leading questions and if Sir Richard Temple thinks he has got at the truth in this matter I can assure him after a close practical study of the food of the people of Southern India for the last fifteen years that he is utterly and entirely mistaken and that so far from the laboring adults living upon a pound a day they eat on the average nearly double.

The following is what I wrote on this subject fifteen years ago. With my great opportunities of inquiry, in regard to the civil population, jails, hospitals, soldiers' rations &c. during the past fifteen years I have nothing to add or alter —

A free laborer if he has the means will use from 32 to 40 ounces of cereal grain (cholum, cumboo, ragi or rice) about 2 or 3 ounces of dhall & a similar quantity of meat or fish and fruits or vegetable in addition.

From numerous personal inquiries, I should be inclined to reckon the average consumption of cereal grain per diem of an adult laboring man is rather under than above 30 ounces.

The greater variety of food and its more liberal use by the free population depends very much upon the means of the individual as well as upon the supply of food in the district. In times of famine and drought after repeated failure of crops the quantities of grain given as the probable daily consumption of a healthy man would be very much reduced and in such seasons the jail diet would be superior to that of the greater number of the laboring poor. This is still too often the case. In years of scarcity grain robberies and petty thefts are very prevalent and many of these offenses are committed with the express object of securing the jail rations as a remedy against starvation. At such times the want of due nourishment is painfully evident in the emaciated bodies of the poor. Many die from the immediate effect of starvation, while the great bulk of those who live to struggle against famine have the vital powers so reduced that they are predestined to suffer from the ravages of cholera and fever. The connection between famine and pestilence the following of the latter in the wake of the former has received many a practical illustration in the records of Indian history within the present century. — (Garrison on Food and Prison Dietaries Madras Medical Journal Volume VIII page 83)

I now come to the consideration of Sir Richard Temple's second Minute of the 1st March in which he enters upon the scientific questions involved in my objections to his diet scheme.

In this Minute Sir Richard Temple observes paragraph 6 — The opinion that one pound a day of grain might suffice for a free laborer together with some allowance for condiments and the like, or some nutritious substance was not indeed based on scientific theory. It was founded rather on probabilities practically deduced from the condition of the poor classes in ordinary times and on the results of general experience.

I think it would have been more to the point if Sir Richard Temple had given something a little more precise than the vague term 'general experience.' I may ask in return whose experience? Not Sir Richard Temple's surely for in 1874 he asserted that the people in Bengal habitually use from 1 to 2 seers of grain (2 to 4 lbs) per adult and that even the people in relief houses doing no work got two thirds of a seer (1½ lbs). Sir Richard Temple records nothing of his travels in Bombay showing that the people there lived on a pound of grain a day. It was only on his arrival in the Madras District that he evolved this strange doctrine that a Madrassee could do what the people in no other part of India can thrive on 16 ounces of cereal grain a day.

I know of no other 'general experience' bearing on this question and favorable to Sir Richard Temple's view. Sir Richard Temple appears to consider Sir Robert Christison's opinion to be entitled to a respectful hearing and I may therefore be allowed to make a further quotation from that venerable and accomplished author's remarks on the diet of the British soldier during the Crimean War.

Experience has shown that the most successful dietaries for bodies of men deduced from practical observation contain carboniferous and nitrogenous food in the proportion of about three of the former to one of the latter by weight. During two and twenty years that my attention has been turned to the present subject not a single exception has occurred to me.

Hence it is obvious that the least weight of food in the rough state will be required first when there is the least moisture and cellulose tissue in it and secondly when the carboniferous and nitrogenous principles are nearest the proportion of three to one.

Of the various nutritive principles belonging to each set some may replace one another. Some are better than others some are probably essential. Two things however are certain that nitrogenous may replace carboniferous food for supporting respiration though at a great loss but that carboniferous food (without nitrogen) cannot replace nitrogenous food for repairing textural waste.

Dietaries are never to be estimated by the rough weight of their constituents without distinct reference to the real nutriment in them as determined by physiological and chemical inquiry.

Keeping these principles in view and with the help of a simple table it is not difficult to fix the dietary advisable for any body of men according to their occupation. It is also in general easy to detect the source of error in unsuccessful dietaries. For example any scientific person conversant with the present subject could have foretold as a certain consequence sooner or later of their diet that the British troops would have fallen into the calamitous state of health which befell them last winter in the Crimea.

Remarks of this nature from so eminent an authority as Sir R. Christison ought to make unskilled constructors of dietaries in famine times somewhat modest in respect to their knowledge. It should make them especially cautious in the enunciation of new and strange doctrine such as that the amount of nitrogen required by natives must be much less than that required by Europeans (paragraph 11 of Minute).

This is really the crucial test of the whole question and I am afraid it cannot be indefinitely settled on the *ipse dixit* of Sir Richard Temple. In the scientific world we are accustomed to ask that any one bringing forward a new theory shall state the facts on which his theory is based and in this case it would be quite fair to ask Sir Richard Temple whether by himself or with professional

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sional as he has endeavoured to test his theory by estimating and measuring the amount of nitrogen which natives of ordinary size and weight eliminate from their bodies. The investigation is one of by no means a difficult character and no one has any right to bring forward such a theory in proof of the sufficiency of a scale of food without first ascertaining by repeated investigation and experiment that the nitrogen excreted by natives is proportionately less than in Europeans. The consequences of our accepting such a theory without the clearest and plainest proof might be most disastrous and the *onus probandi* remains with the originator of the theory.

I almost wish in regard to Sir Richard Temple's reputation as a gentleman of many and varied accomplishments that he had spared me the difficulty of dealing with his crucial tests in paragraphs 11 and 12 as regards the alleged discrepancies in theory and practice as to the amount of nitrogen necessary to a successful dietary. It is not a pleasant thing for one in my position to point out errors of comprehension on Sir Richard Temple's part but however painful the operation it must be done. Sir Richard Temple quotes from the *Madras Manual of Hygiene* a work of admitted excellence by Surgeon Major King M.B. the composition of a scale of rations allowed to native soldiers on foreign service. He points out very truly that these rations while yielding an abundance of carboniferous food (32 ounces of rice) are very defective in nitrogenous principles the whole weight of food in fact yielding only 178 grains of nitrogen per diem. According to this theory observes Sir Richard Temple the Madras sepoy would be undergoing starvation at the hands of the Government. But in fact he is not so reduced physically nor does he fail the Government when it calls upon him for exertion. This case I submit makes very strongly against Dr. Cornish's theory.

I have no excuse to make for this dietary of our native soldiers on foreign service. I gave up fifteen years ago and recorded my opinion of it in the following terms —

'The deficiency of animal food in the diet and the excess of carboniferous material is undoubtedly a fertile source of the prevalence of sickness in native troops on foreign service. The mortality of Madras troops on this diet in Burmah is more than double what occurs in Indian stations where they find their own food.'

The foreign service ration in fact is a survival from the time of the first Burmese War. It was framed many times long before Sanitary Commissioners or Chemists learned in food composition existed and at the present time it is no more to be regarded as a typical diet than are the buttons on the backs of our dress coats to be regarded as a device for supporting a sword belt. The ration is simply an aid to the soldiers employed in a foreign country and the men are put under no stoppages whatever on account of it but draw the full pay of their rank just as if they had to find every particle of food out of their pay. If the relief coolies in whose behalf I have protested had 7 or 9 Rupees a month in addition to the pound of grain I should have made no objections to the inefficiency of their rations.

The Government expect in the settled times with the Burmese market well supplied with poultry, eggs, fish and flesh that the sepoy can buy his nitrogenous food for himself and practically he does so to such an extent that of late years the troops stationed in Burmah have been almost as healthy as when in Southern India.

But there are and have been exceptions. I need not go back to the very terrible mortality of native troops from bowel complaints in the first and second Burmese Wars. These things are matters of history but no later than the year 1872 a detachment of native troops was sent from Burmah to occupy posts on the Arracan river in co-operation with the Iushai Expedition.

In this locality the men had no market at hand in which to buy animal food and in attempting to live on their rations they sickened and died in large numbers. The proportions are given in the margin.

In this case and in all others demanding active service away from markets of supply the native soldier on foreign service does in fact fail to do what the Government want of him and

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simply because his rations are unfitted of themselves to support his health and strength. The fact is acknowledged and admitted by every officer who has commanded in Burmah and I did not at all overstate the case fifteen years ago when I reported to Government as follows —

'I have not entered into the question as to the propriety of revising the ration list of sepoys on foreign service or of effecting changes in civil hospital diets or of the sufficiency of the food laid down by law for emigrants from British India to the Colonies all of which dietaries are unscientific in composition and there need be little hesitation in stating unfitted to support life. The whole of these dietaries require revision.'

