

MADRAS RECORD

Government of Madras.

Public DEPARTMENT.

G.O. No.

297

Press

~~Mis.~~

Dated

12 - 3 - 1870

Not to be folded or roughly handled

PUBLIC DEPARTMENT.

No. 297.

FROM

THE HON. R. S. ELLIS, C.B.,
Chief Secretary to the Government of Fort Saint George,

TO

THE SECRETARY TO THE GOVERNMENT OF INDIA,
HOME DEPARTMENT, (*Sanitary.*)

SIR,

With reference to endorsement, dated the 29th October 1869, No. 465, I am directed to transmit copy of a Despatch to the Secretary of State on the suggestions made by Dr. Bakewell respecting the diet scale and space to be allotted to emigrants proceeding to the Colonies.

I have the honour to be,

FORT SAINT GEORGE,
12th March 1870.

Sir,
Your most obedient servant,

Chief Secretary.

Exd. J. Wright.

Home 1870 Dept.

From Government of

Fort Saint George.

Dated 12th March 1870. No.

Enclosures

R.

Spare copies

D. No.

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L. No. 297.

D.

No.

MARCH.

Nos. 58-60.

Transmitting copy of a Despatch to the Secretary of State on the suggestions made by Dr. Bakewell respecting the diet scale and space to be allotted to emigrants proceeding to the Colonies.

185.

Office of Sanitary Commissioner
Madras 13th February 1878.

From,

The Inspector General of the
Indian Medical Department,
The Sanitary Commissioner, and
The Protector of Emigrants.

To,

The Chief Secretary to Government,
Public Department,
Fort Saint George.

Sir,

We have the honor in accordance with the
Order of Government No 1494 of the 2nd November in
the Public Department to submit our report upon
the suggestions contained in Mr. Bakewell's
report for improving the condition of coolies in
emigrant ships.

2. The delay in submitting our views has arisen
from the necessity of obtaining from various
sources statistics of mortality on board the
different ships that have sailed from this
Presidency for some years past.

3. The description of the Indian Emigrant
from the Bengal Presidency adopted by
Mr. Bakewell from the pen of Mr. Beames does
not apply to the class who immigrate from
the shores of this Presidency - so far from being
"deeply scorbutic" or in a "normal" condition

of "dysentery", they are, as well fed, and in good health, and physique as the mass of their countrymen of the same class and station in life. Neither has any unusual mortality attended emigration. On the contrary it has been very small.

4. We have scrutinized all the statistical information we have been able to procure on this head, and we have to observe that there has been no emigration from British ports to the West Indies, to which colony Mr. B. P. M. M. report more especially applies.

5. During the years marginally noted, 28 ships sailed from Madras for the Mauritius with 9719 emigrants (men, women and children) amongst whom 25 deaths occurred, on the several voyages which had, as mean duration of 28.5 days, the longest voyage being 48 days and the shortest 18. The rate of mortality for the period is 2.58 per 1000 which gives an annual death rate of 30.96 which is very slightly (2.37 per mille) in excess of the death rate of the city of Madras for the average of the past 10 years. But of the 25 deaths above recorded, 3 were accidental/falls overboard/and 4 died from cholera.

6. In the 5 years 1864-65 to 1866-67, 3120 souls emigrated to Natal in 10 ships without a single death on board.

7. No death returns are obtainable for

1864/65
1865/66
1866/67
1867/68
1868/69
1869/70.

emigrant ships from Madras to Reunion.

8. From Garam (French Settlement) to Reunion we have obtained record of 1840 emigrants with 3 deaths. The duration of the voyages of each ship is not known.

9. Mr. Norfor, British Consular Agent, at Pondicherry has submitted a return which does not in every instance give the deaths that may have occurred on board the emigrant ships. From that return we have extracted the following information. From 1864-65 to 1868-69, 12 ships sailed to Reunion with 2059 emigrants amongst whom 7 deaths occurred, one being accidental, "a fall overboard". In 8 of these instances only the length of voyage is given and the average is 29 days, the longest voyage being 43 and the shortest 25 days.

The mortality is 3.4 per mille, which, reduced to an annual rate is 43.9 or 13.9 per mille in excess of the mortality of ships sailing from British ports.

10. Two ships sailed from the same ports for Gaudaloupe, with 651 souls. In one ship cholera broke out and carried off 30 emigrants out of 273 persons. In another ship carrying 378 emigrants there were 3 deaths. The length of their voyages is not stated.

11. Putting all these results together we obtain the following figures.

	Emigrants	Deaths	Voyages	per mille rate of mortality	1 days	per voyage	annual rate	
<u>English</u>								
Mauritius	9419	25 ⁺	29.5	2.58	30	⁺ 3 of these from drowning and 4 from cholera		
Natal	3120	nil	unknown	cannot be determined				
<u>French</u>								
Reunion	1840	5	not known	cannot be determined				
do	2059	7	29 ^{averages}	3.4	43.9			
Gaidaloupe	657	33*	29 ^{of 8 voyages}	known cannot be determined				* 30 from cholera.

12. We do not find that the mortality of the Madras coolie emigrants at all approaches that indicated by Dr. Bakewell as attaching to the Bengallee coolie emigrants sailing for the West Indies. In ships clearing out from British ports it is not in fact above that pertaining to the agricultural population generally.

