ON THE
SYMPTOMS AND PATHOLOGY OF
PSILOSIS

(LINGUÆ ET INTESTINI).

BY

GEORGE THIN, M.D.

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FOR some years past I have been induced to devote attention to the symptoms and peculiarities of a rare climatic disease, examples of which are seen in London in patients who return to their native country in search of health.

One of the symptoms of this disease is a special and characteristic condition of the tongue and mucous membrane of the mouth, and I have had the opportunity of seeing several patients in whom this symptom was a prominent feature. Another characteristic symptom is an irregular and loose condition of the bowels, and to this may be attributed the fact that the class of cases to which I refer has been usually confounded with the various types of disease grouped under the name of *tropical diarrhœa*. The Dutch physicians in Java, where the affection is common, appear to have been the first to call attention to the fact that there is a distinct variety

of intestinal disease which can be distinguished from the ordinary forms of diarrhœa which are found in the tropics, and to the malady they give the name of "Sprue," a term used in the vernacular in Holland, and in some parts of Scotland, to designate an aphthous condition of the mouth.

Believing that it is desirable to choose a more descriptive name for the affection, and having regard to its most peculiar symptom, I have ventured to suggest that it might, at all events provisionally, be known by medical men as a condition of *Psilosis*.

I have given descriptions of cases of the disease with remarks regarding its treatment and pathology in the 'Practitioner' for September, 1883; and again, more fully, in the 'Practitioner' for 1887 (the latter communications being reproduced in a separate publication); and in a paper in the 'British Medical Journal,' June 14th, 1890.

It is the object of the present paper to record some additional observations that have been made since the date of the last publication to which I have referred. The supplementary information which I am now able to give, although imperfect and fragmentary, is suggestive as regards points of general medical interest, and as the opportunities of carrying on investigations into the nature of the malady are beset with difficulties, there is sufficient reason for bringing the subject somewhat prematurely before the Society.

In the previous publications to which I have referred, evidence is given to show that a peculiar erythematous inflammation of the mucous membrane of the mouth and throat coincides with a diarrhœa of a very peculiar nature, and of an extraordinarily persistent character; whilst in the only case known to me in which a histological investigation was made, parts of the tongue and the whole of the œsophagus were found denuded of epithelium, and the entire mucous membrane of the ileum was found in a shrunken, wasted, and sclerosed condition.

It is desirable, therefore, that further evidence should be given regarding the condition of the mouth in this affection, and with this object in view two cases are now related in which the characteristic changes were well marked. These cases are selected from others because they form the basis of some further investigations which are described in the paper. In order to illustrate the distinction between this form of disease and what is called ordinary tropical diarrhoea, two cases of the latter affection will be briefly described, and the points of difference shown.

It is also the object of the paper to invite special attention to the colour of the stools in this disease, as the evidence goes to show that colourless or white stools may be passed for a long period, with no affection either of the liver or pancreas. Further, as possibly having connection with this peculiar symptom, some observations on the bacteria present in the stools will be noted.

Mrs. H— consulted me on September 20th, 1890. She informed me that she had been three summers in Shanghai. During the first two summers she had suffered from diarrhoea without any special symptoms, and recovered her usual health with the cold weather. In August, 1889, she was attacked with diarrhoea for the third time, which persisted during the winter and spring, and had never since entirely ceased. This attack had been accompanied from the beginning by an inflamed condition of the mouth and throat, which had persisted equally with the diarrhoea. The motions had been pale from the first, and she had observed that on the few occasions when they were solid these motions were also quite pale. During the voyage to England, on a diet of chicken broth, milk, and biscuits, the symptoms continued with more or less severity, being much aggravated on one occasion after eating chicken.

She had a worn, pale, highly anæmic look ; a small, feeble pulse ; and in her ordinary clothing only weighed 95 lbs. Apart from the intestinal and mouth symptoms,

she was free from any sign of visceral disease. She passed several copious pultaceous motions daily, of a greyish-white colour, attended with more or less abdominal uneasiness. Her mouth, and particularly her tongue, were excessively tender and raw, and caused her great distress. An attempt to swallow anything hot—either in flavour or temperature—produced great pain in the mouth and throat. In speaking, the instinctive attempt to prevent movements of the tongue, which were painful, caused the articulation to be thick. The soreness of the mouth was the symptom of which she complained most, and which gave her most distress. Above and to the left of the umbilicus there was a point in the abdomen which at that time, and for many months afterwards, was painful to firm pressure; and during a long period symptoms of abdominal uneasiness of varying intensity continued. A drawing was made of the condition of the tongue at the time, and is now shown to the Society (Plate IV).