Then again the rations of the European soldier do not as Sir Richard Temple opposes constitute his whole food.

Every Commanding Officer knows that the British soldier habitually buys extra meat from the bazaar out of his ample pay and there is no regiment in the country which has not a provision shop of its own in which anything from a Yarmouth buster to a truffled sausage may be bought. The rations on the whole are very fairly adapted to a British soldier although there is no doubt that he eats more meat than the quantity contained in the ration.

In the calculation of the component parts of this dietary in the *Madras Manual of Hygiene* I see that the nutritive value of the 1 lb of vegetables has been put down as if all the vegetables were of the cabbage or soft kind whereas potatoes form usually one half of the vegetable ration of the soldiers.

No calculation moreover has been made of the nutritive value of the malt liquor or spirit he consumes.

The proportions of albuminous to carboniferous food in the official ration are about one to four. Sir Richard Temple has made a mistake as to soldiers in garrison receiving a reduced diet.

They do nothing of the kind but European soldiers in prison do receive when sentenced for short period a punitive diet which has no bearing whatever on the question of the insufficiency of albuminous food in a pound of grain to keep an adult native in health.

I must confess that I was a little staggered by Sir Richard Temple's quotation of the scale of food allowed to European soldiers on boardship. I was travelling at the time of receiving the Minute, and away from all books of reference so that I could not verify the composition of the diet as given in the *Madras Manual of Hygiene* but I knew that the diet had been framed under the advice of scientific men and that it was not likely to err in the direction of giving too little nitrogenous food and I was quite satisfied that some error had crept into the calculations and that Sir Richard Temple had pitched upon this crucial instance without thought of the possible inaccuracy of the figures.

The explanation of the calculated quantity of nitrogen in this diet being only 155 grains per day is very simple. The diets which are valued in the appendix to the *Madras Manual of Hygiene* are all taken from the *Madras Medical Code*. The quantities of this particular diet will be found in the Code page 133 Volume II. The transcription instead of entering 4 lbs or 64 oz of fresh bread for a week's ration has made the mistake of entering 4 oz and as a consequence all the calculations of albuminous and carboniferous food are below the actual truth.

There is also another error. The calculator of the nutritive values has assumed that salt meat contains less albumen than fresh and has put down a less proportion of nitrogen for the salt meat but this is not really the case though in salt meat the albuminous matter may be less easily digested. The effect of salting meat is to harden the albuminous tissues and to cause the watery juices of the meat to enter the brine consequently salt meat has more albumen in a given weight than fresh or preserved meat.

On the whole I consider the European soldier's dietary of the European soldier containing as it does according to my calculation from 200 to 240 grains of nitrogen per diem very well suited for a class of people who have nothing whatever to do

of 1100 lbs. and the answer to this statement is that the British soldier is never put on any such diet and that the figures on which Sir Richard Temple rests his crucial instance are wholly wrong partly from a clerical error of the transcriber and partly from the mistake in estimating the albuminous matter in the alt meat of the hip board ration. It follows therefore that all the figures given by Sir Richard Temple are incorrect.

It follows therefore that all Sir Richard Temple's surmises on the hypothesis that 150 grains of nitrogen is enough for a British soldier fall to the ground and this part of the question need scarcely be noticed further.

I feel bound however to protest against the line of argument advanced by Sir Richard Temple that as the British soldier only needs so much nitrogenous food that the native of India can do with two thirds of that amount or less. We have no grounds whatever for admitting so dangerous a theory and all our practical experience tells just the other way.

In the *Indian Annals of Medical Science* Volume III 1895 Mr Strong gives some very remarkable tables showing the influence of the change of diet in the Alipore Jail. A Magistrate in charge thought that the prisoners were being too well treated and so abandoned a scale of food which had been sanctioned by the Medical Board, and which had kept the prisoners in health for a dietary of his own devising. The change consisted chiefly in knocking off the meat reducing the grain allowance and obliging the prisoners to consume what they had in a single meal. The result of this amateur tampering with the food of the people was an increase in mortality from an average of 42.4 per thousand to 117.5 per thousand in the three years during which the experiment was in force. The constituents of this dietary gave about 19 parts of carboniferous food to 1 of nitrogenous!

The late Mr Bedford of the Bengal Medical Service records a similar increase of mortality dependent on a change of food in the Payshaye Jail in 1852-53. In this case several months elapsed before the bowel sickness began to appear but the result was a trebling of the annual mortality.

The effect of improving the standard of diets in the Madras Jails in 1867 so as to raise the amount of albuminous food equal to from 200 to 240 grains of nitrogen per diem has been to diminish the mean annual death rate from 107 to about 22 per thousand for the eight years in which the new dietaries have been in force.

This ought to be fairly convincing testimony but there is more behind. A few years ago a Jail Superintendent who had been admonished by Government for over much flogging was requested to adopt some other mode of punishment and the punishment book showed in the course of a few months some hundreds of entries to this effect *Half rations until he completes his task*. The result was great increase of sickness and mortality from the diseases such as now fill our famine camps viz, sloughing ulcers, bowel complaints, dropsy and impoverished blood. On discontinuing the food punishment the mortality began slowly to subside to its normal proportions. So close is the connection in fact between a sufficiency of nitrogenous food and the health of the prisoners that I never now hear of an increase of bowel disorders and dropsies in a jail without at once suspecting tampering with the food or privation in the district furnishing prisoners. In talking the matter over with the Inspector General of Prisons I find that he has arrived at precisely the same conclusion. After the Bengal famine I soon noted that the rate of mortality in the Julpigoreo Jail was 27 per cent chiefly from bowel complaints. In Rungpore 14.6 per cent. In Gy Tirhoot and Chumbarun the mortality was 17, 10 and 15 per cent respectively. Dysentery was the most fatal disease. The precise writer who compiles the sanitary statistics of the India Office does not appear to have had a notion of the connection of the undue jail mortality with the famine but notes that a special report has been called for to explain it. Leading between the lines I can at once tell him that it was a mortality from privation diseases.

With all these facts before me I think myself quite justified in having given early warning of the danger of reducing wages to the basis of 1 lb of cereal grain a day even admitting that

my remonstrance was as Sir Richard Temple states strongly worded. It saves time to state in plain terms one's actual meaning and, in my meaning was quite evident when I show that Sir Richard Temple's proposals were out of harmony with the experience of the Bengal famine and with our actual knowledge of the effects of insufficient food.

There remains yet one more point to be noted with reference to differences of opinion in regard to the present condition of the laboring poor. On this point Sir Richard Temple states that in the worst districts, my tour in this Presidency thousands of relief laborers are

Having carefully inspected during my tour in this Territory thousands of
give it as my opinion that with very few exceptions which are not as a rule traceable to insuffi-
cient wages the general physical condition of the laborers is as good now as in ordinary years

This is Sir Richard Temple's opinion but not mine. I too have seen the district really is, and my
of relief workers and have taken some pains to find out what the district really is, and my
experience is that the farther I want to see the darker the side of the picture. I must look for
it elsewhere than among the ranks of the poor. All strength enough left them to work
Consequently I make a point of not looking at the poor. I can, the condition of the people find in
I try to get in the condition of the poor

Consequently I make a point of visiting the
relief houses, langarhallas, and by private
who frequent the public bazaars, and in rural
old and the young, whom I find almost invariably
respect probably that my estimate of the e
Mr. Richard J. ...

diff is so widely from Sir Richard's view
with peculiar severity upon certain sections
cent of the population of the several h
a very large mortality primarily due to
the survivors is in many cases critical in
portion of persons who are unfit to work
to keep the feeble vitality they have from be
low that they cannot work the question

to keep the feeble vitality they have from being
Immediately the condition of a people
saving life becomes enormously complicated
Government relief can do more than at

What has been our experience in this situation in the Madras R. of Camps and in the camp now being established throughout the country? Sir Richard Feble I observe in numerous Minute has passed by this subject of the actual mortality of a famine which as a public health official I am bound to take notice of

The following figure show the mortality amongst the la of the population in the M d

Cmps for ten wks ending 31st March —

Annual Ratio p r Mille.