13. In regard to the question of the "diet scale" we quite endorse the opinion Dr. Bakewell advances.

On a physiological point of view it is undoubtedly deficient in those flesh forming principles necessary to maintain a good standard of health upon long voyages, as from Calcutta to the West Indies, and we cordially agree in the recommendation that "atta" or wheat flour be made to replace a part of the rice; that fresh meat be given twice a week; and that 2 oz of the dhol be withdrawn.

This addition to, and alteration in, the diet scale we consider highly advisable in such cases. But as regards the shorter voyages from ports in this Presidency to the Mauritius

and Reunion and in the face of the moderate mortality that has hitherto prevailed in emigrant ships we hesitate to recommend any changes involving expense. We think however in these cases that the substitution of wheat flour for a portion of the rice and the withdrawal of 2 oz of the dhol, advisable.

The introduction of this modified scale with, we have ascertained, entails an additional expense of 6 pie per ration, thus: the present ration of 24 oz of rice costs, at average market rates 11.6 pie, viz: 24 oz of rice 9.6 pie, and 4 oz of dhol 2 pie. The modified scale will be exactly one anna, thus 16 oz of rice 6.4 pie; 2 oz of dhol 1 pie; 8 oz of flour 4.6 pie, total one anna. The increase is Rupees 3.2 - - (3 rupees 2 annas) per 100 men.

14. The issue of spirit, and opium to habitual opium eaters, we would leave to the discretion and judgment of the Medical Superintendent.

15. In the face also of the moderate mortality that has hitherto marked emigration from British ports in this Presidency we do not feel that we have ground to advise the increase of superficial space per head to 15 feet as recommended by Dr. Bakewell.

16. The much larger mortality in ships sailing from French ports is deserving of notice, as also the fact that no reliable information is obtainable of the mortality pertaining to

the majority of such ships.

We therefore recommend that returns in the form appended be sent to the Protector of Emigrants at Madras by all British Consuls, or Governments from ports at which emigrants are landed from Madras, Pondicherry or Karical.

We have the honor to be,

Sir,

Your most Obedient Servants

W. MacKenzie Esq.

Inspector General of the
Indian Medical Department.

Arthur Blair M.C.S.

Protector of Emigrants

J. Manning
Sanitary Commissioner
for Madras.

Report on the Emigrants by the Ship
which arrived at _____ from _____
on the _____

Master.....
Surgeon.....
Compounder.....
Date of departure.....
Length of voyage.....
Registered tonnage.....
Superficies of Passenger's deck.....
Space on upper deck for exercise.....
Space on poop for exercise.....
Dimensions of hospital.....
Height between decks.....
Number of statute adults admissible.....
Number of such adults embarked.....
When and where landed.....
Number of crew.....
Total measurement of apertures for light and air,
exclusive of sides, scuttles, stern ports & hatchways.....
Number and size of side-scuttles.....
—do— Life-buoys.....
State of privies.....
State of cooking apparatus.....
State of fire engine.....
Night and fog signals.....
Number of boats.....
Description of cargo.....
Ports at which the ship touched.....
Total cost of introduction charged on Employers.....

* infants under one year of age not included.

Admissions to the Sick-List during the Voyage.

From	To	
Fever	Shank's	
Dysentery	Cholera	
Sm. grippe	other diseases	
Total		
Re. and		

Passengers embarked and Landed, and Births & Deaths on the Voyage.

Embarked		Died during the voyage		Landed		Total
Males	Females	Males	Females	Males	Females	
Immigrants of ten years of age or above						
do under ten years of age						
do under one year of age						
Born during the voyage						
Males		Females				
Totals						

Mortality during the Voyages.

No	Name	Sex	Age Years Months	Where recruited	Disease cause of death	Date of death	Duration of illness in Days	Remarks
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Remarks

Protection of Immigrants

Endorsement.

Total number of deaths during the voyage

Centisimal proportion of deaths to total number of passengers

Report on the immigrants by the ship arrived
on the from.

INDIA OFFICE;
London, the 31st August 1869.

Sanitary.
No. 32.

To His Excellency the Right Hon'ble the Governor General of India in Council.

MY LORD,—I forward, for the careful consideration of your Excellency in Council, some extracts from a report by Dr. Bakewell, Health Officer of Shipping in Trinidad, on the causes of sickness and mortality in cooly ships, and also a copy of a report on the subject from the Emigration Commissioners.

2. These documents have been transmitted to me from the Colonial Office, and I desire to be furnished with an expression of the views of your Lordship in Council on Dr. Bakewell's suggestions.

I have the honor to be,

My LORD,

Your Lordship's most obedient, humble Servant,
ARGYLL.

Enclosure No. 1.

Dated Emigration Board, the 16th July 1869.

From—T. W. C. MURDOCH, Esq.,

To—Sir F. ROGERS, Bart.

I HAVE to acknowledge your letter of 7th instant, enclosing the report of Dr. Bakewell, the Health Officer of Shipping in Trinidad, on the causes of sickness and mortality in cooly emigrant ships.

2. Dr. Bakewell divides his report into two parts. The first part relates principally to the influence of temperature and weather on the health of immigrants, and the conclusion to which he comes is that sickness increases with an increase of temperature, and *vice versa*, and that north-east or south-east winds, heavy rain, or heavy gales are also causes of sickness. He shows that there is little difference in the mortality of the ships, but that, as might be expected, the mortality is in an inverse ratio to age. The facts from which Dr. Bakewell's argument on these points is drawn are taken to a great extent from the experience of two ships only, the *Arvina* and *Sevilla*, a too narrow basis from which to generalize, though I am aware of no reason to doubt that a more extended experience would lead to much the same conclusions. It appears to me, however, that the results to be deduced from this portion of the report are not of any great practical use.