She was put to bed, and placed on exclusive milk diet. She was unable to take more than seven glasses, (about three pints) of milk a day. At the end of a week she passed one fairly formed solid stool daily, of a perfectly white colour; and the symptoms in the mouth and throat were greatly relieved. At the end of another week, as the white motions continued solid, and the throat symptoms had entirely disappeared, whilst the mouth was scarcely at all tender, I considered it safe to try an addition to her diet. One raw egg was given in milk on two successive days, and once she had a little water arrowroot. The result was disastrous. The diarrhoea and symptoms of the mouth returned, and it was necessary to put her again on exclusive milk diet, to which she adhered for the next five months, the quantity taken being gradually increased from seven glasses to twelve or thirteen daily, which was her maximum.

During all this period of five months the tongue symptoms continued more or less manifest, but on the whole

gradually abated. The motions, when either formed or solid—which they usually were—remained quite white. During occasional attacks of slight diarrhœa the fluid that passed was light yellow.

After five months of the milk treatment it was considered safe to give small quantities of beef-tea ; and bread was cautiously begun one month afterwards.

During this period there had been occasional slight relapses, mostly due to the influence of cold. One relapse, after she had been able to take beef-tea and a little bread, was distinctly attributable to a small quantity of boiled whiting given in the end of January, and rendered a return to milk and beef-tea necessary for another month. Bread was again resumed cautiously, and in April—ten and a half months after I first saw her—she was able to eat beef, mutton, milk pudding, and chicken ; and in another month, exactly one year after I had first seen her, and one year and nine months after the beginning of her attack, she was able to take an ordinary mixed diet.

The pale, colourless, and sometimes greyish motions persisted until the end of December, when, on one occasion, a slightly brownish tinge was noticed. Gradually, as she improved, a slight tinge of light yellow became perceptible in the motions ; but it was only after eight months of treatment, when on a diet of milk and beef-tea, that it was noted that the formed motion was of a natural brownish colour. That this return of the natural colour was due to the restoration to health, and not to the diet of milk and beef-tea, is manifest from the fact that on the same diet the motions had been persistently white, or a white occasionally tinged with very light yellow.

During the course of this long illness the symptoms were carefully noted daily by a trained nurse of unusual intelligence and capacity ; and the full detailed account of the case appended to the paper is only an abstract of the very much fuller account for which I am indebted to this nurse.

Soon after the motions became formed, my attention was attracted to a soft, creamy, somewhat consistent mass, which adhered to the upper part of the formed motion. From its appearance and consistence I was at first under the impression that this mass was simply a quantity of undigested cream from the milk which was taken; but an examination made at this time, for and with me by Dr. Wethered, who was kind enough to take an interest in the case, showed that this mass—so far as its solid elements were concerned—consisted apparently of an almost pure cultivation of bacteria.

Dr. Wethered on several occasions made preparations of these bacteria, which were found to consist mostly of a rod-shaped bacterium of what might be described as intermediate size, with a very few large, thick bacteria. The solid part of the motion also contained a large number of bacteria.

This patient for a period of months passed daily a mass of bacteria as the latter part of the stool, often as much as a coffee-cupful, sometimes more, and sometimes less. As the disease abated, this bacterial mass diminished in quantity, and with the disappearance of the disease and the appearance of colour in the motions it entirely ceased.

On ascertaining how largely bacteria entered into the formation of the stool, and how deceptive the ordinary naked-eye appearances had been regarding its composition, I considered it desirable to obtain an analysis of the fæces, which I was enabled to do through the kindness of Mr. Wynter Blyth, to whom I desire to express my thanks. He has contributed largely to whatever value this paper may have by giving freely of his time and special chemical knowledge, by taking a special interest in the peculiar condition of the stools, and by suggesting means by which a study of their constituent elements might be facilitated.

His investigations consisted, first, of an analysis of the milk which the patient took; and secondly, of the fæces.

Analyses of Milk and Fæces.(I) *Milk.*

Sample delivered 7 a.m., July 29th, 1890 :

	Per cent.
Total milk solids	12·22
„ fat	2·66
„ ash	·60

Sample delivered 5 p.m. (no connection with fæces) :

	Per cent.
Total milk solids	12·26
„ fat	3·41
„ ash	·58

(II) *Fæces.*

The fæces had the appearance and consistence of thick Devonshire cream ; the total weight was 197·35 grms. The reaction was feebly acid. Absence of albumins. Absence of hæmatin.

On distillation with acetic acid, small quantities of *indol* and *skatol* came over.

(a) A small quantity dried at 100° C. showed 82·73 per cent. of water.