Mean St length	Total Dec h	Annual Ratio p r Mille.
11,000	1 371	9308

This enormous mortality simply means an annual death rate of 9308 per mile of the population constantly under observation and in fact is a death rate which wipes out nearly the whole of the living within a year. The excessive death rate going on in Madras is going on in every relief camp in the country. I need but little difference in the proportion of death whether in North Arcot or Cuddalore or Madras. It is not to be supposed that this excessive death rate is due to cholera or small pox, for which Madras Camps have been singularly free of the former and by means of vaccination the small pox epidemic has been controlled. The deaths are almost entirely due to diseases which invariably in India attack underfed and starved people viz extreme wasting of tissue and destruction of the lining membrane of the lower bowels. This is a simple statement of fact. Thanks to the assistance of Surgeon General G. Smith and his able medical staff in Madras the true nature of the famine disease has been abundantly verified by post mortem examinations. Surgeon Major Porter informs me that the average weight of bodies of full grown men he has examined has varied from 57 to 80 lbs and is not enough to record this fact to show too extreme wasting going on during life. The opinion of the laboring classes is so generally satisfactory to Sir Richard

But if the condition of the labour class is so generally satisfactory to Mr. Temple Low is it, I may ask that the death rates of the famined tri are o mu a above

Proceedings of the Madras Government, Revenue Department
24th April 1877

What is usual? I have not as yet received the returns for February but the figures for December and January are available for comparison with the average results of the previous five years. I must, however, note with respect to the district the returns that from a personal investigation in the districts I know they very much understate the real mortality of the last few months. The truth is the famine has disorganised our village establishments to such an extent that the actual numbers who have already perished will never be known. Hundreds and thousands of people have died away from their homes, have fallen down by the roadside and their bodies have been left to be eaten by dogs and jackals. Mr Gribble the Sub Collector of Cuddapah in the course of a morning's ride of 14 miles came upon eight unburied bodies and at Royachoti in January last Mr Supervisor Mathias informed me that after an outbreak of cholera dead bodies lay for days exposed in the dry bed of a river near the works the relief coolies were employed on. Walling over the ground two months after the event the numerous skulls and human bones scattered on the surface.

With our village establishments in ruins it is quite certain that the death register, that the death in the Civil Hospital for certain months and at Royachoti relieved in March had exceeded the figures that the figures I now give do the best approximation only.

Districts	Cumulative
Popl	184

Age	1876	1877
Infant	1876	1877
Male	1876	1877
Female	1876	1877

Districts

th A	of	th B	of	C	of	D	of
3015	8	914	43	1,551	194	16	3006
3445	13	1427	371	2336	13	155	3
2865	644	1046	116	1061	61	7443	71
210	57	108	37	193	115	183	837

The figures which we know to be under the truth show an appalling mortality in the famine districts during December and January. I have no reason to suppose that the rate of this has improved in February and March. But in our municipal town or in some of them at least in the famine area death registration is more efficiently managed and the following figures will tend to show the gravity of the famine as exemplified in an almost death rate. In Bellary I have long had reason to suppose that the registration was not properly done and the returns of some of the Bellary Municipalities are obviously incorrect. The first thing that attracted my attention in connection with the famine on returning to duty in the end of January was the abnormally high death rate amongst certain classes and certain localities of the Bellary town and I lost no time in drawing the attention of Government to the condition of the people and in suggesting measures for combating the great destruction of life then going on. While the mortality of the Bellary town was excruciated by the influx of starving immigrants the experience of other municipalities shows that throughout the famine tract the death rate has been out of all proportion to its normal condition.

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Mortality in the Municipalities of the Tanjore Districts

Municipal Towns	Male	Female	Total	Infant	Child	Adult	Old	Young	Par
Popl	307	53	380	103	579	10275	1766	36	30498
Age	1876	1877	1876	1877	1876	1877	1876	1877	1876
Infant	1876	1877	1876	1877	1876	1877	1876	1877	1876
Child	1876	1877	1876	1877	1876	1877	1876	1877	1876
Adult	1876	1877	1876	1877	1876	1877	1876	1877	1876
Old	1876	1877	1876	1877	1876	1877	1876	1877	1876
Young	1876	1877	1876	1877	1876	1877	1876	1877	1876
Par	1876	1877	1876	1877	1876	1877	1876	1877	1876

The famine so far has already fallen very heavily on young children. It is still weeding out from and in consideration of the fact that his age is months after the cause has passed away I apprehend even after the period of drought and dearth of food.

The survivors of the famine will be the most species and when plenty again blesses the land but I think there can be no reasonable doubt that upon the ordinary agricultural laboring poor and pestilence now in our midst I have in form children born of famine stricken mothers are not less to show that the birth rate is seriously depressed and women is becoming a rare condition.

It is on these grounds that I cannot subscribe Sir Richard Temple summarises the weekly progress and the English people. There are two sides to the skilful General commanding in battle naturally and defence and so long as these are safe his main board to listen to the cries of the wounded and I should be wanting in my duty to myself and to the facts coming to my knowledge and the deductions.

MADRAS
6th April 1877

No 595 ORDER THIRUPON, 24th April

Misellaneous

old the weakly constituted and class as a large number of victims dependent on insufficient food follow many and unusual mortality will continue.

fitted to their race to continue the vigorous race of descendants. Fecundity has fallen very heavily and must elapse before they will victims to the combined famine. I have called attention to the fact that the but kin and bone. My recent experience of the and that pregnancy among the dis-

the pleasing and hopeful telegrams in which efforts for the benefit of the Home Government every picture. Sir Richard Temple like a attention on the main points of attack. I accomplish it, I have a special duty to preserve life and what way the combatants suffer and I must I serve if I failed to state the facts.

SHREEVE Surgeon Major
Tanjore Commissioner for Madras

To 1,546

Government have perused his reply to Sir Richard Temple with interest, but regret to find

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24th April 1877

that the Madras Manual of Hygiene contains such grave errors as those pointed out by the Sanitary Commissioner. The Surgeon General, Indian Medical Department, is requested to have it corrected.

(1)
J H GARSIN,
Additional Secretary to Government

To the Sanitary Commissioner
the Surgeon General in
the Board of Revenue
the Financial Department
the Public Works Department

OFFICE OF SANITARY COMMISSIONER

Madras, 6th April 1877

No 243

From

THE SANITARY COMMISSIONER

For Madras

To

THE CHIEF SECRETARY TO GOVERNMENT

Public Department

Fort St. George

Subject

I have the honor to acknowledge the receipt of two Minutes dated respectively the 7th and 14th March 1877, by the Honorable Sir Richard Temple, Bt. 1st CSI in reference to my objections to the subsistence allowance of relief coolies being calculated on the basis of 1 lb of grain a day and to submit herewith for the consideration of the Madras Government a Memorandum in further elucidation of the subject.

2 The Government of India, while giving every publicity to the Minutes above referred to in the Official Gazette of India, has not thought proper to give a like publicity to my letter No 115 of 13th February to overthrow the arguments of which these Minutes were especially designed.

3 The subject involved is the sufficiency or otherwise of an arbitrary allowance of food to maintain the health and strength of the laboring poor. It is a practical question of the highest interest to men of science political economists and social reformers in every part of the world and in the interests of humanity generally, I venture to express a hope that the fullest publicity be given to my own part in the discussion, as well as to Sir Richard Temple's so that the public, and scientific men in particular may have the subject of discussion before them.