3. The second part is more important. Having contrasted in the first part of the great excess of mortality in cooly emigration to the West Indies over that in emigration from the United Kingdom to Australia, he proceeds to consider the reasons for this difference. First, as regards the individuals, he says, that the English emigrant belongs to a class which for centuries has been living on a much better diet than the Hindoo; that he habitually eats wheaten bread, and drinks beer, and that even if he cannot afford meat, he is able to eat cheese, which is the most concentrated form of nutriment that can be taken. He is therefore, as a general rule, strong and healthy.

4. The Indian, on the other hand, he describes as hereditarily scorbutic, ill-nourished, and subject to a rapid sinking of the vital powers, so fed as to be in a state of "normal diarrhoea," and many of them debilitated by living in the miasmatic poisons of the Plain of Hindoostan. The accidents, moreover, of a sea voyage are all against him; the motion of the ship exhausts him physically, and the feeling that he is violating his caste and leaving his home for a strange land depresses him morally. Thus, both physical and moral causes tend to lower the vital powers and to derange the digestive and nervous systems.

5. Next, in regard to the dietary on boardship. Dr. Bakewell says, that provided in our Australian ships is "almost perfect," that it is difficult to conceive a dietary which, at a reasonable cost, could supply more completely what physiology teaches to be wanted; and that the result shows its success. The dietary of the cooly, on the other hand, is, he says, deficient in nutritive value; the rice of which it is largely composed is not suited to up-country coolies; it is wanting in the nitrogen required to repair the waste of the tissues, and hence the lungs

No. 28 shown by Dec 10 1871
7th Dec 24 68

Subscribed to by 24/10/1870
J. H. S.

Public-1870-1871

The Inspector General of the
Indian Trade Dept.
The South Commission
and
The Director of Emigration

The Chief Secy: to Govt
Public Dept.
Fort St. George

Dated. 16th
Sept 1870
February 1870

No. 225/1870

Submits remarks on
the suggestions of Dr. Bakewell
for improving the condition
of coolies in emigrant ships.

22/12/70
20/13/70

57

and intestinal canal become weakened and diseased. Looking to the other depressing circumstances connected with emigration, he suggests that the cooly on boardship ought to receive a more nutritious dietary than he has been accustomed to in his own country.

6. Another difference between the English and Indian emigrant is, he remarks, the space allowed to each on boardship. The English emigrant is allowed 15, the Indian only 12 superficial feet of deck; the consequence is that, in order to keep the air in the Indian ships fit to breathe, a "tremendous" draft of air must be kept constantly in action through the between decks, causing checks of perspiration and the diseases resulting from it. The choice, therefore, lies between such an amount of ventilation as will produce disease, or such impurity of the air as will have the same effect in another way.

7. The remedies which Dr. Bakewell proposes are (1), an improvement in the quality of the food issued to Indian emigrants; (2), an increase of space; and (3), the placing the transport in the hands of a single firm during good behaviour. Admitting that these alterations would in the first instance increase the expense, he considers that the increase would be more than made up by a diminution of mortality on the voyage, and the better condition of the emigrants when they arrive.

8. It cannot be denied that the mortality of Indian emigrants on the voyage, even under the most favourable circumstances, very far exceeds the mortality in the voyage from the United Kingdom to Australia. But Dr. Bakewell has, I think, pointed out the principal cause of this in the contrast which he draws between the constitution and habits of the English labourer and the Indian cooly. Assuming the description he gives of the latter, it is rather a matter of surprise that the mortality is not greater than that it is so great. I am not aware whether there are any statistics which would show the rate of mortality among the cooly class in India, but if there are, I have no doubt they would show a much higher normal rate than among the agricultural labourers or country mechanics in Great Britain.

9. Nevertheless, there is much in what Dr. Bakewell urges in respect to the innutritious dietary of cooly ships, which appears to deserve attentive consideration. The Indian law places in the hands of the Governor General in Council the duty of prescribing the description, quality, and quantity of food to be issued on the voyage; and we should not be justified in interfering in a matter which so largely depends on the habits, religion, and prejudices of the people, further than by submitting for consideration such suggestions as the experience of our surgeons leads them to make. Several of the most experienced of those surgeons have lately recommended, as Dr. Bakewell does, the issue of a considerable ration of meat to the emigrants, and have stated that they liked it, and grew strong upon it; and these reports we have communicated to the authorities in India. How far the meat ration could be increased by the substitution of preserved meat for the live sheep now carried, is a question for those authorities. Dr. Bakewell suggests, that to prevent religious scruples, mutton only should be used, and be preserved with a portion of its bone to show its origin. I apprehend, however, that no meat is at present so preserved, and it is not likely to be so preserved only for this particular service. But from the reports of our surgeons, we believe that coolies who have broken their caste by emigrating are not likely to be scrupulous about eating meat.