(b) Ether extracted 7·66 per cent.

(c) On addition of a mineral acid to decompose the bile soaps, the residue gave up a second extract of 5·72 per cent. of fatty acids.

(b) was saponified up with alcoholic potash, the alcohol got rid of, the soap shaken up with ether, and an extract obtained weighing equal to ·38 per cent. This should be cholesterin, but it presents several distinct differences and requires further investigation. The soap freed from ether and decomposed gave a mixture of cholic, stearic, and palmitic acids ; some volatile fatty acids, among which was butyric.

(c) was crystallised several times from alcohol ; it mainly consisted of cholic acid.

(d) The nitrogen was estimated by Kjeldahl's process. It equalled .16 per cent.

(e) The fæces extracted with hydrochloric acid gave no sign of oxidised sulphur when tested with baric chloride, but the ash contained potassic sulphate, and by fusing with potash and nitre the organic sulphur was found to be equal to .014 per cent. Most of this is derived from taurin; expressed as taurin, it would be equal to .057 per cent.

(f) The fæces gave a white iron-free ash, total weight equal to 3.27 per cent., .76 per cent. soluble in water, the latter chiefly potassic and sodic sulphates; the portion insoluble in water was a mixture of calcic carbonate and phosphate.

Hence the whole analysis is as follows :

	Per cent.
Water	82.73
Organic solids	14.00
Ash	3.27
	<hr/>
	100.00
<i>Volatile matters :</i>	
Indol	?
Skatol	?
Butyric acids	?
<i>Fixed and neutral fats :</i>	
Palmitin	?
Stearin (cholic acid)	7.28
<i>As soap :</i>	
Cholic acid, with small quantities of other acids	5.72
Body analogous to cholesterin	.38
Taurin	.06
Mineral matters, carbonates, and phosphates of lime	2.51
Sulphates of potash and soda	.76

There are also nitrogenous substances in small quantities. The main peculiarity of the fæces is the absence of the colouring matter (hydrobilirubin) and the large quantity of fatty matters. The whole mass practically consists of bile acids, fats, and ash.

The sulphate is derived from the combustion of organic sulphur matters.

Three pills containing sulphate of iron were given

at Mr. Wynter Blyth's suggestion, in order to observe whether the ordinary black stools of iron were produced, with a negative result. The only change observed was that the motion was of a yellowish-grey colour, showing the absence of the sulphides usually present in iron stools.

The second case (G. N—) was that of a woman who consulted me in September, 1890. Nine months previously, whilst living in China, she was attacked suddenly by diarrhœa, which had persisted ever since that time. Five months after the diarrhœa began she first became conscious of a sensitiveness of the mouth which had increased to an extreme degree, rendering the swallowing of everything except milk and water exceedingly painful.

When I saw her she was passing five to six greyish or faintly yellow motions of the consistence of gruel, and suffering pain and dryness in the mouth and gullet from the throat to the stomach. The softest boiled grain of rice or sago pained her when swallowed. Apart from the intestinal affection, and the condition of the mouth and throat, she was free from organic disease. The tongue was somewhat swollen and reddened, and presented the appearance shown in the accompanying water-colour drawing (Plate V). There were erythematous patches on the soft palate.

On milk diet the diarrhœa ceased and the throat became well, and after a time a very slight yellowish colour was occasionally observed in the usually perfectly white, colourless, formed stools.

Her history since that time has been a series of periods of improvement after relapses produced by cold, and attempts to take solid food. She has, however, reached a stage in which she can digest bread, fish, and chicken. The motions throughout until January, 1892—fifteen months after I first saw her—have been either white or greyish white, or occasionally very slightly tinged with yellow; but quite recently, simultaneously with a great improvement in all her symptoms, a slightly brownish-yellow colour has been observed in the motions.

Reduced iron was given after the diarrhoea had been arrested the first time by milk diet, when the motions were solid, but white, in order to test for sulphides. The iron passed quite unaltered in the stools, the ordinary black stools of iron being entirely absent.

After the patient had been three weeks on milk, when the motions consisted of a fairly solid white cylinder, with a slightly softer, creamy or pasty mass following the more solid part of the motion, microscopic examination was made by Dr. Wethered; and it was found that the mass consisted largely of rod-shaped bacteria, very similar in size and general appearance to those described in the case of Mrs. H—.

More detailed accounts of these two cases accompany the paper, but are too long to read before the Society.

It is not necessary to burden this paper with other cases of which I have records, but it may be useful if I abstract from my notes some references to the colour of the motions.