I have the honor to be,

Sir,

Your most obedient Servant

W. M. M. M. IICS,
Sanitary Commissioner for Madras

Copy of 1877 Madras

REVENUE

Sanitary Commissioner

1 April 1877

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Rev 1877
No 2242

From

SURGEON MAJOR W R CORNISH,
Sanitary Commissioner for Madras

To

THE CHIEF SECRETARY TO
GOVERNMENT
Public Department Fort St George

Recd 6
1877

E. A.

No 243

Submits for consideration of Government a Memo-
randum replying to Sir Richard Temple's Minutes of
the 7th and 14th March as to the sufficiency of a lb of
grain as the basis of famine wages

Laurence A. J. L. 1877

A reply to Sir Richard Temple's Minutes of the 7th and 14th
March as to the sufficiency of a pound of grain as the basis
of famine wages

In a letter addressed to the Madras Government dated 13th Feb-
ruary, 1877 No 115 I felt it my duty to protest against a suggestion
made by Sir R Temple in his Minute, dated 19th January that 16
ounces of cereal grain per diem would suffice for the maintenance
of a labouring adult in health and strength

Sir Richard Temple might that the sufficiency or insufficiency
of the grant of food was a matter of opinion, and recommended that
a scale of payment based on the price of a pound of grain should be
tried as an experiment. The various relief operations through-
out this Presidency and the Madras Government had already ac-
ceded to the proposition and issued orders for the enforcement of
a reduced scale of wages before I was aware that the subject had
been before the Government. Under these circumstances there
was a choice of courses before me. I might have held my peace, and
in the event of subsequent calamity, have sheltered myself under the
plea that the Madras Government had not done me the honour of
seeking my advice before sanctioning the reduced scale of wages
or knowing from long and painful experience the risks to the popu-
lation resulting from inadequate food and nourishment, and the
general want of accurate knowledge of such subjects by most
people I might have ventured unsolicited, to sound a note of
warning to the Government and to state my opinion in terms admitting
of no misunderstanding. I chose the latter course and I am very glad
that I did so as my letter has drawn forth two elaborate minutes from
Sir Richard Temple regarding the basis on which he calculated that
a pound of grain a day would suffice for a laboring man and the
subject can now be discussed purely on its merits by scientific
men and the public at large quite irrespective of the official
positions of the parties contributing to the solution of the problem
of feeding a people with the least expenditure of life and money

I have of course been an attentive reader of famine literature
to which Sir Richard Temple has been so large and valuable a con-
tributor. His most masterly Narrative on the Famine in Bengal
and Behar in 1874 lays down with clearness and precision the
data on which the importation of grain was then determined
and I need not say that I agree almost entirely with every word
Sir Richard Temple then wrote in regard to the quantity and quali-
ty of the food supplies necessary for the maintenance of the health
of the people of Bengal

The only error I find in fact, is one of an arithmetical and not
of a physiological character. Sir Richard Temple based his calculations
on 1½ lbs of grain per head, being required for a certain period for a

main proportion of the population whereas 1½ lb ought to have been taken for an adult and half the quantity for each child under ten years of age. The error was of course one on the right and humane side but involved the provision of more than 100 000 tons of grain beyond what was necessary according to accepted physiological data.

Even so late as January 1877 in a Minute written at Sholapur in Bombay Sir Richard Temple accepted, without question, the fact that the relief wages in Bombay were calculated on the basis of 1½ lbs of grain per diem for an adult. It was only on his arrival in the Bellary district of the Madras Presidency that he appears to have undergone a conversion to the "pound a day" theory, but Sir Richard has not explained in the Minute dated 13th January (to a portion of which I took exception) the grounds of his sudden change of opinion and as his views in 1874 and 1877 appear to me to be irreconcilable I can only quote them here in parallel columns in the hope that some attempt may be made to explain them.

Sir R. Temple in 1874—(Bengal Famine)

This rate (¾ of a seer or about 1½ lbs per head for men women and children) at which grain should be provided was assumed after due consideration and discussion. The lowest diet provided in Bengal jails for non-labouring prisoners is equal to about 1 seer or 2 lbs. The ordinary diet of a labouring adult in Bengal is taken after statistical enquiry to be 1 seer of rice besides ½ seer (about 1 lb) of fish, pulse, pepper or other condiments. The diet prescribed for adult Bengalee emigrants on ship board and for Bengalee sailors always exceeds one seer a day in total weight, and in some cases it reaches 2 seers a day. Many of the poor people for whom grain was to be provided would be labouring hard on relief works

Sir R. Temple in 1877—(Madras Famine)

The present rate of wages is fixed at 2 annas per diem for an adult and proportionately lower for women and children. This rate is fixed upon the supposition that it will purchase 1½ lbs of grain per diem—a quantity which is deemed essential for a man while at work. There might indeed be a question whether life cannot be sustained with 1 lb of grain per diem and whether Government is bound to do more than sustain life. This is a matter of opinion and I myself think that 1 lb per diem might be sufficient to sustain life and that the experiment ought to be tried. Possibly the gangs might not perceptibly fall off in condition. After a week or fortnight's experience it would be seen whether they so fall off, or not, if they were to seriously fall off then the point could be considered.

(11) "The objection to the new scale, which Dr Cornish

during inclement and exhausting weather. Nearly the whole of the Government provision of grain consisted of rice, which contains less nutritive qualities than wheat and some other grains. It was known that each bag of the expected consignments of Burmah rice would contain from 8 to 20 per cent of unnutritious husk. In view of all these considerations I framed my estimates of total requirements on the basis that each person to be relieved would on the average require ¾ of a seer (1½ lbs of grain) a day. In practice it was found that even to ordinary paupers, who did not do any work, local Committees had to give 2 seers of rice daily besides one pie (¾ of a penny) for the purchase of salt and condiments, to women in delicate health and to persons reduced by previous hunger till larger daily dole had to be allowed.

being responsible for the general character of these estimates, I feel bound to record my tribute to the utility of the census which had been carried out two years previously under Sir George Campbell—the first regular ce

tate in detail is properly formulated by the phrase a full day's wages (that is something more than the 1 lb and the 1 anna) for a fair day's work. But the phrase postulates that there is a fair day's work which is just what the vast majority of the relief labourers do not render. Therefore they are not entitled to and do not physically need the full day's wage.

(14) The scale laid down appears to me to be on the whole sufficient to yield the people that subsistence which the Government can afford. We would gladly give more if it were in our power, but we must content ourselves with saying I feel and cannot pretend to prevent all cases of distress.

(16) Having carefully inspected during my tour in this Presidency thousands of relief labourers, I give it as my opinion that with very few exceptions, which are not as a rule traceable to insufficient relief wages, the general physical condition of the labourers is as good now as in ordinary years.

(17) In conclusion it is not possible, I submit to determine, a priori on scientific data, what amount of food is necessary to sustain the particular classes who come to our relief. The real point to be considered is whether in ordinary times they get more than 1 lb a day for a male adult. This is an economic question which can be determined by calculating the rates of wages in the rural districts and the wages of trades professions.

sus which had even been taken in Bengal. If the success of the prescribed plan of relief operation has in any degree depended on the framing of estimates if these estimates have in any degree enabled the Government to make a proper forecast of the supplies and the resources necessary to encounter the crisis, then it is to be remembered that these estimates could never have been framed had not that census extended

al labourers employed by public bodies—not the wages of stalwart men of the professional class of workmen but the men of lesser physique and lighter frame such as that of the village poor—but the wages received by the labouring poor in the villages of the interior, and then by taking the prices of common grains in ordinary years. Now from enquiries made in various districts of the Madras Presidency, I apprehend that the labouring poor in rural localities can hardly get more than 1 lb a day for a male adult in ordinary times' * * *

In his Minute of the 7th March 1877, Sir Richard Temple declines to enter into the purely professional arguments advanced in my letter further than to note 'that while no doubt abstract scientific theories of great value on the subject of public health are of modern growth the Indian population with which we are now dealing have lived for centuries in disregard of them'. I must confess that I am not quite clear as to the meaning of the above extract. I did not put forward any 'abstract scientific theory', but merely stated a fact that as the human frame in every race and climate, disposes of a certain amount of nitrogenous matter every 24 hours a like amount must be taken into the body in food to restore that waste otherwise the tissues of the body will gradually disappear, and that in my opinion one lb of rice containing from 68 to 80 grains of nitrogen and a small money payment of 6 annas, or three farthings would not suffice to enable a laborer to provide a sufficiency of nitrogenous food to restore his daily expenditure of tissue. In reply I am told in effect that abstract scientific theories are very pretty in their way but that the Indian people who disregard them manage to get on very well without them. But this manner of disposing of the subject does not seem to have satisfied Sir Richard Temple for in a subsequent Minute dated 14th March he endeavours to grapple with the scientific objections to his proposals.

I think however in dealing with this double reply it will be more convenient if I discuss the practical objections of the 1st Minute here leaving the scientific arguments of the 2nd Minute for the conclusion.

Sir Richard Temple objects in the first place that my data refer to the case of Europeans, and that owing to the greater size and weight of the white skinned races the quantities of food necessary for natives of India can not be decided by European experience.