10. In respect to an increase of space, I may observe, that while there is no question that it would add considerably to the expense of the emigration, the best authorities in India, who have inquired into the causes of sickness on the voyage, have been of opinion that it was not caused by overcrowding. It was found, moreover, that ships which before the connexion with the French carried coolies from Pondicherry in a larger ratio to space than they are now carried from Calcutta, had comparatively no sickness which leads to the inference that, where the emigrant is in good health at the time of embarkation, the space now allotted to him is sufficient. It is, of course, undeniable that increased space is in itself an advantage, and that where sickness breaks out, smaller numbers and more room are of great value. The real question, however, is whether the circumstances are such as to require an alteration, which would certainly add from 10 to 15 per cent. to the expense of emigration. It can scarcely be considered that they are so at present, and I am not, therefore, prepared to recommend that the space allotted to the cooly, which has recently been enlarged from the 10 superficial feet required by the law to the 12 superficial feet which he formerly received, should be any further increased.

11. Nor am I prepared to assent to Dr. Bakewell's suggestion, that a monopoly of the service should be given to a single firm, conditional on their performing it satisfactorily. It is no doubt true that the owners and masters of ships who have the experience of the service, especially those who are connected with the colony to which the emigrants are taken, are likely to perform the service better than those who take it up as a single venture, and I am gratified at being able to state that, as far as Trinidad is concerned, this seems likely to be the case. Thus, on the 12th instant, in taking up ships for next season, at the request of the Colonial Government, we were able, from the nature of the tenders made to us, to charter four from a single firm largely connected with the colony. But to give an absolute monopoly to a single firm, liable to be cancelled only by misconduct, which would be exceedingly difficult

of proof, would be more likely to lead to carelessness and expense than to increased efficiency, and would be sure to produce dissatisfaction and complaint.

12. On the whole, I would recommend that a copy of the second and third parts of Dr. Bakewell's report should be sent to India for the consideration of the Local Government. The first part, with its elaborate diagrams, though interesting, is not of sufficient practical value to justify the trouble of copying it. The second part suggests the points which it is within the competency of the Government to deal with, while the third part states the conclusions at which Dr. Bakewell has arrived.

No. 2.

Extracts from Report of Dr. BAKEWELL, the Health Officer of Shipping in Trinidad, on the causes of the sickness and mortality in cooly ships, June 1869.

PART II.

SUCH are the principal conclusions which have been reached by the use of the numerical method of investigation. No attempt has been made to reason about the facts or premises there set forth; the writer has rigidly restricted himself to a bare enumeration of facts and figures. It would be folly, however, not to read these facts by the light of our experience, and of that knowledge which, though not reducible to mathematical terms, every one must, and invariably does, act on in the practical business of life.

We have to examine why it is that during the same period of eight years more than eleven times as many immigrants died on board Calcutta ships coming to Trinidad than on board English ships going to Victoria.*

During those years 781 Calcutta immigrants died on board the Trinidad ships. If the mortality had been no larger than it was on board the Victoria ships, only 64 would have died.

Each cooly is estimated to cost the colony about 22*l.*; as the prosperity of the colony is entirely due to immigration, the cooly must be worth more than he costs; however, say, he is only worth 22*l.*, then 894, the number whose lives would have been saved, had the mortality not exceeded that of the Victorian immigrants, multiplied by 22 equals 15,268*l.*, a sum which is certainly worth saving, putting all considerations of humanity out of the question.

Now, besides the difference in the diet and cubical space given to the Australian and Trinidad emigrants, which might serve to account for the difference in their death rate, there are other points of divergence, some moral and some physical, which have to be taken into consideration.

The English emigrant belongs to the working classes, including agricultural labourers, handicraftsmen, &c., not, as a rule, to the most prosperous of his class, for a fully employed working man rarely emigrates, but at any rate to a class who for centuries have been living on a much better diet than the Hindoo. The English working man, except agricultural labourers, habitually eats wheaten bread, and flesh meat, and drinks beer. The agricultural labourer in many parts of the kingdom eats butcher's meat perhaps only once a week, and then in the shape of salt pork or bacon, but he always eats wheaten bread, and generally indulges in the form of beef of a weaker quality than the mechanic. But if he does not take his nitrogen in the form of flesh meat, his out-door occupations in the pure and bracing country air enable him to digest cheese, which, when it can be digested, is the most concentrated form of nutriment that can be taken.

Nevertheless, it must be admitted that both the agricultural labourer and the mechanic are often ill-nourished, the former because his food is too poor in nutritive ingredients to enable him to support the muscular waste his work requires; the latter, because his higher wages tempt him to indulge too much in beer, spirits, and tobacco.

But for both these classes the diet required by the Emigration Commissioners is almost perfect. It is hard to conceive a dietary scale which, at any reasonable cost, could supply the emigrant more completely with what physiology teaches us he wants, and it is certain that practically results show how admirably it answers.

The Indian emigrant is, to use Dr. Pearce's terse description, "a deeply scorbutic, low-fed cooly, with a fatty degeneration of cornea, proneness to low diarrhoea, puffy gums, flabby flesh, and rapid sinking of the vital powers at times." He is, moreover, not an individual who has grafted this state on an originally sound and healthy constitution; he has inherited it, he was born with it, his ancestors for thousands of years have been in the same condition. They have been for the most part vegetable feeders, using a very small portion of animal food. They have consequently been obliged to swallow a much larger bulk of food than the flesh-eating tribes of mankind, in order to draw from it that amount of albuminous and other nitrogenous ingredients which are absolutely necessary to supply the waste of tissue, and to maintain life. Hence his stomach is an enormous pouch with thin walls, and his intestinal canal is in a state

* The writer only selected Victoria incidentally. He has not calculated the mortality of the other Australian colonies.

of what may be called normal diarrhoea. The immigrants coming from Calcutta have, for the most part, been living on the vast Plain of Hindoostan amid miasmatic poisons, which are of themselves extremely debilitating, and which must, in the course of ages, have greatly deteriorated the race.

