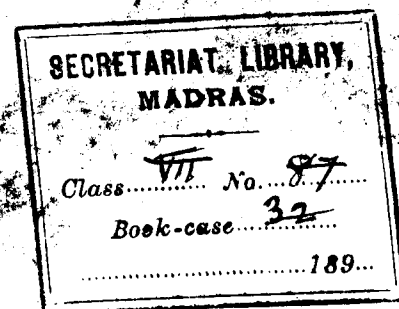




A MEMORANDUM
ON THE
DIETARIES OF LABOURING PRISONERS IN INDIAN JAILS
BY
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CHAPTER I.

A BRIEF SKETCH OF SOME RECENT RESEARCHES BEARING ON THE QUESTION OF LABOURING DIETARIES.

1. IN the following memorandum an attempt will be made to furnish an approximate estimate of the nutritive value of the several scales of diet for Native labouring prisoners which are at present, or have until recently been, in force in Indian jails. Before proceeding to do this, it will be necessary to refer to a few general principles which have to be clearly understood in order to render the remarks which will be made regarding the essential constituents of such dietaries more intelligible, without, however, entering into abstruse physiological details which would be out of place here. A mere tabular statement of the several ingredients constituting the diets in the several provinces would be of comparatively little value unless accompanied by a statement of their chemical composition; and, in order to judge of the comparative merits of dietaries so analysed, it is essential that a clear conception should be formed as to what particular portions are specially adapted to the nutrition of the body, and in what proportion they should be given so as to obtain the most favourable results.

2. As the body itself is composed of organic and inorganic substances, the food essential to its support must likewise consist of such substances. The *inorganic* portion of food consists of water and of various salts; and *organic* alimentary substances are those which have been produced under the influence of life, which may be either animal or vegetable. In reality, however, all organised food stuffs are derived from the vegetable kingdom, seeing that, more or less directly, herbivorous animals constitute the prey of the carnivora. As organised food substances usually contain the requisite proportion of the unorganised, it seems unnecessary, in a note of this kind, to give in detail the amount of the inorganic constituents of individual diet scales.

3. It will, therefore, only be necessary to consider specially the leading characteristics of organised food stuffs. These may be classified under two principal headings—those which contain nitrogen and those which do not. The nitrogenous group of compounds is very commonly referred to as *albuminates* [also: *proteids*] from the circumstance that albumen forms the most important alimentary constituent of the group—a substance which is directly derivable both from animals and plants. The non-nitrogenous group is ordinarily sub-divided into (a) *carbo-hydrates*, the most important compounds of which are starch and sugar; and (b) *fats*.

4. In the present memorandum the sum of the ingredients in all the principal scales of diet given in the text will be found resolved into these three great alimentary principles; but for the sake of conciseness, and as tending to simplicity of arrangement, the nutritive value of the individual ingredients given in the series of the appended dietary tables has been expressed in terms of nitrogen and carbon only. This does not imply that these two elements are assimilated when in an uncombined condition, but that the quantities of the special ingredients cited in any particular diet may, in the laboratory, be resolved into so many grains of nitrogen and carbon. Computations of the amount of these two elements in the different alimentary substances furnish a

convenient and simple index of the approximate nutritive value of a combination of food stuffs, seeing that, as the late Dr. Parkes expressed it, "the phenomena of nutrition are chiefly owing to the various chemical interchanges of nitrogen and carbon (and in some instances of hydrogen with oxygen)."

5. Speaking generally, the chief functions of the nitrogenous principles of food seem to be the development and renovation of the tissues, and the acceleration of the chemical changes which take place in them; whilst the non-nitrogenous, or carbonaceous, material furnishes the principal source of mechanical force; or, as Pavy has it, the former may be spoken of as holding the position of the instrument of action, while the other supplies the motive power. The quantity and the proportions of these proximate alimentary substances which are required to maintain individuals in health, the particular part which each proximate aliment plays in the animal economy, and the relative proportions in which they should be given during periods of rest and of activity, are questions regarding which there is still far too much uncertainty to admit of any definite statement being made. Until recently, the view, advocated by Liebig, was generally held that physical exertion involved a positive waste of muscular tissue, and that, consequently, an increase of the "flesh-formers," as the albuminate constituents of the food were described, was required in proportion to the amount of mechanical labour which the body was called upon to undergo. As a result of this teaching, the leading object which has been ordinarily kept in view in the construction of dietaries has been to increase the nitrogenous elements in the food proportionately, and this in a somewhat arbitrary fashion, to the amount of work exacted.

6. On the strength of this doctrine it has frequently been assumed that the working population of this country, and especially the rice-consuming portion of it, is under-fed, seeing that the amount of albuminous material which enters into their ordinary food is evidently far too small to compensate for the waste of the muscular tissue which the work they perform was supposed to entail. The great distance which a palanquin-bearer, for example, will often travel on food containing an extremely small proportion of nitrogenous material has astonished many European observers, the quantity of albuminates in his food being quite inadequate to replace the waste of muscle which, it was supposed, must have taken place in carrying himself and his burden. Every-day experience in this country, therefore, seemed to contradict the doctrine that physical labour and destruction of the nitrogenous muscular tissue should be looked upon as almost synonymous.

7. This experience is quite in accord with the teachings of the leading physiologists of the present day. In opposition to Liebig, who admitted that the heat but not the motion of the body was due to the oxidation of combustible matters, J. R. Mayer (so far back as 1845) maintained that the chemical force contained in the ingested food and in the inhaled oxygen was the source of the motion as well as of the heat. The truth of this statement has been confirmed by many observers, and during recent years Mayer's researches have been greatly extended. Conspicuous amongst these researches are the experiments which have been made on men and animals by Professors Pettenkofer and Voit, and which, amongst other things, have conclusively demonstrated that the amount of nitrogen excreted by the body during rest is so nearly the same as during exertion that the possibility of power being dependent on nitrogenous waste is, virtually, excluded. These observations, and many others of a like character,¹ have a very practical significance as regards the question of the most suitable dietary for a labouring population, and it would clearly be a mistake to continue formulating scales of diet based on a doctrine which is no longer tenable.

8. Indeed, the present tendency is to invert the doctrine of Liebig, and to hold that it is carbonaceous and not nitrogenous material which is chiefly consumed during mechanical action. In a recent lecture delivered before the British Association, Professor Burdon-

This experience is in accord with the teaching of modern physiology. Not expedient therefore to continue formulating dietaries on the basis of a doctrine which is no longer tenable.

¹ A very carefully prepared account of the principal of these will be found in Chapter IX of Gamgee's *Physiological Chemistry of the Animal Body*.—Vol. I, 1880.

Sanderson says:—"In what may be called 'commercial physiology,' the physiology of trade puffs, one still meets with the assumption that the material basis of muscular motion is nitrogenous; but by many methods of proof it has been shown that the true *Oel in der Flamme des Lebens* is not proteid [or albuminoid] substance, but sugar or sugar-producing material."¹ Although, according to the most recent observations, it may not be strictly accurate to compare the relation of the food to the body with that of the fuel to the steam engine, still the modified form of the popular illustration which has been suggested by two prominent authorities on this subject—Professors Fick and Wislicenus—may serve to aid in rendering the subject more intelligible without being materially misleading as regards the more salient facts. A bundle of muscular fibres may be looked upon as a kind of machine, consisting of albuminous material, just as a steam engine is made of metal. Now, as in the steam engine coal is burnt in order to produce force, so in the muscular machine carbonaceous material is burnt for the same purpose. And in the same manner as the iron, &c., of which the engine is constructed is worn away and oxidised, so also is the constructive material of the muscle worn away. In a steam engine moderately fired and ready for use the oxidation of iron, &c., would go on tolerably equably and would not be much increased by the more rapid firing necessary for working, but much more coal would be burnt when it was at heavy work than when the work was only trifling.

9. As excessive work in the case of the engine implies a slight increase in the wear and tear of its constructive material, so it has been experimentally demonstrated that some slight increase also occurs in the expenditure of the albuminous structures of the body as well as of the carbonaceous elements of food during severe physical exercise, so that it would seem that something more than a preponderance of the non-nitrogenous principles is required to sustain the body under such conditions, and this conclusion, as Pavy expresses it, 'corresponds with the promptings of our instinctive inclination.'² But there can be little doubt that the extent of this instinctive inclination to have recourse to more albuminoid food on account of extra labour than under ordinary circumstances is customary, depends very much on the habits of a people and even on idiosyncracies of the individual. Nothing could well illustrate this more forcibly than the diametrically opposite methods resorted to in the training of athletes in Europe and in India. Dr. Carpenter³ mentions that the *lean* parts of beef and mutton constituted the principal food given by Jackson, a celebrated trainer of prize-fighters in modern times, and that stale bread was the only vegetable allowed; and Letheby⁴ mentions that King, the pugilist, whilst training, partook largely of lean beef and mutton, with toast or stale bread, but with very little potato or other vegetable; sugar was scrupulously avoided. On the other hand, the ordinary training-food of professional wrestlers in this country, at least of Upper India, consists largely of sweetmeats, fat (ghee or clarified butter), and milk. Thus, the training-food of the European prize-fighter is of a highly nitrogenous character, whilst that of the Hindoo wrestler is decidedly carbonaceous. The inhabitants of mountainous districts in Central Europe also are said to place greatest reliance on food of the latter character—bacon and sugar being favourite provisions when they have arduous journeys to perform.⁵ That prolonged exertion is not incompatible with a food in which carbonaceous elements greatly predominate is further evident from the fact that nearly all beasts of burden are herbivorous; and bees, though constantly in motion, feed on saccharine material. Moreover, as the proportion of carbonaceous material contained in animal food is so very much smaller than what is contained in vegetables, and as only a certain, comparatively small, quantity of the nitrogenous element can be advantageously utilized by the system, it is wasteful to resort to very highly nitrogenised forms of food for the supply of the large amount of carbon which is required—and not only is it wasteful but injurious also, seeing that an unnecessary strain

¹ *Nature*, September 8, 1881, page 440.

² *The Lancet*, 1876. Also *A Treatise on Food and Dietetics*—2nd edition.

³ *Human Physiology*—8th edition, page 59.

⁴ *Lectures on Food*—2nd edition, page 121.

⁵ *Hermann's Physiology*—Translated by Gamgee—2nd edition, 1879.

is thrown upon the excretory organs in getting rid of the surplus nitrogen before the carbon which is combined with it in the food can be made available for the production of force.

10. So far as I am aware, no systematic series of observations has been conducted on the precise food-requirements of the inhabitants of this country when undergoing laborious exertion as compared with the requirements when the body is at rest, so that (apart from what observation teaches as to the habits of the people generally) all inferences as to what these requirements are, are based on experiments made in Europe and on people accustomed to a far larger proportion of animal food than the great majority of the inhabitants of Eastern countries. In the light of what is now known as to the respective parts played by the nitrogenous and carbonaceous ingredients of food in the production of muscular action, it is doubtful whether the data which have been acquired by experiments on men accustomed to partake of a large proportion of albuminous principles in their food are strictly applicable to the poorer classes of this country. When such data are resorted to as a basis whereupon to frame dietaries suitable for native prisoners, it is found that the proportion of albuminate is considerably higher than the poorer classes are accustomed to, especially such of them as are habitual rice-eaters. A like discrepancy is found when the food of different classes in European countries is compared; and the effect of habit, as regards the amount and quality of food which is requisite for the maintenance of health, is strikingly shown in the case of soldiers when confined in civil prisons in England. It appears that they almost invariably lose weight, whilst civilians of their own age and former position in life do remarkably well on the prison dietary. The most obvious explanation of this discrepancy seems to be that the soldier since he joined the ranks has become accustomed to a diet consisting to a greater extent of animal food than he obtained before. It would, however, not be desirable, or indeed just to the public at large, that the acquired wants of the soldier should serve as the standard in providing for the ordinary food-requirements of the general prison population.

CHAPTER II.

MOLESCHOTT'S 'STANDARD-DIET'; EDWARD SMITH'S ENGLISH IN-DOOR LABOURER'S DIETARIES; AND THE LABOURING DIET SCALES OF ENGLISH PRISONS.

11. The late Dr. Parkes, as is well known, studied the diet-question with the greatest care, and selected, as a "standard diet," a scale which had been prepared by Moleschott. This scale has been very generally accepted as suitable for Europeans undergoing a fair amount of mechanical labour, of an average height of five feet eight inches, and of an average weight of 150 lbs. It has, however, not been suggested, so far as I am aware, that this scale should serve as a standard for the construction of prison dietaries, but rather for the soldier and the public at large. The diet referred to is given in the following statement, the nutritive values being expressed in ounces of albuminates, fats and carbo-hydrates; as also in grains of nitrogen and carbon:—

Moleschott's "Standard Diet."

Water-free substances given daily.							Ounces.	NUTRITIVE VALUE IN GRAINS.		
								Nitrogen.	Carbon.	
Albuminates	...	...	...	...	...	...	4.58	316	1,068	
Fats	...	...	...	...	...	...	2.96	...	1,024	
Carbo-hydrates	...	...	...	...	...	...	14.25	...	2,768	
TOTAL NUTRITIVE VALUE							...	...	316	4,860

This diet provides about 2 grains of nitrogen and a little over 30 grains of carbon per pound of the weight of the consumer, per diem—the proportion of

the nitrogen to the carbon being as 1 to 15. The amount of fatty matter is nearly three ounces.

12. Some years ago Dr. Edward Smith conducted, on behalf of the Privy Council, a very extensive series of observations on the food of the labouring classes in England.¹ The following statement epitomises the result of these enquiries as regards the nature and amount of food upon which the poorer class of in-door labourers had to live and earn a livelihood. It will be observed that the nature of their work is not unlike what a large proportion of Native prisoners have to perform in India:—

Dietaries of in-door labourers in England.

				OUNCES WEEKLY.		DAILY NUTRITIVE VALUE IN GRAINS.	
				Bread stuff.	Meat.	Fats.	Nitrogen.
Silk-weavers	...	...	...	152	7.25	4.50	164
Needle-women	...	...	...	124	15.0	4.50	135
Kid-glovers	...	...	...	140	18.25	7	173
Stocking-weavers	...	...	...	190.1	11.75	3.5	190
Shoemakers	...	...	...	180	15.75	5.75	188
Average daily nutritive value				=			170
Omitting the needle-women, the average daily nutritive value				=			179
							4,858

The average daily amount of nitrogen entering into the composition of the food of these poor operatives is considerably less than two-thirds of the proportion given in Moleschott's standard diet, even after excluding the needle-women from the computation; and the carbon also is less by over 500 grains. They appear, however, to consume a large quantity of fatty matter, the average daily amount, divided amongst the four classes, being a little over 5 ounces. The nitrogen to the carbon is as 1 to 24.

13. The dietaries of English labouring prisoners also have always been lower than Moleschott's standard. Doubtless, the framers of the jail diets took into consideration that a large proportion of the prisoners are from the lower classes and have been accustomed to live, as Dr. Edward Smith's tables show, very sparingly. Moreover, as the Jail Diet Committee which was recently appointed in England, and to which reference is made in the following paragraph, say, 'the question of sufficiency cannot be dealt with entirely apart from the question of cost; and we conceive that we should ill-discharge our functions if we were to lose sight of the fact that prisoners are, to some extent, maintained at the expense of those whom they have injured.' On the other hand, the diet scales of jails have, during recent years, usually been considerably more liberal than those of English poor-houses; and Dr. Letheby writes, 'the dietaries of prisons are so greatly in excess of the union that in times of distress they offer encouragement for misdemeanour, in order that the prison may be reached in preference to the workhouse.'

14. The special committee above referred to was appointed, during 1877-78, to enquire into the dietaries of Local Prisons in England and Wales, "with a view to introducing uniformity as far as possible," it being considered that a multiplicity of scales involved waste and confusion, and was bewildering to the staff. Their report is dated 27th February 1878, and was printed by order of the House of Commons in the following March. The dietaries proposed were accepted, and the Home Secretary issued instructions that they should be brought into operation from the 15th of May of the same year. Prisoners undergoing hard labour are divided into four classes:—class I being men of 7 days' imprisonment and under; class II men of more than 7 days and not more than one month; class III more than one month and not more than four; and class IV more than four months. The dietaries for the first

¹ Sixth Report of the Medical Officer of the Privy Council, 1864.

² Op. cit., page 116.

two of these classes of prisoners are considerably lower than those for classes III and IV, but they need not be especially noticed here.

15. The *average daily allowance* to men undergoing hard labour of between one and four months' imprisonment, and of those whose sentences exceed four months is, stated briefly, as follows :—

The diets of labouring prisoners in English Local Prisons.

Daily average allowance of food to labouring prisoners in LOCAL Prisons in England and Wales.

CLASS OF PRISONERS.	OUNCES.									
	Bread.	Oatmeal.	Flour.	Cooked meat.	Meat for soup.	Peas.	Potatoes.	Fresh vegetables.	Onions.	Suet.
III.—One to four months*...	20·8	4	1·1	·85	1·3	1·3	8·0	·65	·18	·21
IV.—Over four months* ...	23·4	6	1·7	1·1	1·7	1·7	9·2	·85	·2	·32

* At the expiration of 9 months one pint of cocoa, with 2 oz. of extra bread, may be given at breakfast three times a week in lieu of one pint of gruel or porridge if preferred.

The cooked meat is issued twice weekly, three ounces for dinner, on Mondays and Fridays, to the 'one to four months' class of prisoners; and four ounces on the same days to the 'over four months' class. Soup is issued on three days a week, the quantity of meat used in the preparation of the weekly allowance being 9 ounces to class III and 12 ounces to class IV. Prisoners of the former class, therefore, receive in the aggregate 15 ounces of animal food weekly, and those of class IV 20 ounces.

16. In the following statement these two dietaries have been resolved into the more important of their proximate alimentary constituents; and their dietetic values are also given in terms of nitrogen and carbon;—

The nutritive value of this dietary.

The average daily nutritive values of the dietaries of labouring prisoners in the LOCAL Prisons of England and Wales.

WATER-FREE SUBSTANCES GIVEN DAILY.				CLASS III, ONE TO FOUR MONTHS.			CLASS IV, OVER FOUR MONTHS.		
				Ounces.	NUTRITIVE VALUE IN GRAINS.		Ounces.	NUTRITIVE VALUE IN GRAINS.	
					Nitrogen.	Carbon.		Nitrogen.	Carbon.
Albuminates	...	...	3·13	215	729	3·91	270	911	
Carbo-hydrates	...	...	16·22	...	3,150	19·67	...	3,820	
Fat	...	...	1·02	...	353	1·37	...	473	
TOTAL GRAINS OF NITROGEN AND CARBON				215	4,232	...	270	5,204	

These computations have been made from the weekly totals of the several ingredients which form the dietaries, and are, as regards the average daily amount of nitrogen, almost identical with the results obtained by the committee—the committee's nitrogen-figures being 216 and 270. The amount of carbo-hydrates in the dietaries, as estimated by the committee (16·65 and 20·17 oz.), is somewhat higher than is indicated in the above table, owing chiefly to the high carbon value accorded by the committee to bread. Dr. Parkes gives the percentage of carbo-hydrates in bread as 49·2, and this factor has been adopted in computing the value accorded to it in the present memorandum.¹ The nitrogen is to the carbon in round numbers as 1 to 20. The first diet contains a little over an ounce of fat, and the second a little over an ounce and a quarter.

17. As regards the suitability of these dietaries to the classes for which they were proposed, the following extract from the *Second Report of the Commissioners of Prisons* (July 1879), para. 58, may be cited :—"The deaths from natural causes during the year ended March 31st, 1879, were 167 in number, giving a ratio of 8·3 per 1,000 of the daily average population. This death-

¹ In some recent analyses of bread by Dr. De Chaumont the carbo-hydrates were found to be equal to 45·9 per cent.—*Army Medical Reports*, Vol. XVIII, page 223.

rate is lower than that of any year on record, and is as much as 2 per 1,000 lower than the average death-rate of the previous five years. It would perhaps be premature at present to connect this diminished mortality with any particular cause; but it is important to note the fact, because the health of the prisoners forms one very valuable test of the effect of some of the changes which have been introduced, especially of the uniform diet, and because an improvement in this regard has been the direct object of many of the steps which have been taken, and the Commissioners cannot therefore regard it as otherwise than gratifying that such an improvement should be coincident with the introduction of a uniform diet, and with the efforts they have made to promote the interests alike of the inmates of the prisons and the public at large." And the Commissioners in their *Third Report* (July 1880), the last which I have seen, write as follows (para. 73) :—"The death-rate is again lower than in any previous year, and we cannot but regard this as a substantial proof that such changes introduced since the prisoners were transferred to us, or have any bearing on the health of the prisoners (the most important being the new diet), have been justified by their operation."

18. I have not been able to procure such full details regarding the dietaries in force in Convict Prisons in England, but in Appendix D to Volume I of the *Report of the Commissioners on the treatment of Treason-Felony Convicts* (dated September 1870), and in Appendix K to Volume III of the *Report of the Commissioners on the working of the Penal Servitude Acts* (dated July 1879), I gather that the following scales are allowed to convicts on *light* and on *hard*, and (at Millbank and Pentonville prisons) on *industrial* labour. The *light* labour consists of oakum-picking, &c., and *industrial* labour comprises weaving, shoe-making, &c.

Daily average allowance of food to convicts on light, on industrial, and on hard labour in English Convict Prisons.