I am very sorry if I failed to make myself clear on this point because in para 5 of my letter I expressly allude to an important statistical enquiry undertaken in India in the year 1863 regarding the nature and quality of the food of the various classes of the people of India. I took an active part in this enquiry as regards the Madras Presidency. I drew up the instructions for the medical officers who made the investigations in the various districts and I compiled the report in which the observations were submitted to Government and the Secretary of State for India. I not only did all this as regards the collection of facts for the Madras Presidency but for many months I made a collection of the various food grains experimented with them practically in my own person as to the methods of preparing and cooking them and their digestibility and I further learned by questioning all sorts and conditions of men the average quantity of food they were in the habit of eating. I did all this under a conviction that the statistical enquiry ordered by the Secretary of State was one of vast importance and I took unusual trouble to attain accuracy based on actual investigation because I was convinced that the heavy mortality in our jails was in a great measure due to bad and unscientific feeding and that the only chance of improving the existing jail diets lay in putting the evidence so clearly before Government that the deductions would be irresistible.

But this investigation was not confined to the Madras Presidency. A similar enquiry was made so far as I can remember, by every administration in India and the results are no doubt available for Sir Richard Temple's guidance, though in regard to many of the Provinces I never heard of the results having been published. I imagine that the Statistical enquiry alluded to by Sir Richard Temple in his 'Narrative' and in which the quantity of grain per adult is said to be from one to two seers per diem must be the one made in Bengal in 1863. I think it is much to be regretted that papers of this kind were not at the time collected and published as a standard authority on food supplies and Indian dietaries. There may perhaps be copies of my official report in the Government offices or in the India office but I do not myself possess a single copy. My paper, on 'Food and prison dietaries' published in Vol. viii pp. 173 of the 'Madras Medical Journal' embodies all the facts collected in reference to the nature and variety of food supplies, and the quantity of grain habitually used by the people of Southern India.

It is not easy therefore to account for the mistake that my remarks had reference to the dietaries of Europeans when I was at special pains to point out that an independent investigation, conducted by some 20 or 30 medical officers in the Madras and other stations and checked by my own independent enquiries and observations showed that the minimum grain allowance of a man in health and in work was not less than 4 ounces and that it was frequently double that quantity in favorable seasons.

Moreover in regard to the proportion of nitrogenous to non nitrogenous food the reference I made to Sir Robert Christison's labour was simply to show the standard to which all successful dietaries should approach, and I expressly admitted that in the food of an Indian people the proportions of n to s are but barely attained and the tendency is always to a smaller proportion of nitrogenous food (para 4)

I referred moreover to the experience of Indian jails (para 8) in which practical food experiments on many thousands of persons have been going on for a long series of years under very strict test as to supervision and observation with the view of showing that the food of a people was a more complex question than that of providing a certain quantity of grain

The whole experience I wished to bring forward on this question of food and health was Indian experience and I am surprised that Sir Richard Temple who I knew so well in 1874 what the ordinary food of the people was, should write as if there had never existed any periodical Medical literature in India or that he should ignore the fact that every Indian Medical authority who has written on the subject of food for prisoners is opposed to his recent opinions. One might think from Sir Richard Temple's Minute that men like Leith, Chevers, Fawcett Bedford, Strong Mouat Fawcett, Irving Forbes Watson, Mayer, Lyons myself and many others, whose papers I have not immediately at hand to refer to had never thought out the subject of feeding in its practical and scientific aspects, and that jail and other diets in India had been constructed without reference to the nutritious quality of the food grains or to the proportions of the various kinds of food. It must be abundantly clear to the Government that if this new theory of Sir Richard Temple is correct, viz, that one pound of grain and a small money payment equivalent to three farthings is enough to keep a laboring man in health and strength while undergoing a fair daily toil, then every administration in India has been for years past inciting people to break the law by providing criminals with a dietary beyond their actual necessities, and all the carefully recorded experience of the last 30 years as to the effects of food on health in Indian jails must be discarded as worthless.

I shall have occasion to show however, that the carefully built up experience of the past must be our guide in this matter, in preference to the mere "opinions" of a gentleman who, apparently unconscious of the cruelty involved in his proposals, would desire to begin a huge "experiment" on the starving poor of this country, at a time, and under conditions which would prevent the results of that experiment ever being tested and recorded.

What in fact was the proposition of Sir Richard Temple's to which I took exception? It was this. There might indeed be a

question whether it cannot be sustained with 1 lb of n per diem and whether the Government is bound to do more than sustain life. This is a matter of opinion and I think that 1 lb per diem might be sufficient to sustain life and that the experiment might be tried. Perhaps the s might not perceptibly fall off in condition. After a week or fortnight of experience it would be seen whether they fall off or no.

If it were not so serious a matter as a blind experimentation on the limits of human endurance it would be amusing to note the method by which Sir Richard Temple here proposes to test the results. After a week or fortnight of experience he says "it would be seen whether the s fall off perceptibly in condition. Now what are the conditions abroad in the country by which such an experiment could be subjected to the rigorous tests which would satisfy practical men as scientific men? Our relief work is scattered over many thousands of square miles of country they are but indifferently supervised and in no instances are the native superiors qualified to test the results of any special system of feeding or payment as regards the health of the people. To record the results of such an experiment with the accuracy required it would be essential to weigh every individual of a gang to enter their names and weights in columns and to repeat the weighing each week for a period of several months—to note also the condition of each individual week by week as to anemia, pulse, tongue, heart's action, muscular power, &c. An experiment of this nature might be carried out as regards a few persons under the constant observation of a Medical man aided by careful assistants, but it is obvious that the results on a large scale according to the tests proposed by Sir Richard Temple, could never be ascertained. Sir Richard Temple does not seem to be aware of the fact that a week or two of low living while doing much mischief might still give no results measurable by the eye or by weighing.

There is nothing more remarkable in connection with these famine relief works than the sudden changes and fluctuations in the personnel of the gangs. The people inspected one day may be away the next. The people falling ill and unable to work are replaced by others and there is never any certainty that two inspecting officers going over the same ground within a short interval of time are seeing the same people. Any comparison of their observations or reports therefore can scarcely be gone into profitably while the uncertainty exists in regard to the identity of the individuals composing the gangs.

There is however a rough and coarse test of the results of the reduction of s which may commend itself to the notice of the Government. It is that while the numbers paid for and supposed to be employed on relief works in the first week of February were 90,310 they fell in the 1st week of March to 66,195 and that

the numbers 'too well for work, requiring cooled food in relief houses' had increased from 38 163 in the first week of March to 92 113 in the last week of the same month. From my recent inspection in Madanapally and Royachoti, I found these helpless and infirm people were increasing at the rate of more than 100 a day at each relief house and if they continue so to increase as I think is but too probable the numbers to be fed in the Cuddapah District will probably reach 20 000 within the next two months, instead of 3 94 as in the last week of March. I leave it for others to determine whether the policy of instituting a bare subsistence wage on relief works has or has not contributed to the enormous increase of the sick and feeble and of the gratuitous feeders throughout the distressed districts.

Sir Richard Temple is of opinion that the task work required of coolies who are paid on the lower scale is very nearly equivalent to a condition of rest and that the scale of food necessary for persons in a state of idleness, will very well suit those who only execute light work.

The condition of the laboring gangs varies very much in the several localities. Some have very little distance to go to their labor and in such cases the collection of half a cubic yard of road material may not involve any unusual exertion. But even in these cases I have seen work attempted when the ground was as hard as iron and with tools much too heavy for the strength of those who had to wield them, and officials of the Public Works Department have told me that in their contract rates no coolies would ever think of attempting work of this kind except when the ground had been softened by rain. In such cases the bodily wear and tear of moving half a cubic yard of material or executing 50 per cent of a D P W task is considerable and especially in the case of weakly gangs.

I have seen moreover very wretched and enfeebled creatures in the gangs who have come distances of 4, 6, and even 8 miles to their work some of them dragging their children to and fro with them and I have no hesitation in stating that when these walking distances and carrying weights are taken into account with the day's work that the expenditure of force is far ahead of its replenishment in the shape of food wages.

Sir Richard Temple states that his lowest scale of wages will permit in most instances of men buying 1½ lbs of grain, in addition to condiments and some other nourishment but however this may be the case in the Bellary District or in certain stations on the line of Railway which I have not yet inspected it is not so in the upland taluqs of North Arcot and Cuddapah. At Goorumkonda the other day the bazaar prices of rice was only 1½ lbs the Rupee and at Royachoti about 1½ lbs so that one anna would not purchase even a pound of grain.