Of late years famine has visited his country, and probably the fear of starvation has been the chief motive which has induced the habit-bound and home-loving Hindoo to defy all the sanctions of his religion, to break through all the customs of his caste, and to embark for the unknown land across "the great water."

He has marched, perhaps, hundreds of miles to the depôt at Calcutta. He rests there a few days, and then undergoes an examination before at least two medical men before embarkation. It may be fairly presumed that he is not below the average of his countrymen.

But from the day he comes on board, he enters upon a totally new and strange life. The motion of the ship makes him sea-sick, and although sea-sickness may be a very good thing for a person who habitually indulges too much his appetite for food and fermented liquor, it is a very depressing agent to those who are already weak. The motion of the vessel and the narrowness of the space, the necessity of going up and down the hatchways, &c., cause a great deal of fatigue, as every one must have felt at the beginning of a voyage. It is not that he undergoes more muscular exertion than on land, but that muscles but little used on shore are largely used to maintain one's balance, &c., and are easily fatigued, hence one soon feels tired during the first few days of a voyage. A very convincing proof that new muscles come into action is seen in the rolling gait which one cannot get rid of for a few days after landing from a long voyage. Moreover, the nights are broken, and when sleep does come the rest is not so complete, on account of the motion of the ship, as on shore.

Such are some of the physical causes at work of an exhausting or debilitating kind.

But the moral causes are even more important. We have here to deal with persons who have for the first time in their lives violated openly the precepts of their religion and defied the anger of their gods. They have broken their caste; they have lowered themselves below the level of the lowest Paria; the doctrines and the customs of the oldest religion in the world, which have been handed down from father to son for thousands of years, they see daily disobeyed or broken. They are compelled to eat their food contaminated, as they believe, by the presence of the European and of other Natives of lower caste than themselves. No wonder if such food so eaten is often loathsome to them, and that nothing but the pangs of hunger induce them to take it. They are leaving their homes and their country, and voyaging towards a land of which they know little, except that they will be among people different from them in race, religion, and habits.

It must be remembered that we have not to deal with a race like the Negroes who, provided their physical wants are supplied, are indifferent to everything else, and whose mental powers, especially those of memory and reflection, are almost entirely absent. We have to deal with a race whose ancestors were civilized when ours were naked savages, eating acorns and painting themselves blue. We have to deal with men whose ancestors possessed elaborate systems of religion and philosophy at a time when we knew nothing of our own, who then spoke the language which has proved the mother tongue of all the Caucasian languages, as from their race spring all the great Indo-Caucasian nations.

We must, therefore, take into account the action of moral as well as physical causes. We must admit that all these are depressing agencies; they all tend to lower the vital powers; dejection of mind invariably causes a greater or less derangement of the bodily functions, particularly of those of the digestive and nervous systems.

Placed on board in the state of body and mind here stated, what is done for them?

Common sense would say, that they ought to receive a diet decidedly above the average of what they have been accustomed to, and that special measures should be taken to overcome the mental objection and the other moral agencies tending to lower the system. But this is not done, although there can be no question that their diet, as provided by the regulations, is in some respects very well suited to them. There is no doubt of its being abundantly sufficient in quantity. The condition in which they land here shows that they have had an ample supply of digestive food. But food may be ample in quantity and easy of digestion, and yet be deficient in some of those ingredients which are required for keeping an individual in healthy life. This is where the cooly's diet fails. I do not attach much importance to the fact that it is considerably less in quantity than that of the European emigrant, because, considering the way in which rice swells and gains weight by cooking, I should think the weight and the bulk of the two diets when cooked would be nearly equal.

The immense difference lies in the nutritive value of the materials. Look, for example, at the farinaceous ingredients and compare the cooly's 8 lbs. 12 ozs. of rice with the 7 lbs. 2 ozs. of biscuit, wheaten flour, and oatmeal, to say nothing of the 8 ozs. of rice.

The 14 ozs. of salt fish per week given to the cooly is an amazing contrast to the 40 ozs. of prime salt beef and pork, besides the 16 ozs. of preserved meat and the 6 ozs. of suet. The

carrots and potatoes find no equivalent in the cooly dietary, and the onions are only 14 ozs. against 2 lbs. in the European dietary.

It is a great mistake to suppose that all the inhabitants of British India live on rice and ghee. I know the idea is a favourite one in Trinidad, where it is considered that the additional modicum of salt fish is an unheard-of luxury to the cooly. Dr. Pearce, in his often quoted little book, says (page 85)—"Coolies often loathe the continuous rice, chaupatties (*i. e.*, cakes made with flour and a little salt, something like the oat-cake of Yorkshire and Scotland). Chaupatties are the favourite food of nearly all coolies. A Devonshire boy does not so much enjoy plum pudding as a cooly his chaupatty."

Dr. Rakeem, himself a Native of India, told me in conversation that the up-country coolies detest rice, and that he always issued flour to them for chaupatties. It is evident that the substitution of wheaten flour for rice would make a most important difference to the nutrition of the immigrants.

The two great classes of food, or those which tend to form the organs of the body in growing animals, or to supply the waste of the tissue in adult ones, and those which serve to maintain the respiratory process and to keep up the heat of the body. The former class comprises the foods into whose composition nitrogen enters; the latter consists mainly of fatty bodies (such as the ghee of the cooly, the butter and suet of the European) and the sugars, starches, and alcoholic drinks.