CLASS OF CONVICTS.	OUNCES.													
	Bread.	Oatmeal.	Flour.	Cooked meat.	Meat for soup.	Cheese.	Potatoes.	Fresh Vegetables.	Onions.	Suet.	Pearl Barley.	Cocoa.	Molasses.	Salt.
Light labour ...	20·7	2	·6	1·7	1·7	·6	12·6	·6	·8	·1	·3	·5	1	·5
Industrial labour ...	21·1	2	1·2	2·3	1·1	·6	13·7	·3	·4	·2	·1	·5	1	·5
Hard labour ...	24	2	1·2	2·1	2·3	·6	13·7	·6	·5	·2	·3	·5	1	·5

19. There is somewhat greater variety in the food issued to prisoners undergoing sentence of penal servitude and a more liberal allowance of animal food, the highest rate being a weekly allowance of 3 lbs. 5 oz. against 1 lb. 4 oz. given to class IV in local prisons. There is, however, no very material difference in the aggregate nutritive value of the dietaries of the two classes of prisons, as the oatmeal issued to convicts is less than half the amount given in local prisons, and no peas are given. The comparative value of the two dietaries will, however, be more readily perceived by a study of the following statement, in which the average daily food-allowance is reduced to albuminates, carbo-hydrates, and fats, as also to grains of nitrogen and carbon, than from a comparison of the several ingredients of which the dietaries are composed :—

The average daily nutritive values of the dietaries of light, industrial, and hard labour convicts in English Convict Prisons.

WATER-FREE SUBSTANCES GIVEN DAILY.	LIGHT LABOUR.			INDUSTRIAL LABOUR.			HARD LABOUR.		
	Ounces.	NUTRITIVE VALUE IN GRAINS.		Ounces.	NUTRITIVE VALUE IN GRAINS.		Ounces.	NUTRITIVE VALUE IN GRAINS.	
		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.
Albuminates ...	3·28	226	764	3·53	243	822	3·82	263	890
Carbo-hydrates ...	16·26	...	3,157	17·09	...	3,318	18·53	...	3,598
Fats ...	1·25	...	432	1·47	...	508	1·52	...	525
TOTAL GRAINS OF NITROGEN AND CARBON ...		226	4,353		243	4,648		263	5,013

It will be observed, as already remarked, that no very marked difference exists in the nutritive values of the labour dietaries in force in the two kinds of English prisons. Taking the diets of the 'over four months' class in local jails and the hard labour class of convicts, we find that there is only a difference of seven grains in the nitrogen contained in their daily rations, and of 191 out of a total of over 5,000 grains in the carbon.

20. This dietary appears to have been adopted on the recommendation of a special committee which sat in 1864, and has therefore been in force from sixteen to seventeen years, though there were some small modifications made in the original scale as regards giving it more variety by Lord Devon's commission in 1870.¹

In 1878-79, again, a special commission (of which Lord Kimberley was president) was appointed to inquire into the working of the Penal Servitude Acts. The results given in their report (already referred to) as regards the dietaries are highly satisfactory. In paragraph 101 the Commissioners state, "We are also satisfied that the quantity of food contained in the several dietaries is fairly proportioned to the amount of labour required of the prisoners. We have arrived at this conclusion from personal observation, as the convicts seen by us at hard labour at Chatham, Portland, Dartmouth, and Portsmouth, appeared in excellent health and quite equal to the work upon which they were employed." And, in paragraph 102, they recommend that when, in exceptional cases, the diet is found insufficient "the medical officer should have the power of recommending an increased allowance of bread without, as at present, waiting for the previous sanction of a Director, and that all such cases should be brought before the Director at his next visit, whose duty it should be to make special inquiry into them." Finally the Commissioners in their remarks concerning the Scotch and the convict dietaries (paragraph 108) say—"We recommend such a revision of the former as may cause them to approximate closely to those in force in England, of the sufficiency of which we have received satisfactory evidence."

CHAPTER III.

THE ADAPTATION OF THE DIET SCALES OF LABOURING PRISONERS IN ENGLAND TO INDIAN REQUIREMENTS.

21. Testimony of the character cited as to the suitability of the maximum dietaries issued both to convicts and to labouring Local jail prisoners in England appear to be so conclusive as to warrant and even to invite the suggestion that they should, at all events for the present, serve as the basis for the construction of dietaries for labouring prisoners in other countries. Considering the previous habits of the inmates of English jails, the very small amount of animal food which has been found compatible with the exaction of hard labour, especially in the case of Local Prisons, is a noteworthy circumstance; and this, taken together with the high proportion of the carbonaceous to the nitrogenous ingredients in the food, seems to indicate in a special manner the suitability of such a standard to Indian requirements. Moreover, the lessons which a study of the history of these dietaries seem to teach have not that degree of uncertainty about them which must of necessity characterise lessons

¹ This I gather from the following evidence given by Dr. Gover, the present Superintending Officer of Convict Prisons, before the Royal Commissioners in 1879:—

Question 1575.—Are the prisoners weighed? Yes.

Question 1576.—Do they increase in weight? The general tendency amongst the convicts is that they gain in weight.

Question 1577.—You gave evidence before Lord Devon's Commission? I did.

Question 1578.—I see that you were asked,—"Is it the rule, in your experience, that prisoners lose weight at Millbank?"

Answer.—Yes; I find that they lose weight now somewhat more than they did, * * I think that about one-third of the prisoners lose in weight, speaking roughly, that is to say, of the ordinary convicts? Since that time the diet has been somewhat altered.

Question 1579.—In what respect has it been altered? It has been somewhat improved. There is more variety in the diet than there used to be.

Question 1580.—There was a change in the dietary, I observe, in 1864? Yes.

Question 1581.—Since that time there has been another change? Yes.

Question 1582.—Are you quite satisfied with the dietary? Quite satisfied.

Minutes of Evidence, Vol. II, page 123.

acquired by means of specially devised experiments, in the carrying out of which more or less artificial conditions are inseparable. The experience gained in connection with the English prison diets has been very gradually acquired, and the unconscious subjects of the experiments belonged to the very class for whom it is desired to solve the extremely difficult problem of providing for their sustenance and at the same time carrying out the primary object of their imprisonment.

22. As to what is to be regarded as "sufficiency" in a prison diet, the Diet Committee of the English Local Prisons express themselves thus:—Sufficiency is not a quantity capable of demonstration. There is, at the outset, the defect inherent in all scales, that a uniform diet is given to persons of various age, weight, height, idiosyncrasy and physical conformation, but scales will, nevertheless, be always rendered necessary by the exigencies of administration wherever bodies of persons have to be dealt with in the mass. It is the duty of those who are called upon to frame scales of diet to be guided by averages, and it is the duty of those who use them to provide for exceptional cases by special means.

23. Bearing in mind the spirit of these observations, it may now be considered what proportion of the diet which has proved so successful in English prisons should be considered as sufficient for Native labouring prisoners in India, and which of these two kinds of maximum labour dietaries should be selected. The latter point may be considered in the first instance. As already remarked, there is but very little difference in the aggregate nutritive value of the two dietaries. The little there is, is slightly in favour of the maximum Local Prison scale. The work and the length of the sentences of inmates of this class of prison correspond, perhaps, more closely with that of the majority of Indian prisoners than do the work and sentences of those undergoing penal servitude in England, so that, on the whole, the Local Prison dietary would seem to be the more suitable. Moreover, the classification of the prisoners who are placed on the two principal scales of the diets for labouring prisoners corresponds very closely with that commonly adopted in India—"One to four months'" and "over four months'" imprisonment. In India the more general classification is into "one to three months'" and "over three months'" imprisonment. It may be added that the labour diets of the Local Prison Committee form the bases for the principal non-labouring dietaries.¹

24. The first question to be solved is what proportion of these English scales should be adopted for Indian prisoners. In attempting to frame such an estimate, it has been usual to accept the average relative weights of individuals as being the most satisfactory and practically attainable basis; though in estimating the food-requirements of the prisoners of a province the activity natural to the population, as well as the physique, must be prominently borne in mind. Acquaintance with the mere size of a furnace, for example, will not, of itself, suffice to enable a satisfactory estimate to be formed of the amount of fuel which it will consume. A small-built but a highly energetic people require, proportionately to their weight, considerably more food than an apathetic or indolent race, though, perhaps, it would be more correct to say that they require more of that kind of food which has been shown to be the ultimate source of energy. When, however, the ordinary habits of natives of this country are considered, it is clear that exceptional activity does not exercise a disturbing element in such a computation, for it is notorious that the disproportion in the amount of work which they perform is quite as great as, if not greater than the disproportion between the body-weight of a Hindoo and of an Englishman. There does not, therefore, seem to be any special objection in this instance to resorting to the basis for computing diets which is ordinarily adopted. The average weight of Englishmen may be said to range from 140 to 160 lbs. The weight of convicts, however, is probably below the mean of these figures, owing to the

¹ "We recommend," say the Committee, "that the articles of diet be the same to male prisoners with and those without hard labour; but that in the case of prisoners without hard labour, one-fifth of the total of articles served up in a solid form (or one-sixth of the whole) be deducted from the diet appropriate to the requirements arising when hard labour forms an integral part of the sentence."—*Report on Dietaries*, page 15.

great majority of them coming from the poorly-nourished classes, and it would perhaps be nearer the truth to accept 145 lbs. as the average. The weight of the majority of prisoners in India ranges from 90 to 120 lbs., the mean weight would consequently be 105 lbs., and this is generally accepted. Possibly, however, to adopt 110 lbs. instead of the mean would diminish the margin of error, though this is considered to be a somewhat high average, especially for Bengalis.

25. Assuming that, under the conditions cited, the weight of the body furnishes a fairly correct guide to the food-requirements of the individual, the proportions of the proximate aliments supplied to the English Local jail-labouring prisoner which should be supplied to a native of India under like circumstances are calculated in the following table:—

The two principal dietaries of labouring prisoners in English Local Prisons adapted to the requirements of prisoners of an average weight of 110 lbs.

ONE TO FOUR MONTHS.					OVER FOUR MONTHS.				
OUNCES DAILY.			GRAINS DAILY.		OUNCES DAILY.			GRAINS DAILY.	
Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
2.37	12.30	0.77	163	3,210	2.96	14.92	1.04	205	3,919

According to these scales Native labouring prisoners of less than four months' imprisonment would receive daily about $2\frac{1}{2}$ oz. of dry albuminoid or nitrogenous substances, a little over 12 $\frac{1}{2}$ oz. of farinaceous and saccharine food (carbo-hydrates) with about $\frac{3}{4}$ oz. of fat. The nitrogen contained in the diet is 163 grains and the carbon 3,210. Prisoners undergoing sentences of more than four months would receive nearly 3 oz. of albuminates, nearly 15 oz. of carbo-hydrates, and a little more than 1 oz. of fatty matter. These are equivalent to 205 grains of nitrogen and 3,948 grains of carbon. The proportion of the former to the latter is in both diets very nearly as 1 to 20. As already mentioned, the amount of nitrogenous food in the dietaries of labouring prisoners in local prisons is practically the same as is contained in the diets of convicts in penal jails, a maximum of 270 grains of nitrogen per diem in the former and of 263 grains in the latter. Seeing that this amount of nitrogen has been found sufficient for Europeans accustomed to partake more largely of nitrogenous food than the generality of Natives of this country, it may be concluded that at least the nitrogen-requirements of Native prisoners would be met by the adoption of such a standard as the foregoing.

CHAPTER IV.

THE NUTRITIVE VALUE OF THE DIET SCALES OF LABOURING PRISONERS AT PRESENT OR RECENTLY IN FORCE IN INDIAN JAILS.

26. The question as to how far the dietaries of labouring prisoners in India exceed or fall below this standard may now be considered. Tables will be found appended to this memorandum giving detailed statements of the composition of 151 hard-labour diets together with computations of their nutritive values. Nominally only 86 of these diets are in force at the present time; but in practice it is found that this number is considerably below the truth, even as regards labouring prisoners alone. This will become evident when the chief dietaries of the provinces come under review.)

27. Every endeavour has been made to secure the correctness of the computations of the nutritive values of these numerous diets, still it must be clearly understood that at best such estimates can only convey an approximation of their values,

The scales of dietary for labouring prisoners at present in force in India.

Computations of their nutritive value.

although the probabilities of these being over or understated are about equally balanced. In a country like India, where the number of cereals and pulses resorted to as staple articles of food are so numerous, the construction of a really uniform dietary is hardly possible,—certainly it is not possible to adopt one and the same kind of cereal and pulse for uniform and constant use.

28. Moreover, there are practical difficulties in deciding the equivalent values of these various food-stuffs, not only because the chemical analyses which have been made of many of them are not so complete as desirable, but there is also a want of definite knowledge as to their exact position as true aliments based on their adaptability for being assimilated. Unfortunately also there are some discrepancies in the results of the analyses of food grains and pulses which have been published. This makes it a matter of considerable difficulty to decide which of them should be taken as nearest to the truth. There is no doubt that the nutritive value of cereals and pulses presents considerable variations, not only from deterioration caused by attacks of insects, &c., but also according to the locality in which they are grown. Such discrepancies are common to the analyses of nearly all alimentary substances, and rice, which is said to constitute the chief food of one-third of the human race, may be cited as a notable example, especially as regards the important question of the proportion of nitrogenous matter contained in it.

29. The results, as regards the amount of albuminates in ten analyses of this cereal, which are now before me, vary from a minimum of 5 to a maximum of 11.7 per cent.

In estimating the value of rice as an article of food it must be borne in mind that it is considered to be the most digestible of all cereals, so that, although most other food grains yield a higher proportion of nitrogen in the chemist's laboratory, many of them are, nevertheless, far inferior as a source of nourishment owing to their indigestibility. Mayer, who analysed samples of rice at Madras, gives the proportion of dry albuminates in it as 9.0 per cent., and Dr. Lyon found that a sample which he analysed in Bombay contained over 8 per cent. In his valuable memorandum on foods,¹ however, Dr. Lyon adopts a percentage of 7.3 for computing the proportion of albuminates in this cereal, and I have followed his example in the accompanying jail dietary tables, not only because this proportion appears to give a fair estimate of the quantity contained in an average sample of good rice, but also because it is very desirable that a uniform standard should be adopted in calculating the nutritive values of the various food grains in India.

30. For similar reasons I have followed Dr. Lyon in adopting a common factor for computing the amount of carbon in Indian cereals and pulses. As the factor made use of somewhat understates the average results of analyses as to the carbon value of the majority of these food-stuffs, there is less hesitation felt in adopting it. The extreme differences either way, however, are not very material. A uniform value has likewise been accorded to the different kinds of pulses in regard to nitrogen also, as, in most instances, there is no information available as to the particular pulse made use of, the term pulse (or dhal) being the only definition given for the guidance of jail officials. A table of the factors adopted will be found appended to this memorandum, so that any one interested in the subject may be able to extend the computations on the same bases.

31. Several attempts have been made to reduce the jail diets of this country into something approaching to uniformity, but, as may be inferred from what has been said above as to the number at present in force, without much success. In 1864 a Special Indian Jail Committee was assembled, and, among other matters, this question came under consideration. Their recommendations under this heading were chiefly to the effect that animal food should form a portion of the dietary of all labouring and under-trial prisoners—animal food being understood to include fish, flesh, and milk, with its various products; and that particular attention should be paid to the cooking, as also to securing that the prisoners should receive the prescribed quantities. "No scale of

Dr. Mout's diet-scales approved by the Indian Jail Committee of 1864. Animal food a compulsory ingredient.

¹ Gazette of India, May 19, 1877.

dietary," they remark, "can have fair play unless the proper dressing and the honest distribution of rations are rigidly attended to."

32. Appended to the Committee's report is a separate report by a Sub-Committee, which contains the scales of diet which had been adopted by the Government of Bengal on the recommendation of Dr. Mouat in 1860. In each of these scales intended for labouring and under-trial prisoners animal food is included, and they appear to have received the general approval of the Committee. A detailed statement of these particular diets will be found in Table I of the appendix to this memorandum, together with a computation of the number of grains of nitrogen and carbon in each. The annexed table epitomises this information, and, further, reduces the aggregate of each day's food into its principal alimentary constituents—albuminates, carbo-hydrates, and fats:—

The chief proximate alimentary constituents of the dietaries for labouring and under-trial prisoners approved by the INDIAN JAIL COMMITTEE of 1864, together with their nutritive values in grains of Nitrogen and Carbon.

Nationalities.	Staple cereal of each diet.	(a) DIET WITH MEAT ON 4 DAYS A WEEK.					(b) DIET WITH FISH ON 4 DAYS A WEEK.				
		OUNCES.			GRAINS.		OUNCES.			GRAINS.	
		Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
Bengalis, Ooryas, &c.	I. Rice ...	2.97	18.98	1.11	205	4,763	3.01	19.03	0.98	208	4,736
Natives of Behar, &c.	II. Rice and wheat-flour...	3.63	19.11	1.24	251	4,986	3.66	19.17	1.11	253	4,959

33. These scales of diet appear to have been in force in Lower Bengal for about eighteen years. When compared with the scales of diet which have been adapted from the English Local Prison scales for men of an average weight of 110 lbs. (paragraph 25), it will be found that the amount of nitrogen in each day's food in the scale for Bengalis is precisely the same as is contained in the "adapted" maximum scale, 205 grains. The amount of carbon is greater by over 800 grains. The nitrogen is to the carbon as 1 to 23, and the daily diet contains a little over an ounce of fatty matter.

34. The diet scale for natives of Behar, and of Upper India generally, is a considerably more liberal one, owing to eight out of the twenty ounces of rice issued to Bengalis being replaced by ten ounces of wheat. If the maximum diet of English Local Prisons be accepted as a standard of sufficiency for men weighing 145 lbs., the Behari scale of diet above referred to should suffice for labouring prisoners of an average weight of 134 lbs.—a weight which comparatively few Beharis attain. The fish form of the dietary does not appear to call for special remark, but it may be mentioned that, as the proportion of albuminates is exceedingly variable in the different kinds of fish, it is not possible to express a definite opinion as to the precise value of this diet as compared with the meat form of it.

35. It is not clear to what extent this dietary has been taken as a basis for constructing scales for other provinces, but it is evident that (in 1877, when another Indian Jail Committee, or Conference as it was designated, was assembled at Calcutta, it was found that such diversities existed as to the quantity and nature of the food given in the jails of different provinces that it was deemed expedient to suggest the desirability of introducing a new scale of dietary, at least for labouring prisoners. The following resolutions were adopted¹:—

1.—That labouring prisoners sentenced for terms not exceeding three months should receive less than labouring prisoners sentenced for longer terms. Opinions were too conflicting to admit of our coming to any resolution as to the amount of reduction.

¹ Report of Indian Jail Conference, 1877, para. 26, page 142.

II.—That the following scale be laid down as a maximum for adult male prisoners sentenced to hard labour:—

- (1.) Grain 28 oz. (including 4 oz. pulse) in the form of sifted flour, or 26 oz. in the case of wheat, rice or barley.
- (2.) Green vegetables 6 oz.
- (3.) Fatty matter $\frac{1}{4}$ oz.
- (4.) Salt $\frac{1}{4}$ oz.
- (5.) Condiments $\frac{1}{4}$ oz., pepper from jail garden.
- (6.) Firewood 1 lb.

N. B.—Whenever it may be considered necessary, 4 oz. meat or fish, or an equivalent of milk, may be given instead of 4 oz. grain.

It is to be understood that reduction in one or more of the above articles does not warrant increase in any other.

III.—That meat is not a necessary article of diet, except in the case of Natives who are in the habit of eating it in free life (Dr. Henderson dissented from this resolution).

(36. A comparison of the scales of diet recommended by this Conference with those approved by the Committee of 1864 shows that the principal difference consists in the adoption of the principle that the issue of animal food should be left to the discretion of the local jail authorities instead of making it a compulsory article of the labouring and under-trial dietary. In doing this it would seem that the Conference was influenced by the satisfactory experience which the jails of the North-West Provinces and Oudh, and also of the Central Provinces, furnished of the dieting of all prisoners without the issue of any animal food whatever. In the face of such experience it would have been manifestly unwise to recommend that the jail authorities of any province should be compelled to adopt an expensive article of food when experience had shown that it was unnecessary in some provinces. In connection with this matter the following remarks by the Committee on English Local Prison dietaries may be appropriately cited:—

"There would be no difficulty in constructing a diet containing nutritive principles equal to those of meat out of oatmeal, peas, beans and fats, and this could be done at a third or fourth of the cost incurred by depending entirely upon the animal kingdom for these alimentary products."

37. With regard to the apportioning of the quantities of grains and pulses, noted under clause (1) of the second resolution of the Conference, some confusion is manifest in the text, possibly owing to the transposition of the figures dealing with the quantities of the sifted flour and grain which are suggested for the various dietaries. The superiority of finely-sifted flour over the grain in its crude condition is so obvious as to be manifest on a moment's reflection. It is therefore probable that the text of the resolution of the Conference should be read thus:—"26 ounces (including 4 oz. pulse) of sifted flour, and 28 oz. of grain in the case of wheat, rice or barley." This is the interpretation which has been adopted in calculating the nutritive values of some of the principal forms into which the dietary which they recommended may be resolved. It is, however, to be noted that in grouping wheat, rice, and barley under one and the same heading, the Conference did not sufficiently consider the great importance, from a dietetic point of view, of the varying proportion of albuminates which these cereals contain. Rice, for example, with its average of 7 or 8 per cent. of nitrogenous substance, and wheat-flour, with a percentage of 13, cannot be taken as interchangeable measure for measure in any scheme of dietary.

38. Some of the principal forms into which the dietary suggested may be resolved are given in Table II of the appendix, it being taken for granted that the phrase "sifted flour" (or *atta*) should be considered as implying not only wheaten flour, but also the flour of the other cereals which form staple articles of food all over India. The animal food form of the diet has been framed in this table on the scale approved by the Jail Committee of 1864, namely, at the rate of 1 lb. per week of meat, fish, or milk in its various forms, being issued according to the requirements of different nationalities. The Conference does not mention the quantity of milk which they would recommend

The principal forms into which the Conference dietary may be resolved.

in lieu of meat or fish, consequently no computation of the nutritive value of this form of the diet could be undertaken.

The following statement will serve as a summary of the details given in the larger table. The aggregate ingredients of the several diets are also reduced to their chief proximate alimentary principles:—

The chief Proximate Alimentary Constituents of the principal forms of the diet proposed for labouring prisoners by the INDIAN JAIL CONFERENCE of 1877.