In one case, on a diet of milk, chicken broth, beef-steak, arrowroot, and stale bread, the motions were abundant, semi-fluid, and of a light yellow colour. The same patient at a later period, on a diet of eggs, milk, arrowroot, and beef jelly, had only one motion in two days (the motion being a light yellow); at a still later period, after a partial relapse on a diet of milk, arrowroot, raw eggs, and beef jelly, the motion was divided into two parts as regards colour, one part being slightly yellow, and the other part absolutely white. At another period it was noticed that on a diet of milk, eggs, and occasionally fish, the motions were cream-coloured. It was only after the patient recovered, and was able to digest a mixed diet without relapses, that the motions became a dark or yellowish brown. It was about twenty months from the time I first saw him that he finally recovered. He had been ill two years previously. During the twenty months of which I am cognizant his motions were pale when formed, or very light yellow when they were loose. As the sym-

ptoms abated they became cream-coloured, and after twenty months they at last became brownish yellow.

In another case, in which the symptoms had lasted indefinitely for some years, and in which recovery had taken place after about six months of treatment, the motions were light, or sometimes bright yellow when they were very loose. The looser they were, the more yellow the colour. When they became solid they were white, and remained white on a digested diet of milk, bread, and fish.

Although now on a diet of coffee, milk, bread and butter, fish, chicken, partridge or pheasant, occasionally mutton and cauliflower, "the motions are still," he writes me, "very pale. They vary slightly, but the usual colour is a yellowish grey, which does not at all approach brown, the first portion of the stool being darker than the latter portion." Although this patient is rapidly recovering, he is still in the stage of occasional relapses, the last of which was probably produced by the mutton ; and it is important to note that the condition of incomplete recovery is coincident with the continued absence of the natural yellowish-brown colour of the healthy stool.

In another case of several years' duration, in which the cure has been complete and permanent, a decided colour of the motions did not occur until recovery was so far advanced that the patient had been for two months on a diet of milk, arrowroot, eggs, fish, bread, cauliflower, chicken ; and a fortnight on beef once daily.

In another case in which recovery has been complete, and in which for some time the motions were quite white, five months after treatment was begun, and when he was able to take a diet of arrowroot, bread, steak, occasionally boiled mutton, cauliflower with sauce, and a little milk, the hard motions are described as being still very light in colour. In this case the capacity to eat all ordinary foods without relapses coincided with the appearance of dark brown stools.

The absence of the natural yellowish-brown colour in

the motions, although probably more marked and more persistent in psilosis than in the commoner forms of diarrhoea acquired in the tropics, is also observed in the latter forms of intestinal ailment. In one case of what, for want of a more precise term, may be described as a form of tropical diarrhoea, the solid motion after three weeks of exclusive milk diet was a yellowish white, and after two months of milk diet was a pale yellow; but after only twelve days of beef-tea, bread and butter, and milk, the motion is described as being of a pale brown.

In another case of diarrhoea acquired in the tropics, entirely different from psilosis in its main characteristics, pultaceous, putty-coloured motions were passed. As it was associated with marked yellowness of the conjunctiva, and with a persistent bitter taste in the mouth, it was possibly associated with some disordered action of the liver. When there was much diarrhoea the motions were of a dirty white, and the solid motion passed on milk diet was of a lightish yellow. On a diet of fish, eggs, vegetables, chicken, and fruit, the colour deepened. These two cases are related in detail in the Appendix.

It will be observed that the two cases which have been selected as samples of others yet unpublished or incomplete, entirely confirm the inference drawn from previously published cases to the effect that, in the early stages of the form of intestinal disease known by the Dutch as "sprue," and described by myself as "psilosis," there is a special inflammatory condition of the mucous membrane of the tongue and throat, which is to be distinguished from all other recognised chronic inflammatory conditions of these parts. The appearances are fairly well shown in the two drawings which are submitted to the Society.

This condition of the tongue and mouth may occur in patients who otherwise suffer comparatively little, and in whom the diarrhoea is not a marked symptom; and it is easily distinguishable from the smooth, denuded, beef-steak tongue that may be occasionally observed in the final stages of exhausting intestinal complaints. Not

only do patients recover from it entirely, but often with remarkable rapidity, whilst its fugitive nature—disappearing sometimes at one part of the mouth, and developing in less than a day on another—gives it a special character.