The mode of calculating the wages of the coolies too in some districts has practically the effect of reducing the earnings of men

from 1 A 6 P to 1 A 5 P or 1 A 4 P and what with deductions for short work, and the "customary tribute to the gangsmen there is reason to fear that in a very large proportion of cases the laborer do not get anything like the whole of the reduced wage.

Sir Richard Temple has however, made a most important concession to the famine laborers in consequence of my protest, and if no other good has resulted I feel bound to thank him for the consideration given to the last paragraph of my letter in which I pointed out that a man must eat, even if we give him no work on Sundays and that a subsistence wage ought not to be shared with young children. Practically there is now very little difference between Sir Richard Temple's wage rate and my own recommendations. I have contended and given reasons for considering that the basis of a pound of grain for a laboring man was unsafe especially when that wage was paid only for six days in the week, and when helpless children had to share in the food. Sir Richard Temple admits the weakness of this portion of his scheme and by conceding additional help to feed the young has in point of fact yielded all that I felt justified in urging.

According to my observation though the ordinary wage rate of 2 Annas, 16, and 1 Anna for men women and children respectively may in some districts be too little to procure a sufficiency of nourishing food to keep up health, yet in the like the people are ready enough to work for such wages cheerfully and with a good heart getting payment for and doing work only on six days in the week. Whatever deficiency in their food there may be they supplement in their own fashion by using articles that though not in general use may help at a pinch to sustain life such as the seeds of the bamboo, tamarind, &c, the pith of the aloe plant, and certain jungle leaves like the *Sethæ Indica*.

The actual wage receipts of a family of man wife and four children on the old and amended new scale of wages is given below.

Ordinary scale		
Man	6 days at 2 Annas	0 12 0
Woman	1½ do	0 9 0
Children	1 do	0 12 0
2 children under 7 years of age		
Total per week		2 1 0
Sir Richard Temple's amended scale		
Man	7 days at 1½ Annas	0 10 6
Woman	1½ do	0 8 9
2 Children	1½ do	0 10 6
2 Children below 7 years	1 do	0 3 6
relief grant	1	
Total per week		2 1 3

From this comparison it will be seen that in the case of a man with a family of four children two of whom are workers, and two non workers he is actually better off by 3 P per week under Sir Richard Temple's modified reduced wage than he was when working six days in the week for ordinary wages. Mr West C I in charge of the Cheyar embankment works informs me that to meet the views of the district authorities, and to avoid the appearance of competition in the labor market, he has reduced his rates from the ordinary two annas to the modified scale of Sir Richard Temple's, and paid for the Sundays, and that practically his disbursements per head, average just the same as before.

The great financial saving therefore of over so many lakhs of Rupees is not likely to accrue from the introduction of the new scale of wage. It has given intense satisfaction to the laboring people who could not or would not, comprehend its terms. It has opened the door for abuses of various kinds and it has not tended to economy in disbursements.

In some gangs near Cuddapah the other day I saw several women laborers encumbered by three or four children under age, who had been brought to secure the pittance granted under the recent modification of the rules. These children are of course much exposed all day and distract the mother's attention from her work. The present system can be good neither for the mother nor the children, nor is it economical to the Government, according to the experience of Mr West who has tried both systems and according to the typical case I have given.

Sir Richard Temple asks if I will admit that a pound of grain a day is sufficient to maintain an adult Native of India in a state of rest. In reply I have to state that I do not know of any cereal grain which would give a sufficiency of albuminous matter in a lb weight to replace the daily waste of nitrogen from the adult native body and consequently, I am unable to admit any such proposition. The 'evidence' adduced by Sir Richard Temple in regard to this matter is in reality no evidence at all. Sir Richard says that in the Vellore Relief Camp Dr Fox and Captain Harris were agreed that men had so improved on 1 lb of grain but which I came to enquire into this matter I found that the 'evidence' rested on general impressions and not on periodical weighing and individual record of weight from time to time.

Even in the weight test some caution is necessary for many of the people who come into camps appear to be filling out and fattening, when in reality they are getting atrophied and in a fair way to die. I can easily understand that the people in the Vellore camp did better on 1 lb of grain per day than they did on 12 ounces which was the scale in use until a few weeks ago when Dr Fox introduced an increase.

I have thought it safer and more prudent in this matter to fall back on our experience in dieting non laboring prisoners and to recommend 20 ounces or 1 1/2 lbs of cereal grain besides dhall vegetables condiments &c for adults fed in relief camps and this allowance is now sanctioned by Government, and should be, I think, a minimum allowance, considering how much tissue these poor creatures have to repair before they can be brought into a state to do a day's work. In a paper recently brought to my notice by Surgeon General G Smith, I find that at Nellore, Surgeon Major A M Ross has been weighing coolies on relief works and that their average weight is below that of average under trial prisoners in jail. Thus

In Jail		
Men	Women	Children
109 1/2	92 3/4	70 1/2

Relief works

Men 94 1/2 Women 77 6 Children 46
These weights appear to indicate much wasting, but the weighings will be continued and reported on from week to week.

In the last paragraph of his Minute of the 7th March Sir Richard Temple states his belief that the laboring poor in Madras in rural localities, can hardly get more than one pound of grain a day for a male adult in ordinary times. The enquiries on which this belief is founded were made I apprehend by Sir Richard Temple himself in the course of his rapid journeys through the country.

But I would submit to any impartial person whether enquiries made in this way to satisfy a foregone conclusion can be compared in value with the careful statistical enquiry undertaken calmly and deliberately in the years 1862 and 63 and which enquiry furnished the basis for all our subsequent arrangements in the dieting of the people under circumstances where they cannot have any voice in the choice of their own food. Most people in India are acquainted with the sort of answers a high official personage will get in reply to leading questions and if Sir Richard Temple thinks he has got at the truth in this matter I can assure him after a close practical study of the food of the people of Southern India for the last fifteen years that he is utterly and entirely mistaken and that so far from the laboring adult living upon a pound a day they eat on the average nearly double.

The following is what I wrote on this subject fifteen years ago. With my great opportunities of enquiry in regard to the civil population Jails Hospitals Soldiers rations &c during the past fifteen years I have nothing to add or alter.

A free labourer if he has the means will use from 3 1/2 to 40 ounces of cereal grain (cholum cumboo rice or rice) about two or three ounces of dhall a similar quantity of meat or fish and fruits or vegetables in addition.

From numerous personal enquiries I should be inclined to reckon the average consumption of cereal grain per diem of an adult labouring man is rather under than above 30 ounces.

The greater variety of food and its more liberal use by the free population depends very much upon the means of the individual as well as upon the supply of food in the district. In times of famine and drought after repeated failure of crops the quantities of grain given is the probable daily consumption of a healthy man would be very much reduced and in such seasons the jail diet would be superior to that of the greater number of the labouring poor. This is still too often the case. In years of scarcity grain robberies and petty thefts are very prevalent, and many of these offences are committed with the express object of securing the jail rations against starvation. At such times the want of due nourishment is painfully evident in the attenuated bodies of the poor. Many die from the immediate effects of starvation while the great bulk of those who live to struggle against famine have the vital powers so reduced that they are pre-disposed to suffer from the ravages of cholera and fever. The connection between famine and pestilence the following of the latter in the wake of the former, has received many a practical illustration in the records of Indian history within the present century. — (*Cornish on food and prison dietaries, Madras Medical Journal Vol III, Page 83*)

I now come to the consideration of Sir Richard Temple's second Minute of the 14th March in which he enters upon the scientific questions involved in my objections to his diet scale.

In this Minute Sir Richard Temple observes para 6 — 'The opinion that one pound a day of grain might suffice for a relief labourer together with some allowance for condiments and the like or some nutritious substance, was not indeed based on scientific theory. It was founded rather on probabilities practically deduced from the condition of the poorer classes in ordinary times, and on the results of general experience.'

I think it would have been more to the point if Sir Richard Temple had given something a little more precise than the vague term 'general experience'. I may ask in return 'whose experience?' Not Sir Richard Temple surely for in 1874 he assures us that the people in Bengal habitually use from 1 to 2 seers of grain (2 to 4 lbs) per adult and that even the people in relief houses doing no work, got 2 of a seer (1½ lbs). Sir Richard Temple records nothing of his travels in Bombay showing that the people on relief works there lived on 1 pound of grain a day. It was only on his arrival in the Billary District that he evolved this strange doctrine, that a Madras coolie could do what the people in no other part of India can thrive on sixteen ounces of cereal grain a day.