STAPLE CEREAL OF EACH DIET.	(a) DIETS CONSISTING SOLELY OF VEGETABLE AND FATTY SUBSTANCES.						ANIMAL FOOD FORMS OF DIET—OPTIONAL.											
							(b) MEAT DIET.						(c) FISH DIET.					
	Ounces.			Grains.			Ounces.			Grains.			Ounces.			Grains.		
	Albumi- nates.	Carbo-hy- drates.	Fats.	Nitrogen.	Carbon.		Albumi- nates.	Carbo-hy- drates.	Fats.	Nitrogen.	Carbon.		Albumi- nates.	Carbo-hy- drates.	Fats.	Nitrogen.	Carbon.	
I.—Rice ...	2.85	21.66	0.51	197	5,047	3.03	19.89	.68	209	4,805	3.09	19.00	.56	213	4,778			
II.—Wheat-flour	4.03	18.05	.76	278	4,707	4.07	16.51	.90	281	4,465	4.12	16.89	.57	284	4,438			
III.—Barley meal	2.94	19.45	.71	203	4,707	3.10	17.74	.86	214	4,465	3.13	17.78	.74	216	4,438			
IV.—Jowar-flour	3.00	18.56	1.17	207	4,707	3.14	16.95	1.28	217	4,465	3.19	16.98	1.15	220	4,438			
V.—Bajra-flour	3.33	17.87	1.33	230	4,707	3.48	16.35	1.42	237	4,465	3.48	16.38	1.29	240	4,438			
VI.—Makki-flour	3.30	17.09	1.79	228	4,707	3.42	15.63	1.83	236	4,465	3.45	15.69	1.70	238	4,438			
VII.—Raggi-flour	3.13	17.95	1.42	216	4,707	3.26	16.43	1.49	225	4,465	3.30	16.45	1.37	228	4,438			
Daily average nu- tritive value	3.22	18.66	1.10	223	4,755	3.35	17.07	1.21	231	4,513	3.39	17.16	1.05	234	4,486			

39. The seven cereals which form the staple grain of each of these diet

The diet scales framed in accordance with the seven principal food grains of the country.

scales constitute the principal food grains of the three presidencies, though, for the most part, they are known under different names. The extent to which they are severally resorted to in jail dietaries varies considerably in the different provinces owing to the unequal extent in which they are cultivated. In the North-West Provinces four or five out of the eight are resorted to to a considerable extent, rice being adopted in only one jail; whereas in Lower Bengal rice and wheat alone are the cereals ordinarily made use of. These two cereals may be referred to, generally, as the grains which contain respectively the smallest and the highest proportion of nitrogenous material.

40. The diets in which these two grains form the staple cereals suggested

The nutritive value of the rice and the wheat forms of the Conference diet compared with the dietary approved by the Committee of 1864.

by the Conference of 1877 approximate very closely in nutritive value (as inferred from their chemical composition) to the diets approved by the Committee of 1864, except as regards the fatty matter, which in the Conference diet has been materially reduced. In some of the other diets in which the staple cereal is richer in fatty matter than either rice or wheat, the curtailment of the amount of fat or oil separately issued is not manifest, but, on the contrary, the aggregate fat in the diet is greater than in the 1864 dietaries. In the non-animal food form of the rice diet there is a decrease of 8 grains of nitrogen per diem, but an increase of 284 grains in the carbon owing to 24 ounces of rice being issued instead of 20. In the animal food forms, however, of this diet there is a slight increase both in the nitrogen and carbon,—an increase of 4 grains of the former and of 42 of the latter over the 1864 diet. If the wheat-flour and non-animal food form of the Conference diet be compared in a similar manner, it is found that the Conference diet is richer in nitrogen by 27 grains but poorer in carbon by 279 grains. The meat form of the Conference diet contains 30 grains more nitrogen than the 1864 diet, but owing to 4 oz. of meat being given in lieu of 4 oz. of grain the carbon-value of the scale is less by over 500 grains. On the whole, therefore, there is practically but little difference between the recommendations of the Committee of 1864 and of the Conference of 1877 so far as the ultimate chemical constituents of the dietaries are concerned; but a pound of animal food per week constituted part of the regular food approved by the former, whereas the

latter left the issue of this article to the discretion of the local authorities. The Conference, however, increased the rice ration by four ounces daily when meat was not given (or by two ounces should the interpretation of their intention adopted in this memorandum not prove to be correct), and the vegetables were increased by two ounces per diem.

41. The points of agreement and of contrast between the Conference scale and the dietary given in English Local Prisons will be clearly discerned in the following table, in which the chief proximate alimentary substances of the Conference diet and of the “adapted” Local Prison scale (paragraph 25) are placed side by side, with *plus* and *minus* signs to the figures below to indicate the extent of the variation in the Conference diet from the adapted standard:—

The Conference diet contrasted with the “adapted” English Local Prison scales.

It will be seen that the above table is divided into two parts. In the upper part four of the scales of the Conference dietary are contrasted with the “one to four months” of the adapted English scale. Out of twenty headings under which comparisons are instituted, in four instances only are *minus* signs, and these refer to the fats. In the lower part of the table the same Conference scales are contrasted with the “over four months” adapted English scales, and here *minus* signs are appended to the Conference diet figures under six out of the twenty headings. Four of these are again due to paucity of fatty matter, and the remaining two refer to the same aliment in one diet,—a small difference in favour of the adapted English scale as against the non-animal food form of the rice dietary. The difference is very trifling, about one-tenth of an ounce of albuminates, which is equivalent to 8 grains of nitrogen. On the other hand, the *plus* signs appended to the Conference scales indicate in many instances a considerably more liberal supply of food, both in the nitrogenous elements and also in the carbo-hydrates. The latter are given in some of the scales to a considerably larger extent than would be accorded were the adapted English scale followed, so that if there be any truth in modern physiological teaching as regards the respective parts taken by the proximate aliments in the development of force, the extra amount of starchy food recommended by the Conference should not be objected to.

DIETARIES OF LABOURING PRISONERS.	The Rice and the Wheat forms of the Indian Jail Conference Dietary contrasted with the “one to four months” and “over four months” Adapted Scales of English Local Prisons.						The Rice-Meat diet.						The Wheat-Meat diet.					
	Ounces.			Grains.			Ounces.			Grains.			Ounces.			Grains.		
	Albumi- nates.	Carbo-hy- drates.	Fats.	Nitrogen.	Carbon.		Albumi- nates.	Carbo-hy- drates.	Fats.	Nitrogen.	Carbon.		Albumi- nates.	Carbo-hy- drates.	Fats.	Nitrogen.	Carbon.	
	2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210	
The Adapted English Scale “1 to 4 months” ...	2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210	
Indian Conference Scales ...	2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210	
Difference [Conference Scales]	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	
The Adapted English Scale “over 4 months” ...	2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210	
Indian Conference Scales ...	2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210		2.37	12.30	0.77	163	3,210	
Difference [Conference Scales]	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	

42. As, however, in most provinces a mixture of several cereals is adopted in prison dietaries, it may be that the mean value of the seven scales given in the table (para. 38) may furnish a closer approximate to the amount of nutriment which the Conference intended that their dietary should contain than is to be inferred from the data in the foregoing paragraph. Calculated in this manner, the daily value of the vegetable form of diet in terms of nitrogen and carbon is 223 grains of the former and 4,755 of the latter, the nitrogen being to the carbon as 1 to 21. Such a diet should be sufficient, on the English Local Prison standard, for labouring prisoners of an average weight of about 119 lbs.

43. As regards the curtailment of the fatty matter, the Conference appears to have suggested a retrograde step; for, although the deficiency is not so marked in all the scales, still it would probably be the opinion of most authorities that the amount is decidedly insufficient in some of them, and barely sufficient in others.

44. It does not appear that the recommendations of this Conference regarding dietary have as yet been very extensively adopted. So far as I can learn, the only jails in which the dietary proposed was introduced were those of Lower Bengal and of the Hyderabad Assigned Districts. There are, however, comparatively few prisoners in the jails of the latter province, the total labouring population barely reaching a daily average of 1,000.

45. In March 1879 the dietary which had been in force in Lower Bengal from about 1860 was changed and the Bengali prisoners were placed on the diet proposed by the Conference. The diet of the natives of Behar and of Upper India generally, confined in Bengal jails, was also modified. A detailed statement of the altered dietaries will be found given in Table III of the Appendix, a summary of which is furnished in the following statement:—

The Chief PROXIMATE ALIMENTARY CONSTITUENTS of the DIETARIES adopted in LOWER BENGAL for Labouring Prisoners from March 1879 to March 1880, together with their Nutritive Values in grains of NITROGEN and CARBON.

Staple Cereal of each Diet.	(a) DIETS CONSISTING SOLELY OF VEGETABLE AND FATTY SUBSTANCES.						DIETS CONTAINING ANIMAL FOOD—OPTIONAL.											
	(b) MEAT THREE TIMES WEEKLY.			(c) FISH THREE TIMES WEEKLY.			(b) MEAT THREE TIMES WEEKLY.			(c) FISH THREE TIMES WEEKLY.			(b) MEAT THREE TIMES WEEKLY.			(c) FISH THREE TIMES WEEKLY.		
	Ounces.	Grains.		Ounces.	Grains.		Ounces.	Grains.		Ounces.	Grains.		Ounces.	Grains.		Ounces.	Grains.	
	Albumi- nates.	Carbohy- drates.	Fats.	Nitrogen.	Carbon.		Albumi- nates.	Carbohy- drates.	Fats.	Nitrogen.	Carbon.		Albumi- nates.	Carbohy- drates.	Fats.	Nitrogen.	Carbon.	
FOR BENGALIS:—																		
I. Rice	2.78	20.60	0.60	192	4,814		2.01	19.21	0.63	201	4,628		2.94	19.25	0.63	203	4,607	
FOR BEHARIS:—																		
I. Rice and Wheat flour	3.39	19.62	0.62	234	4,814	3.52	18.27	0.75	243	4,628	3.55	18.29	0.66	245	4,607			
II. Rice and Maize flour	3.26	20.61	1.24	225	5,171	3.39	19.18	1.37	234	4,985	3.42	19.18	1.28	236	4,964			
III. Rice and Millet flour	3.16	21.00	1.03	218	5,171	3.30	19.64	1.16	229	4,985	3.33	19.66	1.07	230	4,964			
Average value of diets for Beharis	3.27	20.37	0.96	226	5,052	3.40	19.32	1.09	235	4,866	3.43	19.04	1.00	237	4,845			

The animal food forms of the above scales were, however, not to be given as an ordinary prison dietary, except in those districts where the inhabitants are meat or fish-eaters, or when specially considered necessary. When meat or fish was given, 4 oz. was to be issued three times a week in lieu of an equal weight of grain. It is not clear to what extent advantage was taken of these clauses in the instructions issued to Superintendents of Jails, nor to what extent maize and millet were used in combination with rice in the Behari dietary. No mention is made of these two cereals in the diet scales proposed by Dr. Mouat—a mixture of wheat and rice being the only grains cited.

46. In order satisfactorily to understand the precise difference between the new dietary and the old, it will be advantageous to have the several ingredients of each dietary brought together, as well as a statement of the chief

The mean nutritive value of the purely vegetable forms of the Conference dietary should, on the Local Prison standard, suffice for prisoners weighing 119 to 120 lbs.

The curtailment of the fat by the Conference a disadvantage.

The proposals of the Conference as to diet have not been extensively adopted.

proximate principles into which each dietary may be resolved. This has been effected in the subjoined table; the rice and the rice-and-wheat dietaries for Bengalis and Beharis, which were in force from March 1879 to March 1880, being contrasted with those previously in force in Bengal. It will be observed that by the introduction of the new dietary the Bengali labouring prisoners who were not accustomed to eat meat and fish when in their homes did not obtain these articles when in jail, as they would have done under the former regulations. This implied an average daily loss to this class of prisoners of 2½ oz. of animal food. The fatty (or oily) matter was reduced all round by nearly half an ounce, but there was an increase of two ounces of rice and two ounces of vegetables per diem. This change expressed in terms of nitrogen and carbon implied a loss of 13 grains of the former (about the amount which would be contained in 1½ oz. of uncooked meat), and a gain of 51 grains of carbon. If the amount of nitrogenous food allowed in Local prisons in England be accepted as sufficient, then the amount in the above scale of diet for Bengalis should suffice for persons of an average weight of 103 lbs. which, judging from the jail returns, appears to be somewhat above the mean weight of Bengali prisoners. Those of the Bengali prisoners who were accustomed to animal food when in their homes, were entitled to rations which are computed to be sufficient for men weighing from 107 to 108 lbs.

The diets in force in BENGAL for labouring prisoners from March 1879 to March 1880, contrasted with the scales in force from 1860 to 1879.

Periods during which the diets were in force.	INGREDIENTS CONSTITUTING THE DIETS.								PROXIMATE ALIMENTS.			NUTRITIVE VALUE IN GRAINS OF	
	Rice.	Wheat.	Pulse.	Animal food.	Vegetable.	Oil.	Salt.	Condiments.	Albumi-nates.	Carbohy-drates.	Fats.	Nitrogen.	Carbon.
DIETS FOR BENGALIS:—	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	oz.	grs.	grs.
1860-79	20.5	...	4.1	2.3	4.10	0.68	0.51	0.50	2.97	18.98	1.11	205	4,703
1879-80*	22.5	...	4.1	...	6.15	0.25	0.51	0.25	2.78	20.6	0.50	192	4,814
Difference [1879-80]=	+2.0	...	...	-2.3	+2.05	-0.43	...	-0.25	-0.90	+1.58	+0.6	-13	+51
DIETS FOR BEHARIS, &c.—													
1860-79	12.3	10.2	3.7	2.31	4.10	0.68	0.60	0.5	3.63	19.11	1.24	251	4,906
1879-80†	12.3	10.2	4.1	...	6.15	0.25	0.51	0.25	3.39	19.62	0.62	234	4,914
Difference [1879-80]=	...	...	+0.4	-2.34	+2.05	-0.43	-0.09	-0.25	-0.24	+0.51	-0.62	-17	-172

* The rice form without animal food.

† The wheat-and-rice form without animal food.

47. In the rice-and-wheat dietary which was adopted for Beharis there was (to such of these prisoners as, owing to previous habits when at large, were not entitled to meat or fish when in jail) an average daily loss of 2.3 oz. of animal food, and of nearly half an ounce of fatty matter. The only increments to the dietary were 2 oz. of fresh vegetables and a little less than half an ounce of pulse per diem. This diet is by no means an inferior one, for the amount of nitrogenous material which is contained in it would, on the English Local Prison standard, suffice for labouring prisoners of an average weight of something over 125 lbs., and the proportion of carbonaceous food should suffice for men of about ten pounds heavier. Those of the Behari prisoners, whose habits when at large gave them a claim to be put on animal food when in jail, obtained rations which should suffice for men of an average weight of 130 lbs. There has been no curtailment as regards the amount of common salt issued—half an ounce per diem being the ordinary allowance in India, except in the North-Western Provinces where it is 100 grains, and in Madras [central jails] 1 oz.

48. During 1879 the health returns of the prisoners in Bengal, as in several other provinces, were exceptionally unfavourable; and as the period during which the new dietary was in force coincided with the period of maximum mortality, it was concluded that the high sickness and mortality in this particular province was attributable to insufficient food. In consequence of this inference extra rations were issued from March 1880 until July 1881, when completely new scales of diets were introduced with the sanction of the Local Government.

The Conference scales discontinued owing to the unfavourable character of health returns.

49. A detailed statement of the different forms of this dietary will be found in Table IV in the appendix, and their values in terms of nitrogen and carbon. A brief account of the dietary may, however, find a place here. The scales present much in common with those which were in force in this province between 1860 and 1879, but the animal food which constituted a part of the regular dietary of labouring prisoners (and was only issued to prisoners who were accustomed when at large to eat meat or fish when the "Conference diet" was in force) is now sanctioned for general issue at the discretion of the local jail officials. But when animal food is issued, 4 ounces of pulse (now increased to 6 ounces daily) is to be omitted. The amount of rice is increased by two ounces per diem, and the quantity of oil has been brought up to nearly the amount given in Dr. Mouat's scale. A new feature in the dietary is the issue of a morning meal consisting either of three ounces of soaked gram* or of four ounces of rice, bringing the daily quantity of rice up to 26 ounces when this grain is also adopted for the morning meal. The dietary is further enriched by the daily issue of an ounce of molasses and of half an ounce of tamarind.

The scales for Bengalis and Beharis are alike, with the exception that the staple cereal in the dietary of the latter consists of a mixture of rice and wheaten flour, or of a mixture of rice and maize.

The nutritive values of the diet scales for labouring prisoners adopted in LOWER BENGAL in July 1881.

Nationalities.	STAPLE CEREAL OF EACH DIET.	(a) DIETS CONSISTING SOLELY OF VEGETARIAN AND FATTY SUBSTANCES.						DIETS CONTAINING ANIMAL FOOD—OPTIONAL.											
		Ounces.			Grains.			(b) MEAT THREE TIMES WEEKLY.						(c) FISH THREE TIMES WEEKLY.					
		Albumi- nates.	Carbo- hydrates.	Fats.	Nitrogen.	Carbon.	Albumi- nates.	Carbo- hydrates.	Fats.	Nitrogen.	Carbon.	Albumi- nates.	Carbo- hydrates.	Fats.	Nitrogen.	Carbon.			
BENGALIS, &c.	I. Rice with morning meal of gram . .	4'07	23'43	0'88	281	5,802	3'82	22'19	1'04	264	5,560	3'85	22'23	0'92	268	5,533			
	II. Rice with morning meal of rice . . .	3'58	25'03	0'80	247	5,972	3'33	23'80	0'96	230	5,730	3'37	23'82	0'84	233	5,703			
	Mean =	3'82	24'23	0'84	264	5,887	3'57	22'99	1'00	247	5,645	3'61	23'02	0'88	249	5,618			
BEHARIS, &c.	I. Rice (1) and Wheat-flour . .	4'06	22'50	1'00	322	5,602	4'42	21'26	1'16	305	5,500	4'46	21'20	1'04	308	5,533			
	II. Ditto (2) . .	4'18	24'10	0'92	259	5,972	3'94	22'85	1'08	272	5,730	3'97	22'89	0'96	274	5,703			
	III. Rice (1) and Maize-flour . .	4'53	23'33	1'61	313	6,142	4'29	22'38	1'77	296	5,900	4'33	22'12	1'61	299	5,873			
	IV. Ditto (2) . .	4'05	24'40	1'53	250	6,312	3'79	23'70	1'69	262	6,070	3'84	23'73	1'56	265	6,043			
	Mean =	4'35	23'58	1'26	301	6,057	4'11	22'47	1'42	284	5,815	4'15	22'51	1'30	286	5,788			

(1) The morning meal consisting of gram.

(2) The morning meal consisting of rice.

50. The foregoing brief account will suffice to show that there is no lack of variety in this dietary, and the above table will serve to indicate the nutritive value of the several scales. Taken as a whole, the nutritive value of this dietary not only exceeds, under every heading, the "adapted" scale, which has been prepared from English Local Prison scales, but in most cases the amount of food actually issued is more than is given as

* Although the addition of this soaked gram (in some provinces parched gram is issued) materially increases the quantity of nitrogenous substances partaken by the prisoners, it is questionable whether more than a small proportion of the food contained in the gram is assimilated. Dr. Wm. Roberts, F.R.S., in his "Lumleian Lectures" (*Lancet*, 10th April 1880), says:—"In the raw state, starch is to a man an almost indigestible substance; but, when previously subjected to the operation of cooking, it is digested with great facility. Diastase has only a feeble action on the unbroken starch granule, even at the temperature of the body. In the lower animals, and in germinating seeds, the starch granule is probably attacked in the first instance by some other solvent, which penetrates its outer membranes, and thus enables the diastase to reach and act on the starchy matter contained within. By the aid of heat and moisture in the process of cooking the starch granule is much more effectively broken up. Its contents swell out enormously by imbibition of water, and the whole is converted, more or less completely, into a paste, or jelly, or mucilaginous gruel. It is in this gelatinous form exclusively, or almost exclusively, that starch is presented for digestion to man."

a maximum dietary in either the Convict or the Local Prisons in England and Wales. The daily value of the diets for Bengalis ranges from 230 to 281 grains of nitrogen, and the carbon from 5,533 to nearly 6,000 grains. The value of the diet scales for Beharis and natives of Upper India generally ranges from 262 to 322 grains of nitrogen per diem, and the carbon from 5,533 to 6,312 grains. The fatty matters in the several diets range from a little under an ounce to a little over an ounce and three quarters, the diets in which maize forms a part being richer in fats than the others.

Computed on the English standard these scales should suffice for men weighing considerably more than the average weight of natives of Bengal and of Behar—the Bengali scales for a body weight of from 123 to 150 lbs.; and the Behari scales for persons weighing from 140 to 172 lbs. It was stated above that the Bengali and Behari diet scales adopted by the Indian Jail Committee of 1864, and which were in force up to March 1879, should have sufficed for prisoners weighing respectively 110 and 134 lbs., so that the present scales are very materially more liberal than those formerly, and for so long a period, in force, and regarding which, judging from the evidence recorded by Mr. William Tallack (the Secretary of the Howard Association) before Lord Kimberley's Jail Commission of 1878-79, there seems to have existed a feeling abroad that even the old scales were far from being deterrent. Mr. Tallack, on being asked to state generally his views on the subject of penal discipline both at home and abroad,* remarked amongst other things:—

"I may also observe that through, as I believe, inadequate regard to this necessity of rendering prisons deterrent and disagreeable, certain foreign countries are experiencing very inconvenient results, especially America, where there is little doubt that the prisoners have, in many cases, if not generally, been actually pampered, and as a result, or as one result, we find that American prisons are almost everywhere overflowing. I was talking yesterday to a friend of mine who has been a missionary of the Church of England in India for many years, and he told me that, with reference to the Bengal prisons, they are generally called by the natives 'our father-in-law's house,' by which they mean that they have a comfortable resource to fall back upon in case of need, and he further gave me an instance of the working of this feeling; he mentioned the case of one Bengal prisoner who, when his term of imprisonment was up, handed his brass water-jug to a comrade, saying 'take care of this for me until I return; I shall soon be back again to claim it.'"