The nature of the diarrhœa which accompanies psilosis may also, in most cases, be distinguished from the more prevalent forms of ordinary, chronic, tropical diarrhœa. When not acute, its chief characteristic is the copious discharge of a peculiar, dirty greyish, pultaceous mass, with a certain distinguishable, penetrating, disagreeable odour, entirely different from the ordinary fœcal odour. In the acute conditions, when the fluid contents of the bowels are rapidly discharged, the usual colour is a light yellow, in some cases a bright yellow. When the discharges are pultaceous, the food mass having remained longer in the intestine, the yellow colour has disappeared, and is replaced by a greyish, sometimes putty-coloured mass. When the diarrhœa, as a diarrhœa, is arrested, the colour becomes either quite white, greyish white, or cream-white. This absence of colour is more pronounced than occurs in cases of ordinary tropical diarrhœa dependent on other causes. In the latter class of cases there is also a comparative absence of colour. But at a very early stage of recovery a certain amount of yellowness appears in the motions, and increases sooner and with greater intensity than in cases of psilosis; and in cases that do well the normal colour of the motions reappears with much greater rapidity. Two illustrative cases of ordinary tropical diarrhœa, to be used as a contrast to the cases of psilosis, are given in the Appendix to the paper. In one of these the symptoms evidently point to a disordered action of the liver as associated with the prominent symptom of diarrhœa. In both of them, mouth or throat tenderness was entirely absent.

On what does the colourless stools in psilosis depend? The generally accepted opinion that colourless motions are always due to absence of bile has been negatived by

the important paper contributed to this Society's 'Transactions' by Dr. Walker.¹

In Dr. Walker's cases the liver was healthy, but the pancreatic juice was entirely wanting, the result being that the patients passed white motions; the inference being, as Dr. Walker has shown, that the brown colour of healthy stools is caused by the action of pancreatic juice on bile. The theory is, as stated by Dr. Walker, that that portion only of the coloured constituents of the bile which has been converted into hydrobilirubin is excreted in the fæces; while the bilirubin, bilifuscin, and biliverdin not so converted are absorbed; and that the colouring matter of the fæces—hydrobilirubin—cannot be produced without the aid of the pancreas.

Now in the cases brought before the Society there was no evidence of any affection of the liver. The skin and conjunctiva were entirely free from jaundice throughout, and the urine was never high-coloured, whilst in the only post-mortem case observed by myself the liver was found healthy. The results of Mr. Wynter Blyth's analysis show that in a typical case the elements of the bile were present in the stools. As regards the pancreas, so far as we know, none of the symptoms from which the patients suffered could be assigned to that organ; and in the post-mortem case referred to, it appeared so healthy to the naked eye that portions of it—perhaps unfortunately—were not put aside for microscopic examination. Further, I have never observed the appearances of free fat in the stools; the pulpy creamy substance, which so simulated the appearance of ordinary cream, but with more consistence, was found, as already described, to consist of an enormous mass of closely agglomerated bacteria, held together undoubtedly by the glia which these organisms form. Mr. Wynter Blyth's analysis shows that a large proportion of the milk-fat consumed was digested. On the 28th of July the total amount of nourishment taken by the patient consisted of about

¹ 'Med.-Chir. Trans.,' vol. lxxii, p. 257.

70 oz. of milk, or 1984·4 grammes, the mean percentage of milk-fat in this quantity being 60·22 grammes. As the motion passed on the following morning contained only 14·36 grammes of milk-fat, it is evident that 45·86 grammes had been digested during the previous twenty-four hours. This does not indicate any want of pancreatic secretion.

It seems sufficiently clear, therefore, that a patient in whom both the liver and the pancreas are exercising their normal functions may, over a period of months, pass formed colourless motions, although taking a diet compatible with health and strength, and with which a brownish-yellow colour of the stools is usually associated.

Although the facts already given in this paper, and in previous papers published by the author, do not afford a sufficient explanation of this condition, yet taken in conjunction with the results given by Allan Macfadyen, M.D., M. Nencki, M.D., and M. Nieber, M.D., in a remarkable paper entitled "Research into the Chemical Processes in the Small Intestine of Man," they may suggest some theoretical considerations which afford at least a basis of a working hypothesis.

These observers had the rare opportunity of making an extensive series of observations on the food mass which was withdrawn from a fistula of the ileum at the part where it joins the cæcum; and were able also to test the reactions of the mucous membrane, both of the ileum and of the first part of the large intestine; and made an important series of observations on the bacteria which were found to be present in the bowel. They ascertained that in this case the normal reaction of the food mass passing into the cæcum was acid; whilst the mucous coat of the ileum reacted alkaline. The alkaline reaction of the mucosa was increased in the colon, whilst that of the chyme did not begin until the food had passed into the large intestine through the ileo-cæcal valve. The statement found in most text-books that the chyme is already neutralised in the upper part of the small intestine, and

generally reacts alkaline in the lower part, is apparently incorrect. They further state that a very important and hitherto unregarded function of the intestinal mucosa is the supplying of alkali to the chyme. "An adequate neutralisation of the acid intestinal contents is of essential importance for the normal digestion in the small intestine. Should the mucous membrane furnish too little alkali, a hyperacidity of the intestinal contents must consequently ensue, whereby the separated mucin, instead of becoming mixed with the food mass, is immediately precipitated on the intestinal mucous membrane. In the same manner also the bile acids would be precipitated. Digestion and absorption must thereby suffer."