Now the rice of the cooly diet consists to a very great extent of starch or other non-nitrogenized substances, the proportion of what Liebig calls "plastic azotized (*i. e.*, nitrogenized) matter" (equivalent to so much vegetable albumen, fibrine, and caseine) he states as only seven per cent. of the whole, while wheat contains more than twenty-one per cent., and oatmeal about 20 per cent.

The nitrogenized ingredients alone go to form tissue, the starch, sugar, and other non-azotized compounds are either burnt off in the respiratory organs or go to form fat. Hence it is, that while we find among these coolies the vital organs, such as the lungs and intestinal canal, showing such evident signs of weakness, and so liable from the slightest cause to become diseased, yet these coolies are plump and fat. If, adopting Liebig's analysis,* we look only to the tissue-forming material, the wheaten flour, biscuit, and oatmeal of the European diet scale are equal to 21 pounds of rice.

It will, of course, be objected that the cooly receives quite as good food as he has been accustomed to, and that he lives in good health on what an Englishman would starve on.

I doubt very much whether he does receive as good food as he has been accustomed to. I have been informed that even the Hindoos make much use of fish. They certainly eat it most heartily when they come here. I have before said that many tribes do not eat rice, but flour; I suppose they drink milk, and do not object to eggs.

As for the Mahometans, of whom large numbers emigrate to this island, they certainly eat meat and other forms of animal food, and cannot fail to suffer from a continuous rice diet.

But even admitting, for the sake of argument, that their food is as nutritious as it was on shore, I deny altogether that what might be sufficient when living on land and following their usual occupations, and not changing their ordinary habits, will suffice in the totally new condition under which they find themselves placed on shipboard.

Some of the depressing and debilitating agencies to which they are subject have been already enumerated. Reasoning *a priori* we should say that a more nutritious dietary is required in order to counteract them, and that if such a dietary be not given the inevitable result will be a great amount of sickness and mortality.

We should say, that looking at what the Hindoo is his feeble frame, his deficient muscular development, his slow and cautious movements, the diseases to which he is liable, and the conditions under which for thousands of years he has lived, nothing could be more contrary to common sense, physiology, and experience than to suppose such a man could be suddenly placed in entirely new physical conditions, subjected to depressing and agitating mental emotions, and to considerable bodily fatigue of an entirely new kind, and be maintained in health and strength on his ordinary dietary. Another proof, if another were needed, that the cause of mortality is debility, is to be found in the fact proved by the experience of eight years, that the death rate invariably increases inversely as the age, that is to say, the infants die in greater proportion than the children, and the children than the adults, and that of the two sexes the females suffer most.

This is exactly what we should expect from the premises. Now, if death were owing mainly to exposure to cold, we should find that more men would die than women, and more adults than infants, the latter being certainly more protected from the cold than their parents.

If reasoning *a priori* we should come to this conclusion, reasoning *a posteriori* we arrive at it too. It is not only the result which we might naturally expect, it is what we find has actually occurred. The proof of this assertion is to be found in the first part.

* I am quite aware that Liebig's views have been opposed by recent inquirers, but not in such a way as to affect my argument.

But not only is the food of the cooly at fault, but another, and I believe fertile, source of disease in the very limited superficial and cubical space allotted to him.

The European immigrant must have 15 superficial feet of the upper passenger deck, if the height between decks is less than 7 feet, then 18 superficial feet must be allowed; this would give at least 105 cubic feet to each individual, not too much when it is considered that in the soldiers' barracks in India 90 superficial and about 1,200 cubic feet are allowed, and in the hospitals 120 superficial feet. Yet this not very liberal allowance was cut down by one-third for the Indian immigrant during the whole period over which our chief calculations extend, and was only increased to 12 feet last year.

What was the reason of this preposterous regulation it is impossible to guess. Was it supposed that the cooly did not make as many respirations in an hour as the European, or that a cooly could live with less oxygen than a European under similar circumstances?

It must be evident that, packed away in this manner, the immigrant can only be saved from suffocation by a tremendous draught of air through the between decks. Dr. Pearse speaks of the injurious effects of this on the people, and of its causing diarrhoea, dysentery, and thoracic disease, in several parts of his book.

There can be no reasonable doubt that this is one of the causes which makes the hotter temperature in the between decks more injurious to health than the lower ones. Of course if the people were in a sound state of health, and receiving sufficient nutritious food, they would be better able to resist the evil effects of this rude kind of ventilation.

It may seem strange to those not acquainted with tropical climates that any injurious effects can be attributed to draughts of air having a temperature between 70° and 90°. In Europe such air would be called warm. But it must be remembered that those who are habitually exposed to a temperature of 85° to 95° in the shade find a draught of air 76° or 78° very chilling. Even when hotter than this, if the air is below the temperature of the blood (99° to 100°), and passing rapidly over the uncovered skin, it will cause a sensation of cold, and will check the perspiration. A very ample proof of this is to be found in the act of fanning, which in the hottest room causes a sensation of coolness.

It is clear, therefore, that by allowing such a small space to the cooly we are reduced to one of two alternatives—either to give him fresh air, by such an amount of ventilation (in the etymological sense of that word) as will be very likely to produce disease, or we must allow him to breathe impure air, and thus certainly produce other and perhaps more formidable diseases.

PART III.