51. Rice forms the staple cereal of the jail dietary in the adjoining province of Assam, as also in British Burma; and as the natives of these provinces present many features as to physique, habits, &c., in common with Bengalis, it will be convenient for purposes of comparison to consider the diet scales in force in these provinces in connection with those of Bengal. Full details regarding these two dietaries will be found in Tables V and XIII of the appendix.

52. In Assam, as in Bengal, two classes of prisoners are provided for,—Assamese and Bengalis forming one class, and Beharis and natives of Upper India generally the other. A summary of the nutritive value of these two dietaries is given below:—

Nutritive value of the diets in force for labouring prisoners in ASSAM.

NATIONALITIES.	Staple cereal of each diet.	OUNCES.			GRAINS.	
		Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
Bengalis and Assamese	Rice	3'24	18'65	1'00	223	4,721
Beharis, Punjabis, &c.	Rice and Wheat.	3'96	18'95	1'13	273	4,994

It will be perceived that they are virtually the same as those which were in force in Bengal from 1860 to 1879, except that fish (or an equivalent in milk) is given daily instead of four times a week. The Assamese and Bengali prisoners receive the equivalent of 223 grains of nitrogen, and the Beharis 273. An ounce of fat is contained in the daily ration of the former, and a little over an ounce in that of the latter. The scales furnish a more liberal dietary than is laid down in the "adapted" English Prison scale; indeed, the Assam scale for

* *Minutes of Evidence*, vol. 11, 1879, Question 2656.

Beharis yields 3 grains of nitrogen more than is given as a maximum dietary to prisoners in local prisons in England, and 10 grains more than the maximum allowed to men undergoing penal servitude in English Convict Prisons; so that the remarks made by the Chief Commissioner of Assam in his review of the Jail Report for 1880 that "the scale of the province does not err on the side of severity," is more than supported by the evidence which the history of English Prison dietaries affords.

53. That the scale of diet which has been computed for men of an average weight of 110 lbs. on the basis of the English Local Prison scales (para. 25) is sufficient to maintain prisoners in a state of good health and is compatible with the exaction of hard labour, is, at least so far as the nitrogenous elements are concerned, amply supported by the facts furnished by the history of jails in Burma. Formerly the mortality in these jails was very high. In 1879 and again in 1880 the death-rate was lower than in any province under the Government of India. In the Local Jail Report for 1880, it is stated that, judged by the death-rate, the health of the convicts has been better than it has ever been before—23·4 per mille, which is the lowest on record:—

The nutritive value of the dietary for labouring prisoners in BRITISH BURMA and of the ADAPTED English Local Prison scales.

DIETARY.	UNDER 3 MONTHS.						OVER 3 MONTHS					
	OUNCES.			GRAINS.			OUNCES.			GRAINS.		
	Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.		Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	
Rice and meat	1·82	16·43	0·83	126	3,902		2·52	19·84	1·05	174	4,803	
Rice and fish	1·87	16·44	0·72	129	3,879		2·59	19·90	0·83	179	4,757	
<i>Mean</i>	<i>1·84</i>	<i>16·43</i>	<i>0·77</i>	<i>127</i>	<i>3,890</i>		<i>2·55</i>	<i>19·87</i>	<i>0·94</i>	<i>176</i>	<i>4,780</i>	
Adapted English Local Prison scales	2·37	12·43	0·77	163	3,210		2·96	14·92	1·04	205	3,948	

As already mentioned, a detailed statement of the dietary will be found in Table XIII. The above table gives the chief proximate alimentary principles into which the aggregate of the ingredients of each scale of diet may be resolved. The mean of the two dietaries has been computed, and the nutritive values of the adapted English Local Prison scales have been placed below for readiness of comparison. It will be observed that the Burma diet scales, on which the prisoners have been maintained in such excellent health, are, under all headings (except those giving the value of the carbonaceous food) lower, and in most instances considerably lower, than the "adapted" English scales. And yet out of 6,971 Burmese prisoners who were weighed during 1880, 5,206 were found to have gained in weight.

54. These results, moreover, speak strongly in support of the value of rice as an article of food. In estimating the food-requirements of natives of this country facts of the above character are of the greatest importance; they demonstrate beyond all question that the amount of nitrogenous food required, when the rations are properly cooked and their issue carefully supervised, is considerably less than is commonly supposed. In order to make sure that no mistake or misprint had occurred in the published dietary statement of the province, the Inspector General of Jails was asked if the diet was correctly given; and his reply was that, as regards the labouring diet scales, the published statement was perfectly correct. As regards the larger proportion of carbohydrates consumed, this experience will be accepted with satisfaction by those physiologists who, during recent years, have strenuously advocated the importance of a considerable preponderance of starchy and saccharine food as a means of nourishment for those who have to undertake mechanical labour. Though

nominal sugar does not constitute an ingredient of the Burmese prison dietary, yet, as is well known, the transformation of starchy into saccharine matter is one of the first steps in the digestive process.

55. As an illustrative of the caution which should be observed in attributing exceptional sickness and mortality amongst prisoners to insufficient food alone, the experience furnished by the Punjab jails may be appropriately cited. As will be found by a reference to Table IX in the appendix, the dietary in force for labouring prisoners in that province is far from illiberal; the lowest of the ordinary diet scales contains 301 grains of nitrogen and over 5,000 grains of carbon; and in two of the largest jails, where the mortality has been highest, special scales were sanctioned, the prisoners in the Rawal Pindi jail receiving a diet containing 342 grains of nitrogen and 5,070 grains of carbon, whilst the prisoners of the Rupar jail received food containing 500 grains of nitrogen and 6,771 grains of carbon.

Nutritive value of the several dietaries for labouring prisoners in the PUNJAB jails.

Alimentary principles.	ORDINARY DIETS.				MODIFICATIONS OF THE ORDINARY DIETS.						SPECIAL DIETS.	
	(a) Wheat, Barley and Mukka.	(b) Wheat, Barley and Bajra.	(c) Wheat, Jowar and Mukka.	(d) Wheat, Jowar and Bajra.	(e) Wheat, Barley and Gram.	(f) Wheat, Barley, Gram and Mukka.	(g) Wheat, Barley and Gram.	(h) Wheat, Gram and Mukka.	(i) Wheat and Barley; Wheat and Gram.	(j) Wheat, Barley and Gram; Wheat and Gram.	(a) Rawal Pindi jail.	(b) Rupar jail.
Ounces of Albuminates	4·36	4·38	4·38	4·40	4·65	4·67	4·70	4·91	5·01	5·32	4·96	7·24
„ Carbo-hydrates	19·98	20·34	19·72	19·96	20·46	19·56	19·42	18·25	18·51	18·07	18·67	23·76
„ Fats	1·38	1·17	1·52	1·31	0·92	1·41	0·91	1·42	0·93	0·97	0·83	1·25
Grains of Nitrogen	301	302	302	303	321	322	324	339	346	367	342	500
„ Carbon	5,374	5,374	5,374	5,374	5,374	5,374	5,180	5,180	5,083	5,083	5,070	6,771

56. When the data given in the above table are compared with those given under similar headings in the tables of dietaries of labouring prisoners in the Local and Convict jails of England, it will be found that the prisoners in the Punjab receive considerably more food than they do in England, and yet the mortality in the jails of that province during 1878 and 1879 was, almost unprecedentedly, high. In 1879 the death-rate was 140 per mille. The diet scales at present in general use were introduced in June 1878. Those in force previous to this date sanctioned the issue of 24 oz. of meat per week. In the new diet the meat was replaced by a small extra allowance of pulse, and by a weekly issue of 28 ounces of parched gram. The proportion of nitrogen in gram is so high that its substitution for animal food, instead of reducing the albuminates of the diet, actually increased its value in a chemical sense; for whereas the former diet contained 264 grains of nitrogen and 4,975 of carbon, the present diet, taking the average of the ordinary scale in use, contains 302 grains of nitrogen and 5,374 grains of carbon.* The fatty matter in the diet averages about 1½ ounce.

57. The mortality in the Punjab jails had commenced to be exceptionally severe before the new dietary was introduced; it reached its maximum of 140 per mille in 1879, and in 1880 it fell to 78·8—the fluctuations seeming to occur quite irrespective of the nature of the dietary. No appreciable result followed the issue of specially liberal scales of diet to the prisoners of the Rawal Pindi and Rupar jails. The death-rate in the latter was 216 per mille in 1878, 283 in 1879, and 104 in 1880, the decline in the mortality being coincident with its decline in most other jails.

As if to give the recent dietary-experience amongst prisoners in this province almost the character of a specially devised experiment, the new scale

* Vide Foot-note to para. 54.

had scarcely been adopted in the large jail at Umballa when the old scale was reverted to and retained until the middle of 1880. Nevertheless this jail became one of the most unhealthy in the province. In 1878 the death-rate was 235 per 1,000 of its average daily strength, and in 1879 it reached 332. In 1880, however, the mortality fell to 81·3 per mille, as it has already been stated to have done in most other jails in the province.

58. The diet scales in force in the North-Western Provinces and Oudh jails are given in detail in Table VI of the appendix, and a summary of their nutritive values is given in the subjoined statement:—

The nutritive values of the several diet scales for labouring prisoners in force in the NORTH-WESTERN PROVINCES and OUDH jails; and the average daily value contrasted with the English Local Prison scales.

Staple Cereals of each Diet.	3 MONTHS AND UNDER.					OVER 3 MONTHS.				
	OUNCES.			GRAINS.		OUNCES.			GRAINS.	
	Albumi- nates.	Carbo- hydrate.	Fats.	Nitrogen.	Carbon.	Albumi- nates.	Carbo- hydrate.	Fats.	Nitrogen.	Carbon.
I.—Wheat	3·37	16·90	·56	233	4,261	4·69	19·66	·63	324	5,128
II.—Bajra	2·65	16·71	1·15	183	4,261	3·97	19·45	1·23	274	5,128
III.—Maize	2·62	15·89	1·63	181	4,261	3·94	18·63	1·71	272	5,128
IV.—Jowar	2·26	17·46	·99	159	4,261	3·62	20·15	1·07	250	5,128
V.—Wheat and Barley	2·81	17·62	·53	194	4,261	4·13	20·36	·61	285	5,128
VI.—Bajra and Maize	2·63	16·31	1·39	182	4,261	3·95	19·04	1·47	273	5,128
VII.—Jowar and Bajra	2·47	17·07	1·07	171	4,261	3·79	19·81	1·15	262	5,128
VIII.—Jowar and Maize	2·46	16·66	1·31	170	4,261	3·78	19·39	1·39	261	5,128
<i>Average nutritive value</i>	2·66	16·83	1·08	184	4,261	3·98	19·56	1·16	275	5,128
English Local Prison Scale	3·13	16·22	1·02	215	4,232	3·91	19·67	1·37	270	5,204
<i>Adapted</i> ditto	2·37	12·30	0·77	163	3,210	2·96	14·92	1·04	205	3,948

As will be seen from the above table, four cereals constitute the principal ingredient in these diets, wheat being considerably the best, and jowar the worst, in point of nutritive value. Animal food (except the fatty matter specially issued) forms no part of the diet scales of these provinces, so that we are here furnished with the experience of feeding an average daily population of some 30,000 prisoners on a strictly vegetable diet. The inhabitants of these provinces are on the average taller and heavier men than those of Lower Bengal, Assam, and Burma; but the average weight of prisoners of even the North-Western Provinces and of Oudh is below the standard of 110 lbs., which was adopted in a previous paragraph (para. 25) in computing the proportion of the English Local Prison dietary which should suffice for native prisoners in this country. It will be observed that the adapted English scales, which for facility of comparison have been inserted in the table, are, under every heading, considerably smaller than the average nutritive value of the North-Western Provinces' dietaries; the latter may, indeed, be said to be practically identical with the actual English scales. So that if weight have any influence on the food requirements of the body, it may be assumed that the labouring prisoners in these provinces are, weight for weight, considerably better fed than labouring prisoners in England.

59. In a former paragraph it was mentioned that, although the several rations actually issued to prisoners in these provinces during 1880, recognised labouring diet scales in India did not exceed 86 or so, nevertheless that the scales actually adopted in practice greatly exceeded this number, the nutritive values of 151

being computed in the tables attached to this memorandum. This number would doubtless require to be materially augmented were information generally available as to the kind and quantity of food grains actually issued to the prisoners in the several jails. A statement of this kind has been kindly furnished by Dr. Walker, the Inspector General of Jails for the North-Western Provinces and Oudh, and from this statement Tables VII and VIII in the appendix have been prepared. Six of the larger district and six of central jails were taken at random. The aggregate of the amount of the several cereals issued in each jail during 1880 was divided by 366 so as to obtain a daily average based on a whole year's expenditure. The amount of the nitrogen and carbon in the several ingredients was then computed, as also the fatty matter in the aggregate of each diet. An epitome of the result will be found in the subjoined statement:—

A Summary of Tables VII and VIII giving the daily nutritive values of the diets which were actually issued to labouring prisoners during 1880, in six District and in six Central jails of the North-Western Provinces and Oudh.

DISTRICT JAILS.							CENTRAL JAILS.						
JAILS.	ONE TO THREE MONTHS.			OVER THREE MONTHS.			JAILS.	ONE TO THREE MONTHS.			OVER THREE MONTHS.		
	Nitrogen.	Carbon.	Fats.	Nitrogen.	Carbon.	Fats.		Nitrogen.	Carbon.	Fats.	Nitrogen.	Carbon.	Fats.
	grs.	grs.	oz.	grs.	grs.	oz.		grs.	grs.	oz.	grs.	grs.	oz.
Allahabad	242	4,278	·59	333	5,145	·67	Allahabad	313	4,272	·76	404	5,139	·84
Bareilly	214	4,261	·66	305	5,128	·74	Bareilly	226	4,261	·70	318	5,128	·78
Benares	182	4,431	·63	273	5,208	·70	Benares	187	4,414	·69	278	5,281	·77
Meerut	280	4,261	·65	371	5,128	·73	Meerut	273	4,261	·63	364	5,128	·71
Moradabad	193	4,261	·63	284	5,128	·61	Agra	220	4,346	·74	311	5,213	·82
Rai Bareilly	188	4,261	·65	279	5,128	·73	Lucknow	276	4,788	·81	367	5,655	·89
Average =	216	4,292	·62	307	5,159	·69	Average =	249	4,390	·72	340	5,257	·80

60. The weight of the several cereals issued was in most instances strictly in accordance with the regulations in force, but, as will be seen from the above epitome of Tables VII and VIII, the nutritive value of the aggregate of the diets in the several jails ranges, as regards the albuminates for instance, in the "one to three months" scales of the district jails, from 182 grains of nitrogen at Benares to 280 at Meerut; and in the "over three months" scales, from 273 grains to 371 respectively in the same prisons. In the central jails the nitrogen contents of the average diet ranged in the "one to three months" class, from 187 grains at Benares to 313 at Allahabad; and in the "over three months," from 278 at Benares to 404 at Allahabad. The dietary of both the Benares jails is therefore lower than that of the other jails. This is chiefly owing to the smaller proportion of wheat and gram as compared with other grains, which was issued to the prisoners at Benares during 1880. Judged by the mortuary returns, however, the scales appear to have been sufficient; for, whereas the death-rate amongst the prisoners in those district and central jails which received the most liberal diets was, at Meerut, 29·2 and 34·0 per mille, at Allahabad 26·3 and 43·4 respectively; the death-rate in the district and central jails of Benares was only 18·0 and 9·7 per 1,000. It only remains to be noted that particular attention is paid in these provinces to providing the prisoners with fresh vegetables and with such sub-acid fruits as may be procurable, with a view to counteracting any tendencies to scurvy.

61. The dietary of prisoners in the jails of the Central Provinces was modified in 1877 chiefly by the reduction of the amount of grain issued to the extent of about 4 ounces. Table X gives the former as well as the present or reduced scale;

Nutritive value of the former or standard scale, and of the present or reduced scale, of dietary for labouring prisoners in the CENTRAL PROVINCES.

64. It is quite clear that the scales of diet in force previous to the introduction of what was termed the Conference scale were exceedingly high; even the "under 3 months" convicts received a considerably more liberal supply of food than is contained in the maximum scale sanctioned for either penal or other convicts in England. The Conference scale which was devised was by no means deficient in nutriment; taking the average of the wheat and jowar-diet days, when compared with the scales of the English Local Prisons, it will be found that the difference is not great.

DIETS.	UNDER 3 MONTHS.					OVER 3 MONTHS.				
	Albuminates.	Carbo. hydrates.	Fats.	Nitrogen.	Carbon.	Albuminates.	Carbo. hydrates.	Fats.	Nitrogen.	Carbon.
English Local Prison . . .	3.13	16.22	1.02	215	4.232	3.91	19.67	1.37	270	5.20
Berar Conference scale . . .	3.08	16.08	0.91	213	4.155	3.53	19.15	1.04	244	4.90
Difference =	0.05	0.14	0.11	2	77	0.38	0.52	0.33	26	30

62. The reduced scale of the "six months and under" class of prisoners contains 29 grains less of nitrogen and 697 grains less of carbon; and the scale of the "over six months" class, 30 grains of nitrogen and nearly 700 of carbon less than the old standard scale. But even this reduced scale is, under almost every heading, more liberal than the maximum diet supplied to prisoners in either Convict or Local prisons in England. The "under six months" reduced scale of the Central Provinces contains 60 grains of nitrogen more than are supplied to labouring prisoners of less than four months' imprisonment in English Local prisons, and 5 grains more than is contained in the maximum scale allowed in England. The carbon in the reduced scale of the "under 6 months" class in the Central Provinces exceeds the amount in the English scale by 555 grains, but the scale for the "over 6 months" class contains 255 grains less than the maximum English scale. This is the only heading under which the Central Provinces' "reduced" scale does not, and generally to a considerable extent, exceed the English dietary in nutritive value. Weight for weight, therefore, a Central Provinces' prisoner even on the "reduced" scale receives much more food than any hard-labouring prisoner in England.

dicted.

65. This Conference scale was introduced into the several jails at various dates towards the end of 1879, but was set aside owing, apparently, to an outbreak of "scurvy" during the later months of 1880 in two out of the six jails—at Amraoti and Akola. The diet had been adopted at the Amraoti Jail in August 1879, and the first admission into hospital from "scurvy" took place in August 1880, an interval of just one year. At Akola the diet was introduced on the 1st October 1879; 1 case of scurvy was admitted in June (just 9 months after the new diet had been in force); 2 in August, 10 in September, 11 in October, 15 in November, and 4 in December. During 1878, when the former exceptionally liberal diet was in force, 106 admissions from scurvy were returned from this same jail. It does not therefore seem probable that the scurvy outbreak of 1880 can with any show of reason be attributed to deficient food. It may be mentioned that the disease frequently returned as "scurvy" in this country is by no means uncommonly met with in well-to-do and well-fed people during exceptionally severe malarious seasons. Like most other diseases, its character is aggravated from insufficient or improper food, but very severe forms of it have often been noticed when no question as to insufficient food could be entertained.

66. In March 1881 another scale of diet was introduced, the ingredients in which and their approximate nutritive value will be found given in the table above referred to (para. 63). This diet scale contains 10 grains of nitrogen and 12½ of carbon more than the maximum diet given to labouring prisoners in England.

63. As has already been stated a scale of dietary based on the recommendations of the Indian Jail Conference was adopted in the jails of the Hyderabad Assigned Districts. The staple cereal in this new diet consisted of a mixture of wheat and jowar, as was also the case in the diet which it replaced. In the new scale, however, the proportions in which the cereals were issued were, to a certain extent, reversed, the weekly amount of wheat being reduced from 79 ounces to 66, and the jowar increased from 66 to 96 ounces. The fatty matter issued was also reduced. The other changes, which are of a minor character, can be ascertained by referring to Table XI in the appendix, where full details are given. This table is epitomised in the statement given below, which also gives the proximate aliments into which the food-stuffs of the diets may be resolved:—

67. As will be seen from Table XV in the appendix, the jail in the city of Bombay has a dietary differing somewhat from the dietaries in force in the other jails of the Presidency. The staple cereals of the former diet consist of a mixture of wheat and rice, whereas in the mofussil jails the staple cereal consists either of wheat, bajra, or jowar. The subjoined statement gives a summary of the nutritive values of the several scales, from which it will be seen that the labouring prisoners in the Bombay City Jail receive a dietary containing 299 grains of nitrogen and 4,011 of carbon. It is a purely vegetable diet, but animal food may be given if ordered by the Medical Officer.

The nutritive values of the former and of the present scales of diet for labouring prisoners in the HYDERABAD ASSIGNED DISTRICTS.

DIETS IN FORCE TILL TOWARDS THE END OF 1879.												DIETS IN FORCE FROM END OF 1879 TILL MARCH 1891.												PRESENT MAXIMUM DIET.					
UNDER 3 MONTHS.						OVER 3 MONTHS.						UNDER 3 MONTHS.						OVER 3 MONTHS.											
Ounces.			Grains.			Ounces.			Grains.			Ounces.			Grains.			Ounces.			Grains.								
Albumin.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
5.11	20.51	1.19	353	5,588	5.16	21.22	1.20	356	5,798	3.08	16.08	0.91	213	4,158	3.83	19.15	1.04	241	4,902	4.05	26.22	1.32	280	6,336					

Nutritive value of diets for labouring prisoners of the BOMBAY City Jail, and of other Jails in the Presidency.