I know of no other 'general experience' bearing on this question and favourable to Sir Richard Temple's view. Sir Richard Temple appears to consider Sir Robert Christison's opinion to be entitled to a respectful hearing and I may therefore be allowed to make further quotation from that venerable and accomplished author's remarks on the diet of the British Soldier during the Crimean War.

I perceive from the fact that the most successful dietaries for bodies of men engaged in practical work consist of a large amount of starchy food in the proportion of about three of the former to one of the latter by weight. During the Crimean War that matter attracted much attention and it was pointed out that a similar exception had occurred before.

The fact is obvious that the heat of food in the diet will be required to be sufficient to counteract the loss of heat in the body. The dietaries are not the proportion of three to one.

Of the various diets the diet of the British Soldier is probably the best.

To this I should add that the diet of the British Soldier is probably the best.

Detritus is a term used by the rough and ready of the army to denote the diet of the British Soldier as determined by physiological laws.

Following these remarks in the help of a simple illustration it is not difficult to see the dietary advice given according to their occupation. It is also a general easy to detect the source of error in a successful diet. For example, a diet which is too rich in starchy food will be found to be too rich in starchy food.

Remarks of this kind from so eminent an authority as Sir Robert Christison ought to be taken into consideration by the unskilled constructors of dietary in famine times somewhat more modest in respect to their knowledge. It should make them especially cautious in the enunciation of new and strange doctrine such as that the amount of nitrogen required by natives must be much less than that required by Europeans' (para II of Minute).

This is really the crucial test of the whole question and I am afraid it cannot be definitely settled on the *ipse dixit* of Sir Richard Temple. In the scientific world we are accustomed to ask that any one bringing forward a new theory shall state the facts on which his theory is based and in this case it would be quite fair to ask Sir Richard Temple whether by himself or with professional aid he has endeavoured to test his theory by estimating and measuring the amount of nitrogen which natives of ordinary size and weight eliminate from their bodies. The investigation is one of by means a difficult character and no one has any right to bring forward such a theory in proof of the sufficiency of a scale of food without first a certainty, by repeated investigation and experiment, that the nitrogen excreted by natives is proportionately less than Europeans. The consequences of our accepting such a theory

without the clearest and plainest proof might be most disastrous and the *emulsi* remains with the originator of the theory

I almost wish in regard to Sir Richard Temple's reputation a gentleness of many and varied accomplishments that he had spared me the difficulty of dealing with his crucial tests in paras 11 and 12 as regards the alleged discrepancy in theory and practice as to the amount of nitrogen necessary to a successful dietary. It is not a pleasant thing for one in my position to point out errors of comprehension on Sir Richard Temple's part but however painful the operation it must be done. Sir Richard Temple quotes from the *Madras Manual of Hygiene* of admitted excellence by Surgeon Major H. King M.B. that the ration of a scale of rations allowed to native soldiers on foreign service is very truly that these rations while yielding an abundance of carboniferous food (3 ounces of rice) are very defective in nitrogenous principles, the whole weight of food in fact yielding only 1/8 grains of nitrogen per diem. According to this theory observe Sir Richard Temple, the Madras sepoy would be undergoing starvation at the hands of the Government. But in fact he is not so reduced physically nor does he fail the Government when it calls upon him for exertion. This case I submit, makes very strongly against Dr. Corbridge's theory.

I have no excuse to make for this deficiency of our native soldier on foreign service. I gave it up fifteen years ago, and recorded my opinion of it in the following terms —

The deficiency of animal food in the diet and the excess of carboniferous material is undoubtedly a fertile source of the prevalence of sickness in native troops on foreign service. The mortality of Madras troops on this diet in Burmah is more than double what occurs in Indian stations where they find their own food.

The foreign service ration in fact is a survival from the time of the first Burmese War. It was framed in times long before Sanitary Commissioners or Chemists learned in food composition existed and at the present time it is no more to be regarded as a typical diet than are the buttons on the backs of our dress coats to be regarded as a device for supporting a sword belt. The ration is simply an aid to the soldiers employed in a foreign country, and the men are put under no stoppages whatever on account of it but draw the full pay of their rank just as if they had to find every particle of food out of their pay. If the relief coolies in whose behalf I have protested had even or nine months a month, in addition to the pound of grain I should have made no objections to the inefficiency of their rations.

The Government expect in the settlements with the Burmese markets well supplied with poultry, eggs, fish and flesh that the sepoy can buy his nitrogenous food for himself and practically he does so to such an extent that of late years the troops stationed in Burmah have been almost as healthy as when in Southern India.

But there are and have been exceptions. I need not go back to the very terrible mortality of native troops from bowel complaints in the first and second Burmese War. These things are matter of history but no later than the year 1870 a detachment of native troops was sent from Berma to occupy posts on the Arracan river in co-operation with a Chinese Expedition.

In this locality the troops had no market at hand in which to buy animal food and in attempting to live on their ration they sickened and died in large numbers. The proportions are given in the margin.

In this case and in all other demanding active service away from markets of supply the native soldier on foreign service does in fact fail to do what the Government want of him, and simply because his rations are unfitted of themselves to support his health and strength. The fact is acknowledged and admitted by every officer who has commanded in Burmah and I did not at all overstate the case fifteen years ago when I reported to Government as follows —

I have not entered into the question as to the propriety of revising the ration of sepoys on foreign service or of effecting changes in civil hospital diets or of the sufficiency of the food laid down by law for emigrants from British India to the Colonies, all of which dietaries are unscientific in composition, and there need be little hesitation in stating unfitted to support life. The whole of these dietaries require revision.

Then again the rations of the European soldier do not as Sir Richard Temple supposes constitute his whole food.

Every Commanding Officer knows that the British soldier habitually buys extra meat from the bazaar, out of his ample pay and there is no regiment in the country which has not a provision shop of its own in which anything from a Yarmouth bloater to a truffled sausage may be bought. The rations on the whole are very fairly adapted for the British soldier although there is no doubt that he eats more meat than the quantity contained in the ration.

In the calculation of the component parts of this dietary in the *Madras Manual of Hygiene* I see that the nutritive value of the 1 lb of vegetables has been put down as if all the vegetables were of the

Sir Richard Temple says the British soldier is not reduced by a diet containing 155 grains of nitrogen and the answer to this statement is that the British soldier is never put on any such diet and that the figures on which Sir Richard Temple rests his crucial instance are wholly wrong partly from a clerical error of the transcriber and partly from the mistake in estimating the albuminous matter in the salt meat of the ship board ration.

It follows therefore that all Sir Richard Temple's surmises on the hypothesis that 155 grains of nitrogen is enough for a British soldier fall to the ground, and this part of the question need scarcely be noticed further.

I feel bound however to protest against the line of argument advanced by Sir Richard Temple, that as the British soldier only needs so much nitrogenous food that the Native of India can do with two thirds of that amount or less. We have no grounds whatever for admitting so dangerous a theory and all our practical experience tells us the other way.

In the *Indian Annals of Medical Science* Vol III 1855, Mr Strong gives some very remarkable tables showing the influence of a change of diet in the Alipore Jail. A Magistrate in charge thought that the prisoners were being too well treated and so abandoned a scale of food which had been sanctioned by the Medical Board, and which had kept the prisoners in health for a dietary of his own devising. The change consisted chiefly in knocking off the meat, reducing the grain allowance and obliging the prisoners to consume what they had in a single meal. The result of this amateur tampering with the food of the people was an increase in mortality from an average of 42.4 per thousand to 117.5 per thousand in the three years during which the experiment was in force. The constituents of the dietary gave about 19 parts of carboniferous food to 1½ of nitrogenous.

The late Mr Bedford of the Bengal Medical Service records a similar increase of mortality dependent on a change of food in the Pajshaye Jail in 1855. In this case several months elapsed before the bowel sickness began to appear but the result was a trebling of the annual mortality.