It will be seen that I attribute the sickness and mortality among the immigrants to two chief causes:—

1st.—Their food not being sufficiently rich in nutritive ingredients.

2nd.—To the want of sufficient deck span. It may be also that sometimes bad water is put on board at Calcutta, as I am informed that it is much less expensive to pump water up from the river than to supply it in other ways. I have been told that 1s. a head for each man has been paid to Captains to induce them to allow this to be done. This cause of disease, when it exists, is so obvious and so certain to be detected by a careful surgeon that I should not imagine it to be very common.

The remedies I would propose are two,—to improve the quality of the food, and to give the same superficial space as in European emigrant ships.

There are certain practical difficulties in the way of improving the nutritive quality of the food, which must be considered.

The Hindoo will eat no meat except mutton, and I believe that some few will not eat that. But the great bulk will undoubtedly eat mutton, and more sheep might, Dr. Pearse says, be readily accommodated.

Preserved mutton, which must, however, contain some of the bones in order to show its origin, might be supplied. This the coolies greatly relish. Those I had charge of who were landed from the *Ellenborough* and *Liverpool* very speedily devoured all the preserved mutton left from the ships' stores. To a large extent, wheat flour should be substituted for rice.

Condensed or desiccated milk might be served out once a week.

The quantity of salt fish ought to be largely increased, and, instead of the stuff which is at present given, the very best Newfoundland cod fish should be the staple. A small quantity of herrings or salt mackerel might be sent as a variety. On these points, however, the Surgeons Superintendent will be able to afford valuable hints.

I should not have presumed to give any advice on the subject, had I not found by experience that the coolies not only like fish, but improve on it very rapidly when it is fresh. Would it not be possible to preserve the cheaper kinds of fish, such as mackerel and herrings, in

the same way that meat is preserved without salt? Surely, if a sufficient market was opened for it, some means of utilizing the immense quantity of mackerel and herring, which are now often wasted, might be found.

I think that probably small quantities of Liebig's essence of beef, made in South America and Australia, might be introduced into the soup disguised as chutnee. A very small quantity of this essence would add greatly to the nutritive qualities of the soup.

Of very great importance, I think, is issuing to the emigrants some form of special stimulants. Dr. Rakeem, I perceive by his journal, and Dr. Pearse give gunjah and opium to those habituated to them. Dr. Rakeem, I see, issued rations of brandy-and-water pretty frequently, besides encouraging tom-toms and other exorcising musical instruments. I would suggest that rum of good quality would answer every purpose of brandy. I have found that coolies like rum and water sweetened with sugar, and flavoured with lime juice, and that it agrees with them well. A very small quantity per diem suffices. To my patients from the *Ellenborough* and *Liverpool*, who were suffering from most severe forms of gangrene and sloughing pagedana, I gave nothing but rum and water, fresh fish, preserved meat, &c., as long as it lasted, and sweet potatoes and other fresh vegetables, together with flour, rice, curry stuffs, tamarinds, &c., as they had had on boardship. On this diet, and sea bathing, every case rapidly improved, and out of 96 I did not lose one case.

What was more extraordinary, the diarrhoea and bronchitis got well without any special treatment, showing clearly that these diseases were entirely constitutional. In fact, there was very little drug treatment, and I doubt whether the little there was did any good.

I believe if an ounce of rum were issued once a day to every cooly, not an opium eater or gunjah smoker, it would have an excellent effect. So such for additions. The only article I would diminish is the rice (to be replaced by flour) and six-sevenths of the tobacco. The quantity of this latter article is preposterous, and certain to act most injuriously if smoked to such excess, both by depressing the nervous system and by aggravating diarrhoea and dysentery. An extensive experience of this latter disease, both in Turkey, the Crimea, and the West Indies, has convinced me that few things are more injurious to a patient suffering from it than smoking tobacco.*

It may be objected that these alterations would entail great additional expense. I doubt this, as, if we compare the rates paid by the Emigration Commissioners to Australia and New Zealand, and consider what the dietary required is, and the additional space required, with the amount paid for coolies to the West Indies, we shall see that the profits on the latter must be very large indeed. I see that the contract prices to South Australia per statute adult during the season of 1866-67, as given in the Commissioners' Report, page 74, were—

Per statute adult.			Days on the voyage.		
£	s.	d.			
12	6	9	...	...	82
12	0	11	...	...	96
14	14	9	...	...	96
12	18	9	...	...	119
14	6	0	...	...	99
13	15	9	...	...	88
13	14	0	...	...	91
13	18	4	...	...	90

The amount paid to Queensland for a much more protracted voyage, ranging from 93 to 123 days, varied from 12l. 16s. to 14l. 19s. To New South Wales the rate varied from 12l. 6s. 11d. to 13l. 19s. 6d., and the number of days from 80 to 123, and the mortality on 3,022 souls embarked was only 17, or 56 per cent. The average rate paid was only 12l. 16s. 1d. Now, if it would pay shipowners to convey emigrants to these places at such a rate, giving them such a dietary, surely it would pay them better to bring coolies here who would not require anything like such an expensive dietary. The freight actually paid is, I believe, a little over this sum.