JAILS.	Staple cereal of each diet.	ON INTRA-MURAL OR MEDIUM LABOUR.										ON <i>Bona-fide</i> HARD LABOUR.									
		WITH MEAT.					WITHOUT MEAT.					WITH MEAT.					WITHOUT MEAT.				
		Ounces.			Grains.		Ounces.			Grains.		Ounces.			Grains.		Ounces.			Grains.	
		Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
Bombay City Jail*	Wheat...	...	...	...	...	...	3'03	15'57	0'81	209	4,011	...	...	...	...	...	3'03	15'57	0'81	209	4,011
Other jails in the Presidency...	Wheat...	3'33	14'54	'99	230	3,943	3'77	17'69	0'72	260	4,367	4'03	17'58	1'91	278	5,014	4'58	20'29	1'56	316	5,544
	Bajra...	2'89	14'36	1'52	186	3,943	3'13	16'53	1'24	216	4,367	3'36	17'38	2'54	225	5,014	3'81	20'07	2'19	263	5,544
	Jowar...	2'39	14'90	1'37	165	3,943	2'88	17'13	1'10	195	4,367	2'90	16'12	2'37	200	5,014	3'46	20'31	2'02	238	5,544
AVERAGE NUTRITIVE VALUE		2'88	14'63	1'29	194	3,943	3'24	17'12	1'02	224	4,367	3'39	17'69	2'27	234	5,014	3'95	20'39	1'92	272	5,544

* No distinction made between medium and hard labour.

In the other jails of the Presidency a distinction is made between medium and hard labour, and the diet scales adapted accordingly; moreover, animal food appears to be issued in lieu of pulse at the discretion of the local officials. The substitution of animal food for pulse, however, reduces the value of the diet considerably, when the value is judged by the proportion of nitrogenous and carbonaceous substances which it contains. The wheat-diet scale, for example, with pulse contains 260 grains of nitrogen and 4,367 grains of carbon; whereas the same scale with meat in lieu of pulse, contains only 230 grains of nitrogen and 3,943 of carbon—a decrease of 30 grains of nitrogen and of 424 of carbon. It will be noted that considerable difference exists in the nutritive value of the several diets according as wheat or jowar or bajra forms the staple ingredient; but as it is probable that these cereals are, to a greater or less extent, issued alternately in most jails, the mean of the dietaries may, possibly, serve to convey a more accurate estimate of the nutritive value of the food actually issued.

68. As the Bombay prison dietaries are not issued according to length of imprisonment (*i. e.*, to prisoners of under or over three or four months), it is not practicable to institute close comparisons between the scales in force here and those in force in England; but, comparing the maximum scale of the English Local Prisons with the maximum of the average of the Bombay Mofussil jail scales, the results are as follows:—

MAXIMUM PRISON DIETARIES.		Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
		oz.	oz.	oz.	grs.	grs.
Bombay Presidency	...	3'95	20'39	1'92	272	5,544
Local Prisons, England	...	3'91	19'67	1'37	270	5,204
DIFFERENCE =		0'04	0'72	0'55	2	340

It will be seen that the difference is in favour of the Bombay diet under every heading, so that, man for man, and not merely weight for weight, the hard-labouring native prisoners in Bombay receive more food than hard-labouring prisoners in England. The ordinary medium-labour scale in Bombay is higher than the "adapted" maximum English Local Prison scale (para. 25).

69. In the Madras Presidency the numerous diet scales which were formerly in force for labouring prisoners have been reduced to two classes,—the dietaries for central jails, and those for the district and subsidiary jails. In both classes the staple cereals are ragi, bajra (cumboo), and jowar (cholum); any or all to be adopted at the discretion of the local officials; but 24 ounces of ragi or jowar is to be considered as equivalent to 25 ounces of bajra. In the central jails $1\frac{1}{2}$ lb. of rice is issued weekly. Fifteen ounces of animal food is also issued weekly in these jails, as also to convicts of 'over four months' in the district

jails. The other ingredients entering into the diets will be found tabulated in Table XVI, and their values computed in terms of nitrogen and carbon.

It is probable that two, if not all three, cereals are resorted to in most jails; hence, in estimating the value of the dietary of the labouring prisoners of the Presidency, it will be advisable to take the mean of the three scales for each of the two classes of diets. The subjoined statement gives the nutritive value of each scale for the central and for the district jails separately; as also the daily average value as aliments of the combined scales of each class of prisons.

Nutritive value of the diets in force for labouring prisoners in the MADRAS Presidency.

STAPLE CEREAL OF EACH DIET.	CENTRAL JAILS.										DISTRICT AND SUBSIDIARY JAILS.									
	Ounces.					Grains.					CONVICTS OF FROM ONE TO FOUR MONTHS.					CONVICTS OF MORE THAN FOUR MONTHS.				
	Ounces.			Grains.		Ounces.			Grains.		Ounces.			Grains.		Ounces.			Grains.	
	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
Ragi	3'36	18'67	1'89	232	5,064	2'91	15'93	1'62	201	4,333	3'34	18'09	1'99	231	4,980	3'34	18'09	1'99	231	4,980
Cholum . . .	3'23	19'24	1'66	223	5,064	2'78	16'49	1'40	192	4,333	3'18	18'75	1'73	220	4,980	3'18	18'75	1'73	220	4,980
Cumboo . . .	3'62	19'20	1'84	259	5,210	3'17	16'44	1'58	219	4,478	3'65	18'68	1'94	252	5,150	3'65	18'68	1'94	252	5,150
AVERAGE NUTRITIVE VALUE =	3'40	19'04	1'80	235	5,113	2'95	16'29	1'53	204	4,381	3'39	18'52	1'89	234	5,037	3'39	18'52	1'89	234	5,037

It will be observed that these diets are richer in fatty substances than jail dietaries ordinarily are, each scale containing from $1\frac{1}{2}$ to 2 ounces. The central jail labouring diet contains an average of 235 grains of nitrogen and 5,113 of carbon. The "over four months'" diet of the district jails is almost of the same value; and the "under four months'" scale contains an average of 204 grains of nitrogen and 4,381 of carbon.

Taken altogether, these dietaries are considerably higher than the standard of the adapted English Local Prison scale, but the average value of the maximum Madras scale contains 35 grains less nitrogen and 91 less carbon than the maximum actual Local Prison diet. It will be recollected that the maximum Bombay scale exceeded the maximum of English Local Prisons.

70. The dietaries in force in the jails of Mysore and Coorg do not call for special remark. The ingredients entering into the labouring diet scales will be found cited in Table XII of the appendix, together with nutritive values in terms of nitrogen and carbon; and a summary of this statement is given below. From this it will be seen, that the nitrogen contained in the three scales ranges from 211 to 245 grains, and is to the carbon about as 1 to 21 or 22. The fatty matter ranges from about $1\frac{1}{2}$ to $1\frac{1}{2}$ oz.

The nutritive value of the diets for labouring prisoners in the Jails of MYSORE and COORG.

STAPLE CEREAL OF EACH DIET.	6 MONTHS AND UNDER.					OVER 6 MONTHS AND UP TO 2 YEARS.					OVER 2 YEARS.				
	Ounces.			Grains.		Ounces.			Grains.		Ounces.			Grains.	
	Ounces.			Grains.		Ounces.			Grains.		Ounces.			Grains.	
	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albumin-ates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
Rice and Ragi .	3'06	18'91	1'27	211	4,824	3'36	19'48	5'51	232	5,088	3'55	20'56	1'61	245	5,376

71. Table XIV in the appendix details the ingredients, and gives the nutritive value of the dietaries in force for Third-class and Chain-gang convicts at the penal settlement in the Andaman Islands. The ordinary dietary consists of two scales: in one rice forms the staple cereal, and wheat in the other. Fish forms

a part of each diet to the extent of $1\frac{1}{4}$ lb. per week. When fish is not procurable, which was the case on 100 days during 1880, an extra allowance of rice is issued in lieu of it. There are consequently four scales of diet in force.

The subjoined statement gives the nutritive value of each of these scales.

The nutritive value of the dietaries for Third-class and Chain-gang convicts at the ANDAMAN ISLANDS Penal Settlement.

STAPLE CEREAL OF EACH DIET.	ORDINARY DIETS.					DIETS WHEN FISH IS NOT PROCURABLE.				
	OUNCES.			GRAINS.		OUNCES.			GRAINS.	
	Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.	Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
Rice ...	3.63	23.62	1.39	251	5,915	3.52	27.43	1.35	243	6,615
Wheat ...	4.55	18.64	1.60	314	5,235	4.43	22.46	1.56	306	5,935
Average nutritive value ... =	4.09	21.13	1.49	282	5,575	3.97	24.94	1.45	274	6,275
Maximum diet of convicts in English Convict Prisons ...	3.82	18.53	1.52	263	5,013	3.82	18.53	1.52	263	5,013

The convicts are permitted to select either the rice or the wheat form as the rations are passed round. The average daily nutritive value of the two scales of the ordinary dietary is equivalent to 282 grains of nitrogen and 5,575 grains of carbon, so that it is better than the maximum diet issued to convicts in England by 19 grains of the former and 562 of the latter; or, when fish is not available, the increase equals 11 grains of nitrogen and 1,262 grains of carbon.

CHAPTER V.

SUMMARY AND CONCLUSIONS.

72. As it has been necessary to enter into so many details in connection with these prison dietaries, it may be desirable that a summary should be prepared of the salient points of the memorandum. Discussion of abstruse physiological questions has been, so far as possible, avoided, but the question as to what constitutes the essential alimentary principles of a dietary suitable for native labouring prisoners could not be satisfactorily examined without a brief reference to some of the more recent researches which have been made on the subject, and which have, more or less completely, reversed the views on important points previously entertained by most writers on dietetics. It has been pointed out that, owing principally to the teachings of Liebig, very great prominence has been given to the necessity of increasing the albuminoid or nitrogenous principle of food in proportion to the amount of work exacted, on the supposition that the nitrogenous, chiefly muscular, tissues of the body are rapidly wasted as a result of exertion, and that the non-nitrogenous elements of food (starch, sugar, fat, &c.) were simply useful in the production of heat.

73. This conception has obtained such a firm hold on popular opinion that nearly all the recommendations as to improving the dietary referred to in the preceding chapters are, consciously or unconsciously, based on it—an addition to the nitrogenous principles of the diet being the prominent feature advocated. So long ago as 1845 it was maintained by Mayer that "a muscle is only an apparatus by means of which the transformation of force is effected, but that it itself is not the material by the change of which the mechanical work is produced." The correctness of this statement is now generally allowed, and further research has established that nearly all the motion, as well as the heat of the body, is dependent on the combustion within

The bearing of modern research on the construction of labouring dietaries.

The influence of Liebig's doctrines still felt in the tendency there is to ignore the fact that energy is stored up in the carbonaceous rather than in nitrogenous elements of food.

it of the carbonaceous principles of the food; whereas one of the chief uses of the nitrogenous principles is to serve as the pabulum from which the tissues are developed and renovated. The precise character of the changes which take place is still a disputed question; but it may serve as a help to the comprehension of this phase of the subject, even though the comparison be not scientifically accurate, were these living tissues of the body looked upon as the wick in the interstices of which the products of carbonaceous material undergo chemical change—are in fact burnt—so as to set free the energy stored up in them. This change is incessantly taking place in the body in order to generate the heat and motion requisite for the maintenance of life; but, in order to withstand the influence of severe cold, or to perform extra labour, the process is accelerated. The more energetic this change proceeds the greater is the drain upon the assimilated carbonaceous [*i. e.*, starch, saccharine and oleaginous] aliments; but the wick itself (to which for simplicity of illustration I have compared the living tissues) is not wasted by this extra combustion to anything like a corresponding extent. Even this waste, however, requires to be replaced as well as the used-up carbonaceous material, and there is an instinctive inclination to supply the general loss, but the food resorted to for the purpose depends very much on the habits of individuals.

74. No specially devised experiments appear to have been undertaken in this country with a view to ascertain the amount of food and the relative proportion in which the several alimentary principles should be given so as to ensure that they should be utilized in the animal economy to the best advantage. The only data available for the study of these points are those furnished by experiments which have been conducted in Europe and chiefly in the persons of well-to-do individuals accustomed to partake more or less largely of animal food, and consequently of a food richer in nitrogenous principles than that of the poorer classes in this country. The natural tendency of the teaching which is based on such experiments is to exaggerate the amount of albuminates necessary when considering the requirements of a population more vegetarian in its habits. It has been estimated that a dietary composed of some $4\frac{1}{2}$ ounces of dry albuminoid or nitrogenous food, of $14\frac{1}{2}$ ounces of carbo-hydrates (starch, sugar, &c.) and 3 ounces of fatty matters, is sufficient to maintain a European, of an average weight of 150 to 160 lbs., in good health whilst undergoing a fair amount of hard labour, and this scale has been suggested as a standard for general adoption. The nutritive value of such a diet, expressed in terms of nitrogen and carbon, is equal to about 316 grains of the former and 5,000 of the latter. It has, however, been ascertained that the poorer class of in-door labourers in England do not obtain anything like so much as this; and that the diet of the English soldier, when on home service, contains only 266 grains of nitrogen and 4,700 grains of carbon (Parkes). Moreover, Dr. Ranke, a well-known name in connection with the subject of dietetics, found that he could keep himself and do a fair amount of work on a diet containing 243 grains of nitrogen. His weight was $162\frac{1}{2}$ lbs.²

75. This is not the place to discuss in the abstract whether a diet, consisting largely or not at all of animal food, is the best for general adoption; nor does it fall within the province of this memorandum to consider the most suitable dietaries for training purposes or for the sick: the question is—what is the minimum amount of the most economical forms of food which experience has shown to be compatible with the exaction of a fair, average task-work, and at the same time to maintain native prisoners in health. The scales of diet of which the most accurate information can be obtained, and which would seem to be most suitable to serve as standards for the construction of Indian jail dietaries, are those of the labouring prisoners in the convict and local jails of England. The diets which are in use in these two classes of prisons have, with trifling modifications, been in

¹ Whether in the cells of the tissue or in the lymph in which they are bathed, need not be specially considered here.

² The average weight of an English soldier may be taken as about 150 lbs., though this is probably a low estimate; hence, if 266 grains of nitrogen be sufficient for him, the proportion in a diet which should suffice for a person weighing 110 lbs. would be 195 grains; whilst, on a like computation based on Dr. Ranke's diet and weight, the amount of nitrogen would be 165 grains.

force for many years, and not only have they been reported upon most favourably by various Royal Commissions (some of the most recent of whose reports have been cited in a previous chapter), but the extremely favourable mortality returns, extending over a long series of years, testify in the most unqualified manner to the general correctness of the opinions expressed by the Commissioners. Full details regarding these dietaries have already been given, but a summarized statement of the nutritive value of the principal forms may be reproduced here with advantage.

Nutritive value of the principal dietaries at present in force for labouring prisoners in English Jails.

DIET SCALES.	ALIMENTARY PRINCIPLES.			NUTRITIVE VALUE IN GRAINS.	
	Albuminates.	Carbo-hydrates.	Fats.	Nitrogen.	Carbon.
CONVICT PRISONS.					
1. Light labour	3.28	16.26	1.25	226	4,353
2. Industrial labour	3.53	17.00	1.47	243	4,618
3. Hard labour	3.82	18.53	1.52	263	5,013
LOCAL PRISONS.					
1. Hard labour: one to four months' imprisonment	3.13	16.22	1.02	215	4,232
2. „ „ over four months' imprisonment	3.91	19.67	1.37	270	5,204

76. The nutritive value of the maximum scales in force in the two classes of

The dietaries of English Local Prisons contain a large proportion of vegetable food and appear suitable as a standard for Indian requirements.

prisons is very nearly equal, but it is probable that, notwithstanding the slight inferiority of the maximum scale in Convict Prisons, as compared with that of the Local Prisons when estimated from chemical analyses, the dietary would be preferred by persons accustomed to animal food, seeing that it consists of an average daily allowance of 4½ oz. of meat, whereas the average of the daily allowance in Local Prisons is only about half this quantity—nitrogenous material in the latter case being made up by a correspondingly larger allowance of oat-meal and by an addition of peas to the dietary. Of the 270 grains of nitrogen contained in this scale, only 39 grains are derived from animal food. That rations containing so small an amount of meat should be associated with such favourable health statistics in a flesh-eating race, is worthy of notice, and especially so in that the dietary is found to be compatible with the exaction of even very hard labour. The proportion of the nitrogenous to the carbonaceous principles is much smaller than that contained in the ordinarily proposed standard dietaries; but bearing in mind the respective parts played by these two alimentary principles in the production of muscular force, the satisfactory results are quite compatible with the present teaching of physiologists.¹ These results are, moreover, quite in accord with every-day experience in this country where men are known to accomplish very great distances and bear a heavy burden on a dietary consisting of even a still greater disproportion between the albuminates and the carbo-hydrates, the amount of the former which is consumed being barely more than has been estimated to be actually necessary for the renovation of the tissues even when the body is at rest, whereas the amount of the starchy food consumed is often very large. In the formulæ for standard dietaries for Europeans, the proportion of the nitrogen to the carbon ordinarily recommended is as 1 to 15; but in the dietaries for labouring prisoners in English jails the proportion is about as 1 to 20: even this, however, is probably higher than the proportion in which the albuminates are found in the ordinary food of the poorer classes in this country, where the comparatively small amount of nitrogen present in the cheaper cereals has to be supplemented by the addition of the richer, and more expensive pulses. Seeing therefore that the labouring diet scales of the English Local Prisons approxi-

¹ Since this memorandum was in type, I have seen that Dr. Carpenter, the well-known writer on physiology, has recently contributed some articles to *Knowledge*, in which he appears to have drawn public attention to the importance of bearing this aspect of the diet-question more prominently in view than has hitherto been the case (vide *Saturday Review*, 19th November 1881).

mate very closely to the food of natives in this country, especially as regards the proportion of it which is derived directly from the vegetable kingdom, and as this dietary has been found to be compatible with exceptionally favourable health returns, I have in a previous paragraph ventured to suggest that it should be adopted as a standard for the construction of Indian jail diets.

77. In adapting the scales of diet of any large body of men belonging to one country to like requirements in another, it is usual to take the average weight of the persons concerned as a leading basis for the computation, though, as has already been pointed out, it is essential that the comparative activity as well as the comparative physique of these persons should be prominently borne in mind—a small-built but exceptionally active race requiring, proportionately, more food, or at least more of that kind of food which serves as the ultimate source of energy, than a heavier but more indolent and apathetic one. In instituting a comparison, however, as to the capacity for physical exertion between English and Hindu workmen, there cannot be much doubt that the disproportion between the amount of work which the former can perform, compared with that of the latter, is probably quite as great as, if not greater than, the disproportion in their weights, so that taking weight alone as the basis for the calculation would not be to the disadvantage of the native. The average weight of the English prisoner has been assumed to be 145 lbs. and that of the Indian prisoner to be 110 lbs., though probably the mean weight has been somewhat understated in the former and somewhat overstated in the latter; but this probable margin of error will be in favour of the native prisoner as regards the quantity of food which would be accorded to him on a computation made on such a basis. According to such a computation the maximum daily allowance of water-free alimentary principles to persons of a mean weight of 110 lbs. would, in round numbers, be 3 oz. of albuminates, 15 oz. of carbo-hydrates, and 1 oz. of fat. A diet of this character would contain a little over 200 grains of nitrogen and a little less than 4,000 grains of carbon.

78. In the foregoing chapter the question as to how far labouring dietaries in Indian jails exceed or fall short of such a standard has been fully considered; and as it is difficult to summarize details of this kind with clearness, a tabular statement has been prepared of the nutritive value of the principal forms of the maximum labouring diets at present, or recently, in force in the various provinces. But, instead of repeating what has been said as to the extent of the variations from the above standard, the body-weight for which each scale should suffice has been added in a separate column. The calculation has been made on the assumption that the 270 grains of nitrogen contained in the maximum dietary of the English Local Prisons is sufficient for a labouring prisoner weighing 145 lbs. Nitrogen has been taken as the basis of the computation because, in the first place, a certain amount of nitrogenous substance is absolutely necessary in all foods and cannot be replaced by any other alimentary principle; and, secondly, because it is manifest that in a diet partaking so largely of vegetable substances, as is that of the bulk of the population of this country, it is not likely that a deficiency will occur in the carbonaceous principles provided the nitrogenous are adequately supplied.

A tabular statement of the nutritive values of existing Indian diets and of the body-weight for which each scale is computed to be sufficient.

extremely resistant, indigestible envelopes, which, if not effectually disposed of by proper cooking, defeat all attempts on the part of the digestive organs to profit by the food. In the endeavour which has been manifested by many framers of jail dietaries to raise the proportion of the nitrogenous element without necessitating a corresponding increase in the carbonaceous, a large addition to the pulses has been a favourite mode of meeting the requirements of a view which presupposed the rapid waste of muscle during exercise ; but it is questionable whether so large an amount of nitrogenous material does not in reality deteriorate the value of the diet on account of the increased work thrown on the excretory organs in getting rid of a portion of the nitrogenous elements which the system does not require and which, to a certain extent, acts more as an irritant than as a food.¹ In some instances, however, the excess of the nitrogenous elements which is shown in many of the diet scales above tabulated, is given in the form of parched, and otherwise imperfectly cooked, gram, so that it is probable that a large proportion of the contained nutriment will not be assimilated. On several grounds therefore the addition of an undue proportion of pulses, and especially of ill-cooked pulses, is a doubtful advantage, and may be even injurious.