The effect of improving the standard of diets in the Madras Jails in 1867, so as to raise the amount of albuminous food equal to from 200 to 240 grains of nitrogen per diem has been to diminish the mean annual death rate from 107 to about 22 per thousand, for the eight years in which the new dietaries have been in force.*

This ought to be fairly convincing testimony, but there is more behind. A few years ago a Jail Superintendent who had been admonished by Government for over much flogging was requested to

* See paper on Sanitary improvements in Indian Jails. *Transactions of the Social Science Association* for 1877.

adopt some other mode of punishment, and the punishment book showed, in the course of a few months some hundreds of entries to this effect "Half rations, until he completes his task". The result was great increase of sickness and mortality from the diseases such as now fill our famine camps viz sloughing ulcers, bowel complaints, dropsy, and impoverished blood. On discontinuing the food punishment the mortality began slowly to subside to its normal proportions. So close is the connection in fact between a sufficiency of nitrogenous food and the health of the prisoners, that I never now hear of an increase of bowel disorders and dropsies in a jail, without at once suspecting tampering with the food or privation in the district furnishing prisoners. In talking the matter over with the Inspector General of Prison I find that he has arrived at precisely the same conclusion. After the Bengal famine I noted that the rate of mortality in the Julpigore jail was 22 per cent chiefly from 'bowel complaints'. In Rungpore 17.6 per cent. In Gya Tirhoot and Chumpran the mortality was 17, 10 and 15 per cent respectively. Dysentery was the most fatal disease. The precise writer who compiles the Sanitary statistics of the India office does not appear to have had a notion of the connection of the undue jail mortality with the famine but notes that a "special report has been called for to explain it". Reading between the lines I can at once tell him, that it was a mortality from starvation and seases.

With all these facts before me I think myself quite justified in having given early warning of the danger of reducing wages to the level of 1 lb of cereal grain a day even admitting that my remonstrance was as Sir Richard Temple states 'strongly worded'. It saves time to state in plain terms one's actual meaning and my meaning was quite evident when I showed that Sir Richard Temple's proposals were out of harmony with the experience of the Bengal famine and with our actual knowledge of the effects of insufficient food.

There remains yet one more point to be noticed with reference to differences of opinion in regard to the present condition of the labouring poor. On this point Sir Richard Temple states "Having carefully inspected during my tour in this Presidency thousands of relief labourers I give it as my opinion that with very few exceptions which are not as a rule traceable to insufficient wages the general physical condition of the labourers is as good as now as in ordinary years".

This is Sir Richard Temple's opinion but not mine. I too have seen a considerable number of relief labourers, and have taken some pains to find out where the distress really is, and my experience is this that if I want to see the darkest side of the famine picture, I must look for it elsewhere than amongst the ranks of those who have still strength enough left them to work. Consequently I make

a point of examining wherever I can, the condition of the people fed in relief houses, luncheon and by private charity. I try to ascertain the condition of the poor who frequent the public bazaars and markets and I pay special attention to the condition of the old and the young whom I find almost invariably to be the earliest victims to distress. It is in this respect probably that my estimate of the effects of the famine on the health of the lower classes differs so widely from Sir Richard Temple's. My view is briefly this that the famine is pressing with peculiar severity upon certain sections of the labouring classes, the average from 20 to 30 per cent of the population of the several districts that amongst these classes there has been already a very large mortality primarily due to bad and insufficient feeding and that the condition of the survivors is in many cases critical in the extreme as shown by the rapidly increasing proportion of persons who are unable to work, and who have to be fed entirely at Government expense to keep the feeble vitality they have from being altogether extinguished.

Immediately the condition of a people becomes so low that they cannot work the question of saving life becomes enormously complicated and in plain language the time has then passed by when Government relief can do more than attempt to rescue a few possessed of the strongest constitutions. What has been our experience in this respect in the Madras relief camps and in the camps now being established throughout the country? Sir Richard Temple I observe in his numerous Minutes has passed by this subject of the actual mortality of the famine stricken but as a public health official I am bound to take notice of it.

The following figures show the mortality amongst this class of the population in the Madras camps for ten weeks ending 31st March

Mean temperature	Total Deaths	Annual Rate per Mille
11.00	111	930.8

This enormous mortality simply means an annual death rate equivalent to 930.8 per mille of the population constantly under observation, and, in fact, is a death rate which wipes out nearly the whole of the living within a year. The excessive death rate going on in Madras is going on in every relief camp in the country. I find but little difference in the proportion of deaths whether in North Arcot, Cuddapah or Madras. And it must not be supposed that this excessive death rate is due to cholera or small pox for the Madras camps have been singularly free of the former, and by means of vaccination the small pox epidemic has been controlled. The deaths are almost entirely due to diseases which invariably in India, attack underfed and starved people viz extreme wasting of tissue and destruction of the lining membrane of the lower bowel. This is a simple statement of fact. Thanks to the assistance of Surgeon General G. Smith and his able Medical staff in Madras

this question of the nature of the famine disease has been abundantly verified by post mortem examinations. Surgeon Major Porter informs me that the average weight of bodies of full grown men he has examined has varied from 57 to 85 lbs and it is enough to record this fact to show the extreme wasting going on during life.

But if the condition of the labouring classes is so generally satisfactory to Sir Richard Temple how is it I may ask, that the death returns of the famine districts are so much above what is usual? I have not as yet received the returns for February but those for December and January are available for comparison with the average results of the previous five years. I must, however, note with respect to these district death returns that from personal investigation in the districts I know they very much understate the real mortality of the last few months. The truth is the famine has disorganized our village establishments to such an extent that the actual numbers who have already perished will never be known. Hundreds and thousands of people have died away from their homes have fallen down by the roadside, and their bodies have been left to be eaten by dogs and jackalls. Mr Gribble the sub collector of Cuddapah in the course of a morning's ride of 14 miles, came upon eight unburied bodies and at Royachoti in January, last Mr Supervisor Mathews informed me that after an outbreak of cholera 53 dead bodies lay for days, exposed in the dry bed of a river, near the works the relief coolies were engaged on. Walking over this ground two months after the event, the numerous skulls and human bones scattered on the surface convinced me that the statement was founded on fact.

With our village establishments panic stricken, and the village messengers away at relief works, it is quite certain that the death registration has been most incomplete. At Madanapally I found that the deaths in the Civil Hospital had exceeded those borne on the village register for certain months, and at Rayachoti, the deaths amongst the starving people sent in to the relief shed in March, had exceeded the registered mortality for the whole town. It is obvious therefore that the figures I now give do not represent the real truth of our losses: they are at the best approximative only.

[Statement

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I view the figures which we know to be under the truth, the appalling mortality in the famine districts during December and January. I have no reason to suppose that the state of things here indicated has much improved in February and March. But in the municipal towns, or in some of them at least within the famine area, death registration is more efficiently managed and the following figures will tend to show the gravity of the famine as exemplified in an abnormal death rate. In Bellary, I have long had reason to suppose that the registration was not properly done and the returns of some of the Bellary Municipalities are obviously imperfect. The first thing that arrested my attention in connection with the famine on returning to duty in the end of January was the abnormal death rate amongst certain classes and certain localities of the Presidency town and I lost no time in drawing the attention of Government to the condition of the people and suggesting measures for combating the great destruction of life then going on. While the mortality of the Presidency town was exaggerated by the influx of starving immigrants, the experience of other municipalities shows that throughout the famine tract the death rate has risen out of all proportion to its normal condition.

Statement

Mortality in the Muncipalities of the Famine Districts

Municipality	Male	Female	Total	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 1000	Rate per 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No

From

D. Conish

Dated

April 6th

1871

FOR ORDERS

She understood her to
be - again to leave
as on Dr Conish's
letter to observe that in
his covering letter to Conish
complains that his letter of
115 of the 7th Feb. 1871 was not
published in the *Evening*
India, while Sir R. Taylor
in his letter to Conish
in the *Evening* *India* to
be as in his letter to his
letter on 115 - Conish's complaint
to be noticed in the *FO!*
12 In passing orders on her
report as notice to be taken
of the blindness in the *India*
Journal of Hygiene in
not - 9
I do suggest the passing
of the following *FO!*

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Chas

He has been perused
of course the reply to
the R Temple
attend but regret to
find that the London
Journal of Hyg
contains
such grave

as those forwarded
by the San Com.

and the imp. feel that
it is up to the
connected
to it

24 April 1877

2 The fact in Council
considers that on
public grounds it is
to be regretted that
the Council letter to
115 of 73rd Dec 2
was not given the
same publicity by the
facing address as the
minutes of the R
Temple which at least
has been to control
its arguments, but
so long a time has
now passed since
the publication of them

Ind. to the Secretary
5th of 8th/77
5th the Public and General
35 the Board of Revenue
5th the General
21 the Board

1-2
-6

He has been perused
the Council does not
consider the
address to address the
facing address as the
of publishing the Council
letter in the face of them
16/4/77

24 April
29 April
27

FOR ORDERS

Just Hand 1