Now in a fatal case, the particulars of which are given in the 'British Medical Journal' for June 14th, 1890, a thorough microscopic examination was made by Dr. Wethered; and it was found that the mucous membrane of the ileum was sclerosed throughout its whole extent, and was in such a condition that the normal secretion of the membrane must have been absent. If this condition applies to all cases of the disease—and there is much in the clinical history of the cases to show that it is so—we have in this malady an absence of the alkali which is required to neutralise the acid intestinal contents. We shall, therefore, have an abnormal acidity of the chyme during the whole of its passage through the ileum, and when it is discharged into the colon. The observers to whom I have referred, also state that there are certain bacteria in the normal small intestine which decompose the carbo-hydrates, and that the products of the decomposition are ethyl alcohol, the two lactic acids, acetic acid, and succinic acid. An abnormal acidity of the chyme, it may be inferred, will probably interfere with the normal development of these bacteria, and the food mass which is discharged into the large bowel will, in that case, not have undergone the usual changes which take place before it leaves the ileum.

Dr. Macfadyen and his colleagues found that the

alkaline reaction in the food mass begins in the large intestine, and that the alkaline reaction of the mucosa of the colon was more intense than that of the ileum ; and each time they examined the fæces of healthy and sick people they found the reaction alkaline.

The fæces submitted to Mr. Wynter Blyth for examination were found to be feebly acid ; and in the case of two other patients the fæces were frequently tested, and were found to be invariably acid. That the food mass when it passes into the large bowel is in this disease probably acid, is a matter of inference from the presumed condition of the mucous membrane of the ileum, and from Dr. Macfadyen's observations in his case ; but that the fæces when passed were acid is a matter that has been accurately ascertained in three cases.

The mucosa of the large intestine is the habitat of many bacteria, but from what is known of these organisms generally, we must infer that the bacteria of an acid bowel will differ from the bacteria of an alkaline bowel ; and it is a matter of fair inference that in the three cases at least in which the reaction of the fæces was tested, the relative numbers of the different bacteria, and possibly also the varieties of these organisms, differed from what is the case in ordinary circumstances. We know that in these cases enormous masses of bacteria were passed in the motions ; and in one of the cases to which I have alluded, in which the motions were found to be acid, organisms were present in great numbers, and I succeeded in cultivating several distinct kinds both of rod bacteria and of cocci. We know that when in this disease the motions are driven quickly through the bowel in attacks of diarrhœa, they may be distinctly yellow ; and it is when the food mass is driven along with comparative slowness that the colour completely disappears.

It is not an improbable hypothesis that the abnormal products of bacterial growth inevitably associated with an alteration in the reaction of the large intestine, and with great probability with a hyperacidity of the food mass

in the ileum, are connected with the absence of hydrobilirubin, which is the ordinary colouring matter of the stools. I make no suggestion as to whether the products of bacteria prevent the formation of the colouring matter altogether, or destroy it after it is formed. It is very strictly within the limits of what we know of the laws of bacterial development that the absence of the alkaline secretion of the mucosa of the ileum must exercise an influence on the bacteria present in that part of the gut; whilst an abnormal influence must again be exercised in the large intestine when the fæces are acid.

Whether psilosis, as a disease, may have a bacterial origin must be still a matter of mere speculation; but the clinical facts point to its cause being some specific and special poison, found in some parts of the world and absent in others, which finds its appropriate soil in the mucosa of the ileum. So far as we know, the disease is entirely unknown in Europe, or indeed in any part of the world except certain parts of the East; and it is a plausible assumption that the *causa vera* of the malady is found in certain food or water ingested in these parts. The peculiar and very exceptional effects on the cure or aggravation of the malady, according as the composition of the food mass is affected by diet, may be explained on this hypothesis; foods which are usually considered easiest of digestion often, in this disease, producing disastrous results. The plausible theory of a possible bacterial origin of the disease is certainly not weakened by the discovery of the fact that when the fæces have remained a sufficiently long time in the bowel, there is discharged with the formed motion a large mass of pure bacteria, far in excess of anything that, so far as we yet know, takes place under ordinary conditions.

These are, however, simply suggestions, and I would not wish, by assigning too great a prominence to mere hypotheses, to weaken the import of the facts on which they are based.