79. If the column giving the estimated weight of a person for which the several diet-scales should suffice be examined, it will be found that great variations are manifest. Great discrepancies in the nutritive value of the maximum scales. Whereas, for example, the maximum scale in force in British Burma has been computed as sufficing for the support of a mean body-weight of only 94 lbs., that in force in the Rupar Jail in the Punjab should suffice for a person weighing 268 lbs. The latter, however, is a special diet, the average value of the scales for the jails of the province generally, being for a body-weight of 162 to 180 lbs.

to 180 lbs. 80. This tabular statement, however, does not appear to call for any lengthened explanation, but a brief reference to the data contained in it regarding the Bengal dietaries may serve as an illustration of the manner in which the table may be studied, and, also, show what appears to be the inference which a careful examination of the dietaries of English and Indian prisons suggests regarding the recent changes made in the Bengal scales. It will be seen that the value of the two maximum diet scales adopted by the Indian Jail Committee of 1864 has been estimated as sufficient, on the English Local Prison standard, for the maintenance of persons of an average weight of 110 and 134 lbs.—the former scale being for Bengalis and the latter for natives of Behar and of Upper India generally. These scales were in force in Bengal up to March 1879 when they were replaced by a dietary based on the recommendations of the Indian Jail Conference of 1877. According to the new regulations the issue of animal food, instead of being general to labouring prisoners, as had been the case heretofore, was restricted to such of them as had been accustomed to partake of it before their admission into jail. The difference in the aggregate nutritive value, however, of the dietaries, as judged from their chemical constituents, was not great, for the daily diets for Bengalis contained only from 4 to 13 grains less of nitrogen (with no material change in the carbon), and the scales should have sufficed for men weighing from 103 to 107 lbs.; whilst the scales for Beharis should have sufficed for men weighing from 125 to 130 lbs. Records of jail weighments show that neither Bengalis nor Beharis have an average weight equal to that for which even the minimum of their respective diet scales are estimated to provide. Nevertheless it was decided, after a year's trial, that the Conference dietary was wholly insufficient, and that it had, indeed, contributed materially to the death rate amongst the prisoners. New scales for Bengalis and for Beharis were introduced last July, and are now in force. The table shows that the present scales for Bengalis should suffice for prisoners weighing from 132 to 141 lbs., and the Behari scales for men weighing from 152 to 172 lbs. If the issue of the Conference rations was efficiently supervised and the cooking properly conducted, it is difficult to reconcile the recorded experience of Bengal with that which is furnished by, for example, the jails of Burma. Here,

¹ "A large meal of proteid material must tax the system to the utmost in getting rid of or stowing away the nitrogenous crystalline bodies arising through the luxur consumption either in the alimentary canal or in the liver."—*Text-book of Physiology* by M. Foster, F. R. S., Third Edition, page 442, 1879. K

79. It has already been pointed out that chemical analysis, however exhaustive, can only afford such information as will enable an approximate estimate to be formed of the nutritive value of any food, seeing that it is not only what nutriment a particular food stuff contains that is of moment, but also what portion of it can be readily digested and assimilated by the body. In a diet composed extensively of vegetable substances, the quality of the cooking is of much more importance than it is in animal food dietaries, seeing that a large proportion of nutriment contained in cereals and pulses is enclosed in

with a maximum labouring diet scale which, calculated on a like basis, should suffice for men weighing only 94-lbs.—and which, moreover, has been in force for several years—the mortality for some time past has been lower than it has been in any province in India; and where, during 1880, out of a total of 6,971 prisoners who were weighed, 5,203 were found to have gained since their admission into jail. In Burma, therefore, a maximum diet containing 176 grains of nitrogen and 4,780 of carbon has been found compatible with exceptionally favourable mortuary returns; whereas in Bengal, a prison population, closely similar as regards habits and physique, is considered to have been partially starved on even a minimum scale of diet containing 192 grains of nitrogen and 4,814 grains of carbon—rice having formed the staple cereal in both provinces.

82. In the tabular statements appended to this memorandum, the nutritive

The desirability of more closely ascertaining the comparative nutritive value of Indian food-grains and pulses before attempting to frame uniform diets.

value of 151 scales of Indian Jail diets for labouring prisoners have been computed. Of these, nominally only 86 are actually in force at the present

time, and several are but modifications of the same scales adapted to prisoners of varying length of sentences. In reality, however, the number of dietaries is considerably greater than the above figures imply, as some latitude is necessarily allowed to local officials as regards the selection of such grains and pulses as are most readily obtainable in their particular districts, and at different seasons of the year. One kind of grain is, consequently, frequently replaced by another, and, in the absence of any fixed rule, the nutritive value of the rations actually issued to the prisoners varies even to a greater extent than these tables indicate. It is therefore very desirable that some general principle should be adopted as regards the quantities of the several grains and pulses which should be used, as, even judged from their chemical composition alone, they are far from being of equivalent value and cannot be issued measure for measure. Were satisfactory information obtained from officers practically conversant with the dieting of large bodies of men as to the value which should be attached to these several food-stuffs, in addition to what we know of their chemical composition, and as to the most satisfactory manner of cooking them, the difficulty of preparing scales of diets suitable for the several provinces would be very materially diminished and dietaries could be devised in which the nutritive values would not present such extreme discrepancies as are now manifested even in the standard scales.

83. So far as our knowledge of these matters permits of an opinion being

The evidence as to the sufficiency of the labouring diets of Indian jails.

formed, it would seem that the dietaries which have been in force in India during recent years, have not been insufficient. Indeed, an examination of the tabular statement above given shows that native labouring prisoners in every province in India have been, weight for weight, better fed than either convict or other prisoners in England. In British Burma the maximum diet is lower, but only as regards the nitrogenous elements, and, even in this respect, Burmese prisoners receive proportionately a larger quantity than Dr. Ranke (who was not a vegetarian) found was enough to maintain himself in health whilst performing a moderate amount of work. It has been shown in the preceding chapter that the lowest scales are by no means associated with the most unfavourable health-returns, but that, on the contrary, in those instances where enquiry has been especially made, the results in this respect were even better than those associated with the most liberal diet scales, though this, of course, may be a mere coincidence. When the scales of diets are calculated so as to be just sufficient for the maintenance of labouring communities in health and no more, it goes without saying that the most stringent measures should be adopted that the quality of the staple articles of food and notably of the fresh vegetables is unexceptionable, and that the cooking and the issue of the rations should be most closely supervised. The fulfilment of some such conditions as these is absolutely essential to the success of any scale of diet. It is believed that they are strictly carried out in English prisons; and were the penalties of non-fulfilment sufficiently severe in Indian jails, there does not appear to be any reason why scales of diet for native prisoners framed, as already indicated, on the basis of those diets which have proved so successful in England, should not prove equally successful in this country.

84. As above stated (para. 77), the proportion of the alimentary principles contained in the maximum diet scale of English

Conclusion.

Local Prisons, which should suffice for persons of an average weight of 110 lbs., amounts to about 3 oz. of albuminates, 15 oz. of carbo-hydrates, and 1 oz. of fats. In such a diet the proportion of carbo-hydrates to the albuminates is as five to one, but observation of the ordinary habits of natives, as well as a study of such jail diets as have proved successful, suggests the advisability of the proportion being as six or six and-a-half to one when the dietary consists exclusively, or almost exclusively, of vegetable substances. Moreover, a diet in which the several alimentary principles are distributed in such proportions would seem to be in accord with the teachings of modern physiologists as to the respective parts which they play in the economy. The aggregate of the fatty matter should not be less than 1 oz. per diem, and this amount might be increased with advantage to 1½ oz. during the colder season of the year, as a considerable proportion of the food which in warm weather goes towards the production of mechanical power is in cold weather diverted to meet the extra calls upon the system to maintain the heat of the body at its healthy standard. This suggestion is based on the fact that the inhabitants of cold countries resort largely to fatty food as a means of resisting the influence of cold, and is made quite apart from theoretical considerations as to the principal sources of the heat of the body, regarding which much uncertainty prevails.

The diet above sketched would, therefore, in round numbers, consist of the following proportions of water-free principles: albuminates 3 oz., carbo-hydrates 18 to 19 oz., and fats 1 to 1½ oz.; while its value, expressed in terms of nitrogen and carbon, would be 207 grains of the former and from 4,500 to nearly 5,000 grains of the latter. The half-an-ounce of common salt, which is very generally issued in Indian as well as in English prisons, appears to be enough. Judging from the data which have been collected during the preparation of this memorandum, a diet of this character should, if properly cooked, be sufficient to maintain native prisoners, of an average weight of 110 lbs., in good health, and at the same time be compatible with the exaction of a fair amount of ordinary hard labour.

SIMLA,

November 1881.

[Tabular Statements of the several Diet Scales and of their Nutritive Values in terms of Nitrogen and Carbon are appended; as also of the Factors adopted in the computations.]

Factors adopted in computing the Nutritive Values of the several ingredients entering into English and Indian Jail Diets.

[The data given in Dr. Parkes' *Manual of Hygiene* (5th Edition) have been resorted to except when otherwise mentioned.]

	GRAINS PER OUNCE.		Percentage of Fats.
	Nitrogen.	Carbon.	
<i>Cereals in Indian diets :—</i>			
Wheat, Gahun (<i>Triticum vulgare</i>)	9.22*	170*	2.0
Barley, Jow (<i>Hordeum vulgare</i>)	5.81*		1.8
Rice, Chawul, (<i>Oryza sativa</i>)	5.07*		0.8
Bajra, Cumboo, spiked millet (<i>Penicillaria spicata</i>)	7.00		4.6
Jowar, Cholum (<i>Sorghum</i> or <i>Panicum vulgare</i>)	5.97		3.9
Maize, Mukka (<i>Zea mäs</i>)	6.93		6.7
Ragi, Murwa (<i>Eleusine corocana</i>), calculated as common } millet	6.40		5.0
<i>Pulses or Dhäls in Indian diets—Average values</i>	17.86*		1.5†
Uncooked meat, meat for soup, &c.	10.35	64.0	8.4
Cooked meat	19.0	117.7	15.45
Fish (white)	11.5	52.4	2.9
Fats and Oils	...	345.6	...
Milk	2.75	30.8	3.7
Bread	5.5	119	1.5
Oatmeal	8.7	172	5.6
Flour (English) for puddings	7.6	169	2.0
Suet (Letheby)	...	294.3	85.1
Cheese	23.0	162	24.3
Peas	15.0	161	2.0
Pearl Barley	4.3	167.2	2.4
Potatoes	1.0	49	0.1
Succulent vegetables [mean value of carrots and potatoes } (Parkes) adopted by Lyon]	0.70	33.5	0.17
Onions (Church)	1.0	13.5	0.2
Sub-acid fruits [Tamarind, &c.]—Mean of analyses of five } kinds (Dobell)	5.7	17.5	...
Cocoa (Pavy) ;	11.0	188.3	19.0
Molasses (Letheby)	...	140.5	...

* Dr. Lyon.—See paras. 29 and 30 of Memorandum.
† Average of several pulses.

TABLE I.

Dietaries approved by the INDIAN JAIL COMMITTEE of 1864 for Labouring and Under-Trial Prisoners, together with their Nutritive values.

[These appear to have been in force in Lower Bengal from 1860 to 1879.]

NATIONALITIES.	INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	LABOURING AND UNDERTRIAL PRISONERS.										Serial number.	
		(a) MEAT COLUMN.					(b) FISH COLUMN.						
		Ounces.			Nutritive value in grains.		Ounces.			Nutritive value in grains.			
		On 4 days.	On 3 days.	Total for the week.	Nitrogen.	Carbon.	On 4 days.	On 3 days.	Total for the week.	Nitrogen.	Carbon.		
BENGALIS, URJAS AND ASSAMESE.	I.												
	1. Rice	...	20.5*	20.5	143.5	727.5	24,395.0	20.5	20.5	143.5	727.5	24,395.0	1
	2. Meat	...	4.1	...	16.4	169.7	1,049.6	...	...	...	...	...	2
	3. Fish	...	..	...	...	...	...	4.1	...	16.4	188.6	859.3	3
	4. Pulse	...	4.1	4.1	28.7	512.5	4,879.0	4.1	4.1	28.7	512.5	4,879.0	4
	5. Vegetables	...	4.1	8.2	41.0	28.7	1,373.5	4.1	8.2	41.0	28.7	1,373.5	5
	6. Oil	...	0.68	0.68	4.76	...	1,645.0	0.68	0.68	4.76	...	1,645.0	6
	7. Salt	...	0.5	0.5	3.5	...	...	0.5	0.5	3.5	...	...	7
	8. Condiments	...	0.5	0.5	3.5	...	...	0.5	0.5	3.5	...	...	8
	Average daily Nutritive value =					205	4,763	...	...	...	208	4,736	
NATIVES OF BEHAR, N. W. P. AND THE PUNJAB.	II.												
	1. Rice	...	12.3	12.3	86.1	436.5	14,637.0	12.3	12.3	86.1	436.5	14,637.0	1
	2. Attah (wheaten flour)	...	10.2	10.2	71.4	658.3	12,138.0	10.2	10.2	71.4	658.3	12,138.0	2
	3. Meat	...	4.1	...	16.4	169.7	1,049.6	...	...	...	...	...	3
	4. Fish	...	...	...	...	...	...	4.1	...	16.4	188.6	859.3	4
	5. Pulse	...	2.0	6.1	26.3	469.7	4,471.0	2.0	6.1	26.3	469.7	4,471.0	5
	6. Vegetables	...	4.1	4.1	28.7	20.0	961.4	4.1	4.1	28.7	20.0	961.4	6
	7. Oil	...	0.68	0.68	4.76	...	1,645.0	0.68	0.68	4.76	...	1,645.0	7
	8. Salt	...	0.6	0.6	4.2	...	...	0.6	0.6	4.2	...	...	8
	9. Condiments	...	0.5	0.5	3.5	...	...	0.5	0.5	3.5	...	...	9
Average daily Nutritive value =					251	4,986	...	...	...	253	4,959		

* Ten chittacks [One chittack=2.05 oz. avoirdupois].

TABLE II.

Some of the Principal forms into which the diet scale for Native Labouring Prisoners proposed by the INDIAN JAIL CONFERENCE of 1877 may be resolved.

Number.	INGREDIENTS ENTERING INTO THE SEVERAL DIETS.		(a) DIETS CONSISTING SOLELY OF VEGETABLE AND FATTY SUBSTANCES.			ANIMAL FOOD FORMS OF DIET—OPTIONAL.									
						(b) MEAT.						(c) FISH.			
						Ounces.			Nutritive value in grains.			Ounces.			Nutritive value in grains.
			Ounces daily.	Nitrogen.	Carbon.	On 4 days.	On 3 days.	Total weekly.	Nitrogen.	Carbon.	On 4 days.	On 3 days.	Total weekly.	Nitrogen.	Carbon.
I	Rice ...	24	121.6	4080.0	20	24	152	770.6	25,840	20	24	152	770.6	25,840	
	Meat ...	...	...	...	4	...	16	165.6	1,024	...	...	...	...	...	
	Fish ...	...	...	...	...	...	...	...	...	4	...	16	184	838	
	Pulse ..	4	71.4	680.0	4	4	28	500	4,760	4	4	28	500	4,760*	
	Vegetable ...	6	4.2	201	6	6	42	29.4	1,407	6	6	42	29.4	1,407	
	Fat ...	25	...	86.4	25	25	1.75	...	604	25	25	1.75	...	604	
	Salt ...	5	...	...	5	5	3.5	...	...	5	5	3.5	...	...	
	Condiments ...	25	...	...	25	25	1.75	...	...	25	25	1.75	...	...	
	Average daily Nutritive value		197	5,047	...	...	...	209	4,805	...	...	...	213	4,778	
II	Wheat Flour ...	22	202.8	3,740	18	22	138	1,272.3	23,460	18	22	138	1,272.3	23,460	
	Other Ingredients ...	11	75.6	967.4	15	11	93	695	7,795	15	11	93	713.4	7,609	
	Average daily Nutritive value		278	4,707	...	...	...	281	4,465	...	...	...	284	4,438	
III	Barley Flour ...	22	127.8	3,740	18	22	138	801.7	23,460	18	22	138	801.7	23,460	
	Other Ingredients ...	11	75.6	967.4	15	11	93	695	7,795	15	11	93	713.4	7,609	
	Average daily Nutritive value		203	4,707	...	...	...	214	4,465	...	...	...	216	4,438	
IV	Jowar Flour ...	22	131.3	3,740	18	22	138	823.8	23,460	18	22	138	823.8	23,460	
	Other Ingredients ...	11	75.6	967.4	15	11	93	695	7,795	15	11	93	713.4	7,609	
	Average daily Nutritive value		207	4,707	...	...	...	217	4,465	...	...	...	220	4,438	
V	Bajra Flour ...	22	154	3,740	18	22	138	966	23,460	18	22	138	966	23,460	
	Other Ingredients ...	11	75.6	967.4	15	11	93	695	7,795	15	11	93	713.4	7,609	
	Average daily Nutritive value		230	4,707	...	...	...	237	4,465	...	...	...	240	4,438	
VI	Makki Flour (Maize)...	22	152.4	3,740	18	22	138	956.3	23,460	18	22	138	956.3	23,460	
	Other Ingredients ...	11	75.6	967.4	15	11	93	695	7,795	15	11	93	713.4	7,609	
	Average daily Nutritive value		228	4,707	...	...	...	236	4,465	...	...	...	238	4,438	
VII	Ragi Flour (Millet) ...	22	140.8	3,740	18	22	138	883.2	23,460	18	22	138	883.2	23,460	
	Other Ingredients ...	11	75.6	967.4	15	11	93	695	7,795	15	11	93	713.4	7,609	
	Average daily Nutritive value		216	4,707	...	...	...	225	4,465	...	...	...	228	4,438	

TABLE III.

The scales of Diet for Labouring Prisoners in force in LOWER BENGAL between March 1879 and March 1880, and their average daily Nutritive values.

Nationalities.	INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	(a) DIETS CONSISTING SOLELY OF VEGETABLE SUBSTANCES.		DIETS (OPTIONAL) CONTAINING ANIMAL FOOD.										Serial Number.	
		Ounces daily	Nutritive value in grains.		(b). MEAT.			(c). FISH.							
			Nitrogen.	Carbon.	Ounces.			Nutritive value in grains.		Ounces.			Nutritive value in grains.		
					On 4 days.	On 3 days.	Total for the week.	Nitrogen.	Carbon.	On 4 days.	On 3 days.	Total for the week.	Nitrogen.		Carbon.
BENGALIS AND URDUIS.	I.														I.
	1. Rice ...	22.5	114.0	3,825.0	22.5	18.4	145.2	736.1	24,684.0	22.5	18.4	145.2	736.1	24,684.0	1
	2. Meat ...	...	...	...	...	4.1	12.3	127.3	787.2	...	...	...	...	...	2
	3. Fish ...	...	...	...	...	...	...	...	...	...	4.1	12.3	141.4	644.5	3
	4. Pulse ...	4.1	73.2	697.0	4.1	4.1	28.7	512.5	4,879.0	4.1	4.1	28.7	512.5	4,879.0	4
	5. Vegetables ...	6.15	4.3	208.0	6.15	6.15	43.0	30.1	1,440.5	6.15	6.15	43.0	30.1	1,440.5	5
	6. Oil ...	0.25	...	86.4	0.25	0.25	1.75	...	604.8	0.25	0.25	1.75	...	604.8	6
	7. Salt ...	0.51	...	...	0.51	0.51	3.57	...	...	0.51	0.51	3.57	...	...	7
	8. Condiments ...	0.25	...	...	0.25	0.25	1.75	...	...	0.25	0.25	1.75	...	...	8
	Daily average Nutritive value =		192	4,814	...	...	...	201	4,628	...	...	...	203	4,607	...
NATIVES OF BENGAL, NORTH-WESTERN PROVINCES, AND PUJAB.	II.														II.
	1. Rice ...	12.3	62.3	2,091	12.3	8.2	73.8	374.1	12,546	12.3	8.2	73.8	374.1	12,546	1
	2. Wheat flour ...	10.2	94.0	1,734	10.2	10.2	71.4	658.3	12,138	10.2	10.2	71.4	658.3	12,138	2
	3. Meat ...	...	...	...	...	4.1	12.3	127.3	787.2	...	...	...	...	...	3
	4. Fish ...	...	...	...	...	...	...	...	...	...	4.1	12.3	141.4	644.5	4
	5. Pulse ...	4.1	73.2	697	4.1	4.1	28.7	512.5	4,879.0	4.1	4.1	28.7	512.5	4,879.0	5
	6. Vegetables ...	6.15	4.3	206	6.15	6.15	43.0	30.1	1,440.5	6.15	6.15	43.0	30.1	1,440.5	6
	7. Oil ...	0.25	...	86.4	0.25	0.25	1.75	...	604.8	0.25	0.25	1.75	...	604.8	7
	8. Salt ...	0.51	...	...	0.51	0.51	3.57	...	...	0.51	0.51	3.57	...	...	8
	9. Condiments ...	0.25	...	...	0.25	0.25	1.75	...	...	0.25	0.25	1.75	...	...	9
Daily average Nutritive value =		234	4,814	...	...	...	243	4,628	...	...	...	245	4,607	...	
NATIVES OF BENGAL, NORTH-WESTERN PROVINCES, AND PUJAB.	III.														III.
	1. Rice ...	12.3	62.3	2,091	12.3	8.2	73.8	374.1	12,546	12.3	8.2	73.8	374.1	12,546	1
	2. Maize flour ...	12.3	85.2	2,091	12.3	12.3	86.1	596.6	14,637	12.3	12.3	86.1	596.6	14,637	2
	3. Meat ...	...	...	...	...	4.1	12.3	127.3	787.2	...	...	...	...	...	3
	4. Fish ...	...	...	...	...	...	...	...	...	...	4.1	12.3	141.4	644.5	4
	5-9. Of No. II	11.26	77.5	989.4	11.26	11.26	78.82	542.6	6,924.3	11.26	11.26	78.82	542.6	6,924.3	5-9
	Daily average Nutritive value =		225	5,171	...	...	...	234	4,985	...	...	...	236	4,964	...
	IV.														IV.
	1. Rice ...	12.3	62.3	2,091	12.3	8.2	73.8	374.1	12,546	12.3	8.2	73.8	374.1	12,546	1
	2. Millet flour ...	12.3	78.7	2,091	12.3	12.3	86.1	551.0	14,637	12.3	12.3	86.1	551.0	14,637	2
3. Meat ...	...	...	...	...	4.1	12.3	127.3	787.2	...	...	...	...	...	3	
4. Fish ...	...	...	...	...	...	...	...	...	...	4.1	12.3	141.4	644.5	4	
5-9. Of No. II	11.26	77.5	989.4	11.26	11.26	78.82	542.6	6,924.3	11.26	11.26	78.82	542.6	6,924.3	5-9	
Daily average Nutritive value =		218	5,171	...	...	...	228	4,985	...	...	...	230	4,964	...	