But one measure which, I venture to say, ought to be adopted, and I advocate it, of course, on sanitary grounds alone, is to place the whole of the transport of the immigrants in the hands of one firm or company, to be held *quandiu se bene gesserint*, interpreting that term stringently. A step in this direction has been made by His Excellency the Governor in giving the contract for one year to one firm. But this, I venture to say, is not going far enough. The experience of that firm and the Captains it employs may be entirely lost next year, and we may have to begin again with raw hands who know nothing and care very little about coolies. An illustration of the kind of feeling which it is most desirable to create and encourage was shown to me to-day (May 4th) on my inspection of the ship *Ancilla*, which arrived with coolies. She had embarked 324, of these only one died. There were three births on the voyage, and of these one infant died. She consequently landed one more than she embarked. The moment I got on board, the Captain proclaimed these good news, and loudly boasted that no other ship in the two years had done the same. He declared that *he knew* he should do it, and he meant to do it.

* It may be as well to mention that the writer is not an anti-tobacco fanatic, but has been for many years a habitual smoker.

Now, it must be perfectly evident that the experience this Captain had acquired, the pride he takes in his success, and the interest he shows in the welfare of his human cargo, are feelings which cannot be expected to animate those who make one chance voyage with coolies, think them perhaps a great nuisance, and do not wish to have anything more to do with them.

Another great advantage which would result from giving the transport to one firm would be that, in the event of any Captain or officer neglecting his duties, small fines may be inflicted on the owners who would recover them from the person at fault. Each Captain would find it to his interest zealously to second the efforts of the surgeon, instead of yielding (as they often do) only a sullen and reluctant obedience to his orders.

Of course, it would be easy to make some arrangement by which the contract price might be regulated by the average freights.

Even supposing that I am wrong in my conjecture that the expenses would not be increased, and that it would be necessary to pay a pound or thirty shillings a head more for the coolies, I believe it would be an economical outlay for the colony, for it is certain that the chief loss on indentured immigrants arises during their first year, and that the sickness among them is then very great.

But it must be clear that a sharp attack of fever, or dysentery, or bronchitis on boardship is an exceedingly bad preparation for hard work in the cane field, and that the diseases from which he has suffered on the voyage are just those, which not only weaken him at the time, but render him very liable to a recurrence of them. There can be no doubt that the planter, who takes an immigrant who has had no illness during the voyage, will have a much better labourer than he who takes an immigrant who has just recovered from an attack of sickness.

I have now finished this inquiry, which has extended much beyond what I originally intended. My apology for its length must be the extreme interest and importance which the subject possesses in this colony.

I will now briefly sum up the conclusions arrived at in the second and third parts :—

- 1st.—That looking at the known constitution and habits of the Indian immigrants, we should expect that he would suffer severely from the depressing and debilitating effects of a long sea voyage to an unknown country;
- 2nd.—That this is proved to be the case by the statistics given in the first part;
- 3rd.—That the best means of combatting this state would be to give him a more nutritious and stimulating diet than his ordinary one;
- 4th.—That his present dietary does not fulfil that indication;
- 5th.—That it ought to contain a much larger proportion of nitrogenous ingredients than it does;
- 6th.—That he should have as large a superficial space allotted to him as the European emigrants;
- 7th.—That the whole transport of emigrants should be placed in the hands of one responsible firm, under such special regulations as to diet, &c., as may be thought desirable.

I have the less hesitation in submitting these views for the consideration of his Excellency the Governor, because not only do I believe them to be consistent with sound physiology and common sense, but because they are in accordance with those entertained by men who have had much larger experience of coolies than I can pretend to.

Among these I should include all the Surgeon Superintendents with whom I have conversed. I feel sure, moreover, that my conclusions will in the main meet with the approval of the Agent General of Immigrants, Dr. Mitchell, who in his official reports has uniformly and persistently striven to show the necessity of good food and proper sanitary regulations for the health of the cooly. Had his wise suggestions been carried out in their integrity, this colony would have been saved many thousands of pounds, to say nothing of human suffering and lives. It is to Dr. Mitchell that every improvement in the sanitary condition of the immigrant is due, and I think that we may infer that to him too is owing something of the enormous difference between the mortality on board Trinidad cooly ships, and those going to a neighbouring colony.

I have great pleasure in acknowledging the facilities he has afforded me for making this report.

No. 465

COPY forwarded to the Government of Madras.
with a request for an expression of opinion on Dr. Bakewell's suggestions.

By Order of the Governor General in Council, 2

HOME DEPARTMENT,
SANITARY;

Simla, the 29 October 1869.

Under Secy. to the Govt. of India.

dupd 25/3/20
With 3 copies of the despatch
and of its accompaniment

Public Department.

No. 297.

To

The Secretary to the Government
of India.

Home Department.
(Sanitary)

Sir,

With reference
to endorsement dated the
29th Oct^r 1869 No 465, I am
directed to transmit copy
of a despatch to the Secy.
of State on the suggestion
made by Dr. Kitchinwell
respecting the diet scale
and space to be allotted
to Emigrants proceeding
to the Colonies.

W. V.
R. S. C.

For. Secy
12 March 1900.

As . Department

To,

To
The Secretary to the
Government of
Department

Dated 18 .

*Sub. 25 to Reg. 2251 and
1890 of 8.*

22/2/70
22/5/70

Home 1870. Dept.

From Government of

Fort St. George

Dated 2nd 12

R.

1870

No.

Enclosures

space

D. No.

1008.

D.

L. N. 207.

No.

Nos. 50. 60.

Transmitting copy of a des.
to the Secy. of State on the
suggestions made by Mr.
Bakerly respecting the
diet scale & space to be
allotted to immigrants pro-
ceeding to the Colonies.