Briefly put, the facts are that in an organic but curable

affection of the mucosa of the small intestine (which in one case has, by post-mortem examination, been proved to be the ileum) the stools remain colourless during long periods of convalescence, although the liver and pancreas are both quite healthy.

The import, therefore, of white or colourless stools is much wider than is usually supposed.

APPENDIX.

THE two cases of Psilosis are related in greater detail than in the previous part of the paper, and for the sake of comparison two cases of a common type of tropical diarrhoea are given.

CASE 1 (Psilosis).—Mrs. H— consulted me on May 20th, 1890. She was a small, pale, anæmic, delicate-looking woman, and informed me that she had been three summers in Shanghai; that she had had diarrhoea each summer, and that this spring she had been sent home for her health. In the summer of 1887 she had merning diarrhoea, which lasted all the summer, and disappeared with the colder weather. In the end of August, 1888, the morning diarrhoea returned. In September she passed a round-worm, after which the diarrhoea ceased. During these two summers she became thinner, but there was nothing wrong with the tongue. Towards the end of August, 1889, the diarrhoea again began, and was worse than in the previous summers. There were about ten motions in the morning, and several during the day, accompanied with abdominal pain. The motions were copious, watery, light in colour, and with a good deal of mucus, the diarrhoea alternating with occasional constipation. She became much thinner. Towards the end of September her mouth became very sore, being raw and painful, and when she swallowed anything hot there was tenderness all down the gullet, and a sensation of great distension after swallowing.

During the winter she was confined of a healthy child, and for a short while after the confinement the diarrhoea ceased, and the tongue got almost well, but as the old symptoms gradually returned she left for England.

Her condition during the voyage varied on a diet of chicken broth,

milk, and biscuits. The symptoms were much aggravated on one occasion after eating chicken. The soreness of the tongue remained. After being a fortnight in England, at the sea-side, where her condition remained the same, she came to town to consult me.

I found her free from fever, with no symptoms of visceral or thoracic disease, but with a certain amount of tenderness on pressure on the abdomen. The hepatic dulness was normal, or perhaps slightly diminished; the liver was not tender. One particular point, to the left of the umbilicus, was more tender than the rest, and persistently remained so for a very long period. She says that during her illness her motions have always been pale. Several times, for a day or two, since last September she has had solid motions, but they also were pale. Only twice has she observed the colour to be natural during this period. For the last two days she has taken nothing but milk, and for a fortnight previously had taken milk with corn-flour and revalenta. On this diet she had passed one solid motion daily, the colour of which was quite white, but during the whole time the mouth had continued very sore and tender. She remarked that she knew by experience that if, at this time, she had taken bread and butter, in addition to the sore mouth, she would instantly have had a relapse of diarrhoea. She has a tired worn look, and weighs, in her dress and jacket, 95 lbs. She states that her tongue had improved during the last few days considerably. I found it furred in the centre, but red and ragged on the edges, with a somewhat glazed look at parts. There was an herpetic and erythematous eruption on the soft palate. She was put on exclusive milk diet. I have noted that the first motion I saw was copious, pulsaticeous, of a greyish-white colour, and fermenting, and that she passed several of these the first two days. The tongue continued tender and raw. All attempts to swallow anything hot produced pain in the mouth and throat. The soreness of the tongue caused the articulation to be slightly affected, from an instinctive attempt to prevent its coming in contact with the rest of the mouth. This soreness of the mouth was the symptom of which she complained most, and which gave her most distress.

On the 23rd, after three days of milk treatment, the motion was partly solid, large, and quite white. On the 24th there was a soft white motion, not so copious; and the palate had got well. The patient was not able to take more than seven glasses of milk daily, and felt weak. The milk diet being continued on the 29th, the throat and upper surface of the tongue looked fairly natural in appearance, and the under surface, which until the 28th had continued slightly rose-coloured, had also become almost natural.

The pulse was small and regular, and about 70, the recumbent position being mostly maintained. She was now able to take eight glasses of milk a day, and was improved in appearance. The one daily motion was formed, solid, large, and of a pale greyish-white colour. The disappearance of inflammation of the mouth made manifest a high degree of anæmia in the mucous membranes. For some days she continued in this satisfactory condition, but the first relapse, whilst under my care, soon took place, and was distinctly due to diet. I had recommended a little arrowroot and a raw egg to be added to the milk, and when she had taken two of these raw eggs the diarrhoea relapsed, and the mouth again became sore. She was put again on pure milk diet, and sent to the sea-side. There she lived on eight glasses of milk a day, spent the morning on the sofa, drove in the afternoon, and walked very little. The mouth did not get well so rapidly this time.