TABLE IV.

The scales of Diet for Labouring Prisoners adopted in LOWER BENGAL in July 1881, and their average daily Nutritive values.

Nationalities.	INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	DIETS CONSISTING SOLELY OF VEGETABLE SUBSTANCES.			DIETS (OPTIONAL) CONTAINING ANIMAL FOOD. *								Serial number.		
		Ounces daily.	Nutritive value in grains.		MEAT.			FISH.							
					Ounces.			Nutritive value in grains.		Ounces.				Nutritive value in grains.	
			On 4 days.	On 3 days.	Total for the week.	Nitrogen.	Carbon.			On 4 days.	On 3 days.	Total for the week.			
FOR BENGALIS AND URYA.	I.														
	1. Rice ...	22	111.5	3,740.0	22	22	154.0	780.7	26,180.0	22	22	154.0	780.7	26,180.0	
	2. Meat ...	...	...	...	4	...	16.0	165.6	1,024.0	...	...	...	...	...	
	3. Fish ...	...	...	...	...	...	...	...	...	4	...	16.0	184.0	838.4	
	4. Pulse ...	6	107.1	1,020.0	2	6	26.0	464.3	4,420.0	2	6	26.0	464.3	4,420.0	
	5. Vegetables ...	6	4.2	201.0	6	6	42.0	29.4	1,407.0	6	6	42.0	29.4	1,407.0	
	6. Oil ...	5	...	172.8	5	5	3.5	...	1,209.6	5	5	3.5	...	1,209.6	
	7. Tamarind ...	5	4.3	8.7	5	5	3.5	30.6	61.2	5	5	3.5	30.6	61.2	
	8. Salt ...	5	...	...	5	5	3.5	...	...	5	5	3.5	...	...	
	9. Condiments ...	25	...	...	25	25	1.75	...	...	25	25	1.75	...	...	
	10. Molasses ...	1	...	149.6	1	1	7.0	...	1,047.2	1	1	7.0	...	1,047.2	
	11. Gram* ...	3	53.5	510.0	3	3	21.0	375.0	3,570.0	3	3	21.0	375.0	3,570.0	
	Daily average Nutritive value =			281	5,802	...	...	...	264	5,560	...	...	...	266	5,533
	II.														
	1-10. As in No. I ...	36.75	227.1	5,292.1	36.75	36.75	257.25	1,470.6	35,349.0	36.75	36.75	257.25	1,489.0	35,183.4	...
	11. Rice* ...	4	20.2	680.0	4	4	28.0	141.0	4,760.0	4	4	28	141.9	4,760.0	...
Daily average Nutritive value =			247	5,972	...	...	...	230	5,730	...	...	...	233	5,703	...
FOR NATIVES OF BEHAR, NORTH-WESTERN PROVINCES, AND PUNJAB.	III.														
	1. Rice ...	12	60.8	2,040.0	12	12	84.0	425.8	14,280.0	12	12	84.0	425.8	14,280.0	
	2. Wheat flour ...	10	92.2	1,700.0	10	10	70.0	645.4	11,900.0	10	10	70.0	645.4	11,900.0	
	3. Meat ...	...	...	...	4	...	16.0	165.6	1,024.0	...	...	...	...	...	
	4. Fish ...	...	...	...	...	...	...	...	...	4	...	16.0	184.0	838.4	
	5. Pulse ...	6	107.1	1,020.0	2	6	26.0	464.3	4,420.0	2	6	26.0	464.3	4,420.0	
	6. Vegetables ...	6	4.2	201.0	6	6	42.0	29.4	1,407.0	6	6	42.0	29.4	1,407.0	
	7. Oil ...	5	...	172.8	5	5	3.5	...	1,209.6	5	5	3.5	...	1,209.6	
	8. Tamarind ...	5	4.3	8.7	5	5	3.5	30.6	61.2	5	5	3.5	30.6	61.2	
	9. Salt ...	5	...	...	5	5	3.5	...	...	5	5	3.5	...	...	
	10. Condiments ...	25	...	...	25	25	1.75	...	...	25	25	1.75	...	...	
	11. Molasses ...	1	...	149.6	1	1	7.0	...	1,047.2	1	1	7.0	...	1,047.2	
	12. Gram* ...	3	53.5	510.0	3	3	21.0	375.0	3,570.0	3	3	21.0	375.0	3,570.0	
	Daily average Nutritive value =			322	5,802	...	...	...	305	5,560	...	...	...	308	5,533
	IV.														
	1-11. As in No. III ...	36.75	268.6	5,292.1	36.75	36.75	257.25	1,761.1	35,349.0	36.75	36.75	257.25	1,779.5	35,163.4	...
	12. Rice* ...	4	20.2	680.0	4	4	28	141.9	4,760.0	4	4	28	141.9	4,760.0	...
Daily average Nutritive value =			269	5,972	...	...	...	272	5,730	...	...	...	274	5,703	...
	V.														
	1. Rice ...	12	60.8	2,040.0	12	12	84.0	425.8	14,280.0	12	12	84.0	425.8	14,280.0	
	2. Maize ...	12	83.1	2,040.0	12	12	84.0	582.1	14,280.0	12	12	84.0	582.1	14,280.0	
	3-12. As in No. III ...	17.75	169.1	2,062.1	17.75	17.75	124.2	1,064.9	12,739.0	17.75	17.75	124.2	1,083.3	12,563.4	
Daily average Nutritive value =			313	6,142	...	...	...	296	5,900	...	...	...	299	5,873	...
	VI.														
	1. Rice ...	12	60.8	2,040.0	12	12	84.0	425.8	14,280.0	12	12	84.0	425.8	14,280.0	
	2. Maize ...	12	83.1	2,040.0	12	12	84.0	582.1	14,280.0	12	12	84.0	582.1	14,280.0	
	3-11. As in No. III ...	14.75	115.6	1,552.1	14.75	14.75	103.25	689.9	9,100.0	14.75	14.75	103.25	718.3	8,983.4	
Daily average Nutritive value =			280	6,312	...	...	...	262	6,070	...	...	...	265	6,043	...

* As a morning meal.

TABLE V.

The scales of Diet in force in ASSAM for Labouring Prisoners with their Nutritive values.

INGREDIENTS ENTERING INTO THE SEVERAL FORMS OF DIET.					FOR BENGALIS AND ASSAMESE.			FOR NATIVES OF BEHAR, N. W. P. AND PUNJAB.			Serial number.
					Ounces daily.	NUTRITIVE VALUE IN GRAINS.		Ounces daily.	NUTRITIVE VALUE IN GRAINS.		
						Nitrogen.	Carbon.		Nitrogen.	Carbon.	
1. Wheat flour	...	...	...	...	...	...	10	92.2	1,700	1	
2. Rice	...	...	...	20	101.4	3,400	12	60.8	2,040	2	
3. Fish*	...	...	...	4	46.0	209.6	4	46	209.6	3	
4. Pulse	...	...	...	4	71.4	680	4	71.4	680	4	
5. Vegetables	...	...	...	6	4.2	201	4	2.8	134	5	
6. Fatty matter	...	...	...	66	...	230.4	66	...	230.4	6	
7. Salt	...	...	...	5	...	...	5	...	...	7	
8. Condiments	...	...	...	5	...	..	5	...	...	8	
Average daily Nutritive value =					223	4,721	...	273	4,994		

* Or an equivalent of milk.

TABLE VI.

Scales of Diet for Labouring Prisoners in the NORTH-WESTERN PROVINCES and OUDH Jails.

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.		Ounces daily.	PRINCIPAL CEREALS AND COMBINATIONS OF THEM.																Serial Number.
			I.		II.		III.		IV.		V.		VI.		VII.		VIII.		
			WHEAT.		BAJRA.		MAIZE.		JOWAR.		WHEAT AND BARLEY.		BAJRA AND MAIZE.		JOWAR AND BAJRA.		JOWAR AND MAIZE.		
			Nutritive value in grains.		Nutritive value in grains.		Nutritive value in grains.		Nutritive value in grains.		Nutritive value in grains.		Nutritive value in grains.		Nutritive value in grains.		Nutritive value in grains.		
		Nitrogen.	Carbon.	Nitrogen.	Carbon.	Nitrogen.	Carbon.	Nitrogen.	Carbon.	Nitrogen.	Carbon.	Nitrogen.	Carbon.	Nitrogen.	Carbon.	Nitrogen.	Carbon.		
1 Cereal flour		22.8	210.2	3,876.0	159.6	3,876.0	158.0	3,876.0	136.1	3,876.0	171.3	3,876.0	158.8	3,876.0	147.8	3,876.0	147.0	3,876.0	1
2 Pulse ...		1.1	19.6	187.0	19.6	187.0	19.6	187.0	19.6	187.0	19.6	187.0	19.6	187.0	19.6	187.0	19.6	187.0	2
3 Vegetables...		5.1	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3
4 Oil or ghee...		0.08	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	4
5 Salt ...		0.22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
6 Chillies ...		1 pod	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6
Daily average Nutritive value ... =			233	4,261	183	4,261	181	4,261	159	4,261	194	4,261	182	4,261	171	4,261	170	4,261	
1 Cereal flour		22.8	210.2	3,876.0	159.6	3,876.0	158.0	3,876.0	136.1	3,876.0	171.3	3,876.0	158.8	3,876.0	147.8	3,876.0	147.0	3,876.0	1
2 Pulse ...		6.2	110.7	1,054.0	110.7	1,054.0	110.7	1,054.0	110.7	1,054.0	110.7	1,054.0	110.7	1,054.0	110.7	1,054.0	110.7	1,054.0	2
3 Vegetables...		5.1	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3.5	170.8	3
4 Oil or ghee...		0.08	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	...	27.6	4
5 Salt ...		0.22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5
6 Chillies ...		1 pod	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6
Daily average Nutritive value ... =			324	5,128	274	5,128	272	5,128	250	5,128	285	5,128	273	5,128	262	5,128	261	5,128	

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TABLE VII.

Average daily Nutritive value of the Diets actually issued to Labouring Prisoners during 1880 in six DISTRICT Jails in the NORTH-WESTERN PROVINCES and OUDH.

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	ALLAHABAD.						BAREILLY.						BENARES.						Serial Number.																		
	Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.						Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.						Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.																					
		3 months and under.			Over 3 months.				3 months and under.			Over 3 months.				3 months and under.				Over 3 months.																	
		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.			Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.			Quantity in Ounces.	Nutritive value in grains.																				
			Nitrogen.	Carbon.		Nitrogen.	Carbon.			Nitrogen.	Carbon.		Nitrogen.	Carbon.			Nitrogen.	Carbon.		Nitrogen.	Carbon.																
		I																				I															
1. Cereal flour—																			1.																		
a.—Wheat ...	6,983.2	19.1	176.1	3,247.0	19.1	176.1	3,247.0	4,286.4	11.7	107.8	1,989.0	11.7	107.8	1,989.0	3,081.7	5.7	52.5	969.0	5.7	52.5	969.0	a.															
b.—Bajra ...	147.6	0.4	2.8	68.0	0.4	2.8	68.0	...	...	...	...	...	...	...	343.2	0.9	6.3	153.0	0.9	6.3	153.0	b.															
c.—Maize ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	c.															
d.—Jowar ...	...	...	...	...	...	...	...	1,710.0	4.7	28.0	799.0	4.7	28.0	799.0	1,043.9	2.9	17.3	493.0	2.9	17.3	493.0	d.															
e.—Barley ...	623.2	1.7	9.8	289.0	1.7	9.8	289.0	1,789.8	4.9	23.4	833.0	4.9	23.4	833.0	5,244.6	14.3	83.0	2,431.0	14.3	83.0	2,431.0	e.															
f.—Gram* ...	623.2	1.7	30.3	289.0	1.7	30.3	289.0	559.6	1.5	26.7	255.0	1.5	26.7	255.0	...	...	...	...	...	...	...	f.															
2. Pulse ...	...	1.1	19.8	187.0	6.2	110.7	1,054.0	...	1.1	19.8	187.0	6.2	110.7	1,054.0	...	1.1	19.8	187.0	6.2	110.7	1,054.0	2.															
3. Vegetables ...	...	5.1	3.5	170.8	5.1	3.5	170.8	...	5.1	3.5	170.8	5.1	3.5	170.8	...	5.1	3.5	170.8	5.1	3.5	170.8	3.															
4. Oil or ghee ...	...	0.08	...	27.6	0.08	...	27.6	...	0.08	...	27.6	0.08	...	27.6	...	0.08	...	27.6	0.08	...	27.6	4.															
Salt ...	...	0.22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.															
5. Chillies ...	...	1 pod	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6.															
Average daily nutritive value }		= 242		4,278		...		333		5,145		Average daily nutritive value }		214		4,261		...		305		5,128		Average daily nutritive value }		182		4,431		...		273		5,298		...	

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	MEERUT.						MORADABAD.						RAI BAREILLY.						Serial Number.									
	Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.						Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.						Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.												
		3 months and under.			Over 3 months.				3 months and under.			Over 3 months.				3 months and under.				Over 3 months.								
		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.			Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.			Quantity in Ounces.	Nutritive value in grains.											
			Nitrogen.	Carbon.		Nitrogen.	Carbon.			Nitrogen.	Carbon.		Nitrogen.	Carbon.			Nitrogen.	Carbon.		Nitrogen.	Carbon.							
1. Cereal flour—																												
a.—Wheat ...	6,167.4	16.8	154.8	2,856.0	16.8	154.8	2,856.0	3,995.7	10.9	100.4	1,853.0	10.9	100.4	1,853.0	2,006.4	5.5	50.7	935.0	5.5	50.7	935.0	1.						
b.—Bajra ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	a.						
c.—Maize ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	b.						
d.—Jowar ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	c.						
e.—Barley ...	136.8	0.4	2.3	68.0	0.4	2.3	68.0	4,349.1	11.9	69.1	2,023.0	11.9	69.1	2,023.0	1,939.0	5.3	31.6	901.0	5.3	31.6	901.0	d.						
f.—Gram* ...	2,040.6	5.6	100.0	952.0	5.6	100.0	952.0	...	...	...	...	...	...	...	4,012.8	10.9	63.3	1,853.0	10.9	63.3	1,853.0	e.						
2. Pulse ...	...	1.1	19.8	187.0	6.2	110.7	1,054.0	...	1.1	19.8	187.0	6.2	110.7	1,054.0	...	387.6	1.1	19.8	187.0	1.1	19.8	187.0	f.					
3. Vegetables ...	...	5.1	3.5	170.8	5.1	3.5	170.8	...	5.1	3.5	170.8	5.1	3.5	170.8	...	...	1.1	19.8	187.0	6.2	110.7	1,054.0	2.					
4. Oil or ghee ...	...	0.08	...	27.6	0.08	...	27.6	...	0.08	...	27.6	0.08	...	27.6	...	...	5.1	3.5	170.8	5.1	3.5	170.8	3.					
5. Salt ...	...	0.22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0.08	...	27.6	0.08	...	27.6	4.					
Chillies ...	...	1 pod	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5.					
Average daily nutritive value }		280	4,261	...	371	5,128	Average daily nutritive value }		193	4,261	...	284	5,128	Average daily nutritive value }		188	4,261	...	279	5,128	Average daily nutritive value }		188	4,261	...	279	5,128	6.

* To avoid confusion Gram and Urd have been tabulated amongst the cereals, as they have been issued instead of staple cereal. The calculation, however, has been carried out as for other pulses except as regards the fatty matter contained in Gram, which has been taken as 3.7 per cent.

The amount of Fatty Substances in each of the above Diet Scales:—

Jail.	Under 3 months.	Over 3 months.	Jail.	Under 3 months.	Over 3 months.
Allahabad	Oz.	Oz.	Meerut	Oz.	Oz.
Bareilly	0.59	0.67	Moradabad	0.65	0.73
Benares	0.66	0.74	Rai Bareilly	0.63	0.61
	0.63	0.70		0.65	0.73

TABLE VIII.

Average Daily Nutritive Value of the Diets actually issued to Labouring Prisoners during 1880 in six CENTRAL Jails in the NORTH-WESTERN PROVINCES and OUDH.

CENTRAL Jails IN THE NORTH-WEST PROVINCE.

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	AGRA.						ALLAHABAD.						BAREILLY.						Serial Number.
	Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.					Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.					Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.					
		3 months and under.			Over 3 months.			3 months and under.			Over 3 months.			3 months and under.			Over 3 months.		
		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.				
			Nitrogen.	Carbon.		Nitrogen.			Carbon.	Nitrogen.		Carbon.			Nitrogen.	Carbon.	Nitrogen.	Carbon.	
II																		I	
1. Cereal flour—																		1.	
a.—Wheat ...	2,650.4	7.2	66.3	1,224.0	7.2	66.3	1,224.0	4,172.4	11.4	105.1	1,933.0	11.4	105.1	1,933.0	4,957.9	13.5	124.4	2,295.0	a.
b.—Bajra ...	706.8	1.9	13.3	323.0	1.9	13.3	323.0	490.2	1.4	9.8	238.0	1.4	9.8	238.0	859.8	2.4	16.8	408.0	b.
c.—Maize ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	75.4	0.2	1.3	34.0	c.
d.—Jowar ...	1,732.8	4.7	28.0	799.0	4.7	28.0	799.0	1,140.0	0.3	1.7	51.0	0.3	1.7	51.0	902.5	2.5	14.9	425.0	d.
e.—Barley ...	2,456.4	6.7	38.9	1,139.0	6.7	38.9	1,139.0	22.8	0.06	0.3	10.2	0.06	0.3	10.2	887.1	2.4	13.9	408.0	e.
f.—Gram* ...	1,014.4	2.8	50.0	476.0	2.8	50.0	476.0	3,545.4	9.7	173.2	1,649.0	9.7	173.2	1,649.0	663.1	1.8	32.1	306.0	f.
g.—Urd* ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	g.
2. Pulse ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2.
3 to 6 as in I	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3.
Average daily nutritive value }		220	4,346	...	311	5,213	Average daily nutritive value	313	4,272	...	404	5,139	Average daily nutritive value	226	4,261	...	318	5,128	...

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	BENARES.						LUCKNOW.						MEERUT.						Serial Number.				
	Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.						Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.						Ounces of cereal, &c., flour per head issued during 1880.	Average daily Diets of Labouring Prisoners.							
		3 months and under.			Over 3 months.				3 months and under.			Over 3 months.				3 months and under.				Over 3 months.			
		Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.			Quantity in Ounces.	Nutritive value in grains.		Quantity in Ounces.	Nutritive value in grains.			Quantity in Ounces.	Nutritive value in grains.						
			Nitrogen.	Carbon.		Nitrogen.	Carbon.			Nitrogen.	Carbon.		Nitrogen.	Carbon.			Nitrogen.	Carbon.		Nitrogen.	Carbon.		
II																							
1. Cereal flour ...																							
a.—Wheat ...	2,329.9	6.4	59.0	1,088.0	6.4	59.0	1,088.0	4,033.8	11.0	101.4	1,870.1	11.0	101.4	1,870.1	6,675.9	18.2	167.8	3,094.0	18.2	167.8	3,094.0	a.	
b.—Bajra ...	823.3	2.2	15.4	374.0	2.2	15.4	374.0	385.4	1.1	7.7	187.0	1.1	7.7	187.0	...	...	...	...	...	...	...	b.	
c.—Maize ...	157.3	0.4	2.7	68.0	0.4	2.7	68.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...	c.	
d.—Jowar ...	1,122.9	3.1	18.5	527.0	3.1	18.5	527.0	2,209.9	6.0	35.8	1,020.0	6.0	35.8	1,020.0	...	...	...	...	...	...	...	d.	
e.—Barley ...	4,229.5	11.5	66.8	1,955.0	11.5	66.8	1,955.0	958.5	2.8	15.1	442.0	2.8	15.1	442.0	...	...	...	...	...	...	...	e.	
f.—Gram* ...	31.3	0.1	1.7	17.0	0.1	1.7	17.0	1,106.3	3.8	67.8	646.0	3.8	67.8	646.0	1,668.9	4.6	52.1	782.0	4.6	52.1	782.0	f.	
g.—Urd* ...	...	...	...	...	...	...	...	600.2	1.4	25.0	238.0	1.4	25.0	238.0	...	...	...	...	...	...	...	g.	
2. Pulse ...	...	1.1	19.8	187.0	6.2	110.7	1,054.0	...	1.1	19.8	187.0	6.2	110.7	1,054.0	...	1.1	19.8	187.0	6.2	110.7	1,054.0	2.	
3 to 6 as in I	...	...	3.5	198.4	...	3.5	198.4	...	...	3.5	198.4	...	3.5	198.4	...	...	3.5	198.4	...	3.5	198.4	...	3.
Average daily nutritive value		187	4,414	...	278	5,281	Average daily nutritive value		276	4,788	...	367	5,655	Average daily nutritive value		273	4,261	...	364	5,128	...	...	
The calculation, however, has been carried out on the basis of the average nutritive value of the staple cereal.																							

TABLE IX.

The Weekly scales of Diet for Labouring Prisoners in the PUNJAB JAILS with their average daily Nutritive values.

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	I.—ORDINARY DIETS.								II.—SPECIAL DIETS.						Serial number.				
	(a)		(b)		(c)		(d)		(a)		(b)								
	20 oz. Wheat, twice weekly. 24 oz. Barley, twice weekly. 24 oz. Mukka, thrice weekly.		20 oz. Wheat, twice weekly. 24 oz. Barley, twice weekly. 24 oz. Bajra, thrice weekly.		20 oz. Wheat, twice weekly. 24 oz. Jowar, twice weekly. 24 oz. Mukka, thrice weekly.		20 oz. Wheat, twice weekly. 24 oz. Jowar, twice weekly. 24 oz. Bajra, thrice weekly.		Rawal Pindi Jail.		Bapar Jail.								
	Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.					
		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.		Carbon.			
1. Cereal flour—																			
a.—Wheat ...	40	368.8	6,800	40	368.8	6,800	40	368.8	6,800	40	368.8	6,800	140	1,290.8	23,800	160	1,475.2	27,200	1
b.—Barley ...	48	278.8	8,160	48	278.8	8,160	...	...	...	...	...	...	...	...	...	...	...	...	2
c.—Mukka ...	72	408.9	12,240	...	...	...	72	408.9	12,240	...	...	...	...	...	...	...	...	...	3
d.—Bajra ...	...	...	...	72	504.0	12,240	...	...	...	72	504.0	12,240	...	...	...	...	...	...	4
e.—Jowar ...	...	...	...	...	...	...	48	286.5	8,160	48	286.5	8,160	...	...	...	...	...	...	5
2. Gram ...	28	500.0	4,760	28	500.0	4,760	28	500.0	4,760	28	500.0	4,760	28	500.0	4,760	78	1,393.0	13,200	6
3. Meat ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	82.8	512	7
4. Pulse (urd or mung) ...	25	446.5	4,250	25	446.5	4,250	25	446.5	4,250	25	446.5	4,250	33	589.3	5,610	30	535.8	5,100	8
5. Vegetables ...	24	16.8	804	24	16.8	804	24	16.8	804	24	16.8	804	24	16.8	804	24	16.8	804	9
6. Oil or ghee...	1.75	...	804.8	1.75	...	804.8	1.75	...	804.8	1.75	...	804.8	1.5	...	518	1.6	...	518	10
7. Salt ...	1.75	...	...	1.75	...	...	1.75	...	...	1.75	...	...	3.5	...	...	3.5	...	...	11
8. Condiments	1.75	...	...	1.75	...	...	1.75	...	...	1.75	...	...	3.5	...	...	2.6	...	...	12
Average daily Nutritive value }		301	5374	...	302	5374	...	302	5374	...	303	5374	...	342	5070	...	500	6771	

TABLE X.

The Former and the Present, or Reduced, Weekly scales of Diet for Labouring Prisoners in the CENTRAL PROVINCES and their Daily average Nutritive values.

INGREDIENTS ENTERING INTO THE DIETS.	I.—FORMER OR STANDARD SCALE.						II.—PRESENT OR REDUCED SCALE.						Serial number.
	20.5 oz. Wheat,* twice weekly. 24.6 „ Bajra* „ „ 24.6 „ Jowar,* thrice „						16.4 oz. Wheat,* twice weekly. 20.5 „ Bajra* „ „ 20.5 „ Jowar,* thrice „						
	(a) LESS THAN 6 MONTHS.			(b) OVER 6 MONTHS.			(a) LESS THAN 6 MONTHS.			(b) OVER 6 MONTHS.			
	Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		
		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.	
1. Cereal flour*— a.—Wheat ... b.—Bajra ... c.—Jowar ... 2. Gram ... 3. Pulse ... 4. Vegetables ... 5. Fatty matter ... 6. Salt ... 7. Chillies ... Daily average Nutri- tive value	41.0 49.2 73.8 28.7 24.6 24.6 1.8 2.8 0.64 ... 304	378.0 344.4 440.5 512.5 439.3 17.2 5,484	6,970.0 8,364.0 12,546.0 4,879.0 4,182.0 824.1 622.0	41.0 49.2 73.8 28.7 28.7 24.6 3.07 2.8 0.64 ... 315	378.0 344.4 440.5 512.5 512.5 17.2 5,646	6,970.0 8,364.0 12,546.0 4,879.0 4,879.0 824.1 1,060.9	32.8 41.0 61.5 28.7 24.6 24.6 1.8 2.8 0.64 ... 275	302.4 287.0 367.1 512.5 439.3 17.2 4,787	5,576.0 6,970.0 10,455.0 4,879.0 4,182.0 824.1 622.0	32.8 41.0 61.5 28.7 28.7 24.6 3.07 2.8 0.64 ... 285	302.4 287.0 367.1 512.5 512.5 17.2 4,949	5,576.0 6,970.0 10,455.0 4,879.0 4,879.0 824.1 1,060.9	

* Rice may be substituted for any of these cereals at the discretion of the medical officer.

TABLE XI.

Former and Present scales of Diet for Labouring Prisoners in the Jails of the Hyderabad Assigned Districts.

Modifications of "Ordinary" Diets during May, June, July, August and September.																	
1. Cereal flour— <i>a.—Wheat ...</i> <i>b.—Barley ...</i> <i>c.—Mukka ...</i>	(a) 20 oz. Wheat, twice weekly. 24 oz. Barley, twice weekly. 18 oz. Barley, thrice weekly. 6 oz. Gram, thrice weekly.		(b) 20 oz. Wheat, twice weekly. 18 oz. Barley, twice weekly. 6 oz. Gram, twice weekly. 24 oz. Mukka, thrice weekly.		(c) 20 oz. Wheat, twice weekly. 10 oz. Wheat, twice weekly. 10 oz. Barley, twice weekly. 18 oz. Barley, thrice weekly. 6 oz. Gram, thrice weekly.		(d) 20 oz. Wheat, twice weekly. 10 oz. Wheat, twice weekly. 10 oz. Gram, twice weekly. 24 oz. Mukka, thrice weekly.		(e) 20 oz. Wheat, twice weekly. 24 oz. Barley, twice weekly. 10 oz. Wheat, thrice weekly. 10 oz. Gram, thrice weekly.		(f) 20 oz. Wheat, twice weekly. 18 oz. Barley, twice weekly. 6 oz. Gram, twice weekly. 10 oz. Wheat, thrice weekly. 10 oz. Gram, thrice weekly.						
	Ounces weekly.		Ounces weekly.		Ounces weekly.		Ounces weekly.		Ounces weekly.		Ounces weekly.						
	NUTRITIVE VALUE IN GRAINS. Nitrogen. Carbon.		NUTRITIVE VALUE IN GRAINS. Nitrogen. Carbon.		NUTRITIVE VALUE IN GRAINS. Nitrogen. Carbon.		NUTRITIVE VALUE IN GRAINS. Nitrogen. Carbon.		NUTRITIVE VALUE IN GRAINS. Nitrogen. Carbon.		NUTRITIVE VALUE IN GRAINS. Nitrogen. Carbon.						
2. Gram ...	40	368.8 6,800	40	368.8 6,800	60	553.2 10,200	60	553.2 10,200	70	645.4 11,900	70	645.4 11,900					
3. Pulse (urd or mung) ...	102	592.6 17,340	36	209.1 6,120	74	429.9 12,580	...	...	48	278.8 8,160	36	209.1 6,120					
4. Vegetables...	...	...	72	408.9 12,240	...	...	72	408.9 12,240	...	...	...	...					
5. Oil or ghee...	40	821.5 7,820	40	714.4 6,900	48	821.5 7,820	48	821.5 7,820	68	1,035.8 9,860	70	1,250.2 11,900					
6. Salt ...	25	...	25	...	25	...	25	...	25	446.5 4,250	25	...					
7. Condiments	24	...	24	...	24	...	24	...	24	16.8 804	24	...					
Average daily Nutritive value	1.75	463.3 5,659	1.75	463.3 5,659	1.75	463.3 5,659	1.75	463.3 5,659	1.75	...	1.75	61.8 5,659					
	1.75	...	1.75	...	1.75	...	1.75	...	1.75	...	1.75	...					
	1.75	...	1.75	...	1.75	...	1.75	...	1.75	...	1.75	...					
	321	5374	...	322	5374	...	324	5180	...	339	5180	...	346	5083	...	367	5083

INGREDIENTS ENTERING INTO EACH DIET.	DIETS IN FORCE TILL TOWARDS THE END OF 1879.				DIETS IN FORCE FROM TOWARDS THE END OF 1879 TILL MARCH 1881.				PRESENT MAXIMUM DIET SCALE.			
	UNDER 3 MONTHS.		OVER 3 MONTHS.		UNDER 3 MONTHS.		OVER 3 MONTHS.		24 oz. Jowar, four times weekly.		24 oz. Jowar, four times weekly.	
	22 oz. Jowar, thrice weekly. 21 oz. Wheat, thrice weekly. 16.5 oz. Wheat, thrice weekly.		22 oz. Jowar, thrice weekly. 21 oz. Wheat, thrice weekly. 16.5 oz. Wheat, thrice weekly.		20 oz. Jowar, four times weekly. 18 oz. Wheat, three times weekly.		24 oz. Jowar, four times weekly. 23 oz. Wheat, three times weekly.		24 oz. Jowar, four times weekly.		24 oz. Jowar, four times weekly.	
	Ounces weekly.	Nutritive value in grains. Nitrogen. Carbon.	Ounces weekly.	Nutritive value in grains. Nitrogen. Carbon.	Ounces weekly.	Nutritive value in grains. Nitrogen. Carbon.	Ounces weekly.	Nutritive value in grains. Nitrogen. Carbon.	Ounces weekly.	Nutritive value in grains. Nitrogen. Carbon.	Ounces weekly.	Nutritive value in grains. Nitrogen. Carbon.
1. Cereals—												
a.—Wheat ...	79.5	782.9 13,515	79.5	782.9 13,515	54	497.8 9,180	66	608.5 11,220	66	608.5 11,220	66	608.5 11,220
b.—Jowar ...	66	894.0 11,220	66	894.0 11,220	80	477.6 13,000	96	573.1 16,320	96	573.1 16,320	96	573.1 16,320
2. Pulse ...	28	500.0 4,760	28	500.0 4,760	28	500.0 4,760	28	500.0 4,760	42	750.1 7,140	42	750.1 7,140
3. Gram ...	45.5	812.6 7,735	45.5	812.6 7,735	...	...	...	...	...	...	...	...
4. Vegetables ...	24	16.8 804	56	89.2 1,876	28	19.6 938	42	29.4 1,407	42	29.4 1,407	42	29.4 1,407
5. Fatty matter ...	3	...	8	1,036.8	1.75	...	604.8	1.75	...	604.8	3.5	...
6. Tamarind ...	1.5	18.1 26.2	1.5	13.1 26.2	...	...	...	...	...	...	...	...
7. Salt ...	2.2	...	3.2	...	3.5	...	3.5	...	3.5	...	3.5	...
8. Condiments ...	2.3	...	2.3	...	1.75	...	2.6	...	3.5	...	3.5	...
Daily average Nutritive value		353 5,585	...	356 5,738	...	213 4,155	...	244 4,902	...	280 5,328	...	280 5,328

TABLE XII.

The scales of Diet in force for Labouring Prisoners in Mysore and Coorg.

Serial number.	INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	(a) 6 MONTHS AND UNDER.			(b) OVER 6 MONTHS AND UP TO TWO YEARS.			(c) OVER TWO YEARS.			Serial number.
		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		Ounces weekly.	NUTRITIVE VALUE IN GRAINS.		
			Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.	
1	Rice ...	24	121.6	4,080	36	182.5	6,120	36	182.5	6,120	1
2	Ragi ...	144	921.6	24,480	132	844.8	22,440	143	915.2	24,310	2
3	Meat* (with bone)	4	33.1	205	9	74.5	461	12	99.3	614	3
4	Pulse ...	19	339.3	3,230	22	392.9	3,740	22	392.9	3,740	4
5	Vegetables ...	42	29.4	1,407	42	29.4	1,407	42	29.4	1,407	5
6	Tyre (buttermilk) ...	...	...	...	24	67.2	600	24	67.2	600	6
7	Fatty matter ...	87.5	...	302.4	2.25	...	777.6	2.25	...	777.6	7
8	Salt ...	4.375	...	...	5.25	...	...	5.25	...	...	8
9	Condiments ...	5.9	...	...	6.6	...	...	6.6	...	...	9
10	Tamarind ...	3.5	30.6	61.2	3.5	30.6	61.2	3.5	30.6	61.2	10
Average daily Nutritive value=			211	4,824	...	232	5,088	...	245	5,376	

* One-fifth has been deducted on account of bone.

TABLE XIII.

The Daily scale of Diets allowed to Labouring Prisoners in the Jails of British Burma, and their average Nutritive values.

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	MEAT FORM OF DIET.						FISH FORM OF DIET.						Serial Number
	(a) UNDER THREE MONTHS.			(b) ABOVE THREE MONTHS.			(c) UNDER THREE MONTHS.			(d) ABOVE THREE MONTHS.			
	Ounces.	Nutritive value in grains.		Ounces.	Nutritive value in grains.		Ounces.	Nutritive value in grains.		Ounces.	Nutritive value in grains.		
		Nitrogen	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.	
1. Rice ...	20	101.4	3,400	24	121.6	4,080	20	101.4	3,400	24	121.6	4,080	1
2. Meat ...	2	20.7	128	4	41.4	256	...	...	...	...	...	...	2
3. Fish ...	...	...	...	...	...	...	2	23	104.8	4	46	209.6	3
4. Vegetables	6	4.2	201	8	5.6	268	6	4.2	201	8	5.6	268	4
5. Fatty matter	5	...	172.8	5	...	172.8	5	...	172.8	5	...	172.8	5
6. Gnapee*	...	...	...	5	5.7	26.2	...	...	...	5	5.7	26.2	6
7. Salt ...	5	...	...	5	...	...	5	...	...	5	...	...	7
8. Condiments	5	...	...	5	...	...	5	...	...	5	...	...	8
Average daily Nutritive value ... } = 126 3,902 ... 174 4,803 ... 120 3,870 ... 170 4,757 ...													

* This has been treated as fish, but as decomposition reduces the amount of nitrogen which fish contains the estimate is probably too high. It should perhaps be looked upon more as a condiment than as an aliment.

TABLE XIV.

The Weekly scale of Diets for Third class and Chain gang convicts at the ANDAMAN ISLANDS.

INGREDIENTS ENTERING INTO EACH DIET.	I.—ORDINARY DIETS.†						II.—DIETS WHEN FISH IS NOT PROCURABLE.‡						Serial number.
	Staple Cereal.						Staple Cereal.						
	(a) Rice.			(b) Wheat.			(a) Rice.			(b) Wheat.			
	Ounces Weekly.	Nutritive value in grains.		Ounces weekly.	Nutritive value in grains.		Ounces weekly.	Nutritive value in grains.		Ounces weekly.	Nutritive value in grains.		
		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.	
1. Rice ...	182*	922.7	30,940	14	70.9	2,380	217*	1,100.1	3,890	49*	248.4	8,330	
2. Wheat-flour ...	...	...	..	140	1,290.8	23,800	...	...	...	140	1,290.8	23,800	
3. Pulse ...	28	500.0	4,760	28	500.0	4,760	28	500.0	4,760	28	500.0	4,760	
4. Fish ...	20	230	1,048	20	230	1,048	...	...	...	...	...	..	
5. Dhali† ...	12	33.6	300	12	33.6	300	12	33.6	300	12	33.6	300	
6. Vegetables ...	56	39.2	1,876	53	39.2	1,876	56	39.2	1,876	56	39.2	1,876	
7. Fatty matter ...	7	...	2,419.2	7	...	2,419.2	7	...	2,419.2	7	...	2,419.2	
8. Tamarinds ...	3.5	30.6	61.2	3.5	30.6	61.2	3.5	30.6	61.2	3.5	30.6	61.2	
9. Salt ...	3.5	...	...	3.5	..	...	3.5	...	...	3.5	...	...	
10. Condiments ...	3.5	...	...	3.5	...	...	3.5	...	...	3.5	...	..	
Average daily Nutritive value =													
	251	5,915		...	314	5,235	...	243	6,615	...	306	5,935	

* This includes 2 oz. of rice made into congee.

† Curdled skimmed milk.

‡ Convicts working in particularly unhealthy districts are allowed from 10 to 16 ounces of milk in addition.

TABLE XV.

The Daily Diet scales of Labouring Prisoners in the BOMBAY PRESIDENCY, with their Nutritive values.

INGREDIENTS ENTERING INTO THE SEVERAL DIETS.		B.—OTHER JAILS IN THE PRESIDENCY.															Serial number.					
		A.—BOMBAY CITY JAIL.			I.—PRISONERS ON INTRAMURAL OR MEDIUM LABOUR.						II.—PRISONERS ON <i>longa fide</i> HARD LABOUR.											
		WHEAT-FLOUR.			(a) WHEAT-FLOUR.		(b) BAJRA-FLOUR.		(c) JOWARI-FLOUR.		(a) WHEAT-FLOUR.		(b) BAJRA-FLOUR.		(c) JOWARI-FLOUR.							
		Ounces daily.	Nutritive value in grains.		Ounces daily.	Nutritive value in grains.	Ounces daily.	Nutritive value in grains.	Ounces daily.	Nutritive value in grains.	Ounces daily.	Nutritive value in grains.	Ounces daily.	Nutritive value in grains.	Ounces daily.	Nutritive value in grains.						
	Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		Nitrogen.	Carbon.		
Cereal flour ...	8	78.7	1,360	20	184.4	3,400	20	140	3,400	20	119.4	3,400	24.0	221.2	4,080	24.0	168	4,080	24.0	143.2	4,080	1
Rice ...	8	40.5	1,360	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2
Pulse ...	5	89.3	850	4	71.4	680	4	71.4	680	4	71.4	680	5.0	89.3	850	5.0	89.3	850	5.0	89.3	850	3
Vegetables ...	8	5.6	268	6	4.2	201	6	4.2	201	6	4.2	201	8.0	5.6	268	8.0	5.6	268	8.0	5.6	268	4
Fatty matter	5	...	172.8	5.25	...	80.4	2.25	...	86.4	2.25	...	86.4	1.0	...	345.6	1.0	...	345.6	1.0	...	345.6	5
Salt ...	0.4	...	...	0.4	...	...	0.4	...	...	0.4	...	...	0.4	...	...	0.4	...	...	0.4	...	...	6
Condiments ...	1	...	...	2.25	...	...	0.25	...	...	0.25	...	...	1	...	...	1	...	...	1	...	...	7
Average daily Nutritive value.	...	209	4,011	...	260	4,367	...	216	4,367	...	195	4,367	...	316	5,544	...	263	5,544	...	238	5,544	...
Average daily Nutritive value of 5 oz. Meat* be given instead of 5 oz. Pulse	}			230	3,943	...	186	3,943	...	165	3,943	...	278	5,014	...	225	5,014	...	200	5,014	...	

* Meat may be given in the Bombay City Jail also, if ordered by the Medical Officer: the amount is not stated.

TABLE XVI.

The Weekly scales of Diet for Labouring Prisoners in the MADRAS PRESIDENCY, and the average Daily Nutritive values.

A.—CENTRAL JAILS.										B.—DISTRICT AND SUBSIDIARY JAILS.														
I.—CONVICTS OF FROM ONE TO FOUR MONTHS.										II.—CONVICTS OF MORE THAN FOUR MONTHS.														
INGREDIENTS ENTERING INTO THE SEVERAL DIETS.	(a) RAGL.			(b) CHOLUK (JOWAR).			(c) CUMBOO (BAJRA).*			(a) RAGL.			(b) CHOLUK.			(c) CUMBOO.								
	Nutritive value in grains.			Nutritive value in grains.			Nutritive value in grains.			Nutritive value in grains.			Nutritive value in grains.			Nutritive value in grains.								
	Uncees weekly.	Nitrogen.	Carbon.	Uncees weekly.	Nitrogen.	Carbon.	Uncees weekly.	Nitrogen.	Carbon.	Uncees weekly.	Nitrogen.	Carbon.	Uncees weekly.	Nitrogen.	Carbon.	Uncees weekly.	Nitrogen.	Carbon.						
1. Oats	146	934.4	24,920	146	871.6	24,830	146	1,064.0	25,840	140	886	23,800	146	1,037.0	24,920	146	1,037.0	24,920	175	1,225.0	29,750	1		
2. Rice	24	121.6	4,080	24	121.6	4,080	24	121.6	4,080	...	...	...	...	...	...	...	...	...	...	...	...	2		
3. Pulse	14	250.0	2,380	14	250.0	2,380	14	250.0	2,380	21	375.0	3,670	21	375.0	3,670	14	250.0	2,380	14	250.0	2,380	3		
4. Meat	15	155.2	960	15	155.2	960	15	155.2	960	...	...	...	...	...	...	15	155.2	960	15	155.2	960	4		
5. Vegetables	28	19.6	938	28	19.6	938	28	19.6	938	28	19.6	938	28	19.6	938	28	19.6	938	28	19.6	938	5		
6. Tamarind	40	112.0	1,000	40	112.0	1,000	40	112.0	1,000	30	84	750	30	84	750	30	84	750	30	84	750	6		
7. Mustard	35	...	1,209.6	35	...	1,209.6	35	...	1,209.6	35	...	1,209.6	35	...	1,209.6	35	...	1,209.6	35	...	1,209.6	7		
8. Tamarind	35	30.6	61.2	35	30.6	61.2	35	30.6	61.2	35	30.6	61.2	35	30.6	61.2	35	30.6	61.2	35	30.6	61.2	8		
9. Salt	7	...	...	7	...	...	7	...	...	5.25	...	...	5.25	...	...	5.25	...	...	5.25	...	...	9		
10. Condiments	7.2	...	...	7.2	...	...	7	...	...	7	...	...	7	...	...	7.2	...	...	7.2	...	...	10		
Average daily nutritive value	=	232	5,064	...	223	5,064	...	250	5,210	...	201	4,333	...	192	4,333	...	319	4,478	...	231	4,980	...	252	5,150

* 25 ounces of cumboo to be considered "as equivalent to 24 ounces of ragl or cholum."

† Or fish.

‡ Stimmed (?) milk.

§ Includes 1 oz. curry powder, 1 oz. onions and 30 grains of garlic daily.