On June 9th she wrote that there was a white spot on the tip of the tongue, another on the inside of the lower lip, and that the sides and back part of the tongue were red, with a somewhat whitish appearance in the centre; and for two days there had been a red patch on the back of the palate. The motions continued to be mostly formed, but still quite white in colour.

June 22nd.—Has been in town for several days. I saw the motions, which were solid, rounded, and formed, somewhat lumpy, very pale in colour; sometimes a very faint tinge of yellow. Since beginning the treatment she has been losing weight at the rate of one pound a week. For the last two days she has had an egg daily in addition to the eight tumblers of milk, and to-day she was ordered a cup of arrowroot and an extra glass of milk. The tongue at this time had a very slight silvery fur, broken on the edges at several places, with almond-shaped patches of a bright rosy red. There were two bright rosy red patches on the under surface of the tongue, one on each side of the raphe, with one small white patch. For several days past the inner surface of the lower lip has been inflamed.

23rd.—After the arrowroot and egg yesterday the motions were not so solid, and there were several in twenty-four hours. Again put on exclusive milk diet.

26th.—Tongue improving. Three motions instead of four on the previous day. They were fluid and white. She takes ten glasses of milk daily.

July 8th.—Since being again on exclusive milk diet the motions have become gradually less loose. Now she passes one formed motion daily as a rule, but some days there are one or two loose

motions, in one case the colour being described as greyish. She is now taking only seven and a half tumblers of milk a day, and remains in bed. The pulse is 75, small and regular. The tongue, which for some time had been very sore, is now less tender, but is still very red round the edges and at the point. There is also a patch of inflammation on the mucous membrane of the lower lip.

About this time meat suppositories were tried, but were discontinued at the request of the patient, who considered they gave her great discomfort and encouraged diarrhoea. The pain in the stomach at this time was occasionally so severe that starch and opium enemata were given.

12th.—The tenderness in the abdomen is now confined to a spot about the size of a shilling, in the epigastric region, opposite the centre of the false ribs.

This condition continued without much change for some time. The quantity of milk taken varied from eight and a half to ten glasses daily, and the exclusive milk diet was maintained. From the daily record may be taken as samples—

18th.—Tongue feeling decidedly better towards evening. Tenderness in abdomen scarcely to be felt. One motion at 6.30 a.m., partly naturally formed, tinged with yellow; the rest rather pasty-looking, but not quite so white as usual. No pain felt at the time. Ten glasses of milk taken between 4 a.m. and 8 p.m. Feeling better and stronger all day. The tongue continued to vary from day to day.

25th.—States that the tongue is still red on the upper surface at the back, and a new small red patch has appeared on the left side near the tip. There is still a tender spot in the abdomen. Motion to-day was full, partly formed, and the rest a greyish, creamy-looking mass. Took ten and a half glasses of milk.

31st.—Left for the sea-side.

August 2nd.—Tongue much in the same condition, except that on the right side there are three small clefts in the red patch, which is now of a dull red, and appears to be fading, and there is no thick fur in the centre. Tender spot on the abdomen about the same. In the motion at 9 a.m., there were two large hard pieces, slightly yellower than usual. Took eleven glasses of milk.

9th.—Very little redness to be seen on the tongue; the tip quite normal; slight patches at the centre of the back of the tongue and on the left side. Stomach easier. Motion at 11 a.m., full, slightly formed, a tinge yellower than usual. Ten and a half glasses of milk. Feeling stronger and looking better.

16th.—Tongue is not red. Very large formed motion at 9 a.m., of

a slightly yellow tinge; no early morning pain (the patient often complained of morning abdominal pain). Took ten glasses of milk. During the next week she several times passed a day without any motion. Tongue, which was occasionally slightly tender, is reported on the 23rd as feeling more comfortable, and being pale all over.

No motion on the 24th.

On the 25th there was a motion at 9 a.m., very full, part of it formed (very large), the rest in a heap very slightly formed, and of the usual cream colour. Her diet consisted still of ten glasses of milk a day; and the motions being very large, and occasionally streaked with blood, enemata had to be used.

On the 25th, 26th, and 27th a pill containing sulphate of iron was given, and on the 27th and 28th it is noticed that the "motion is of a yellowish-grey colour."

31st.—Motion, after an enema, preceded by painful straining, and a small quantity of blood was passed on the motion, which was very full, large, and formed; very slightly yellow in colour, and followed by the usual small creamy mass. Ten and a half glasses of milk. For some time motions were only obtained by enemata.

September 7th.—Was able to have a motion without an enema with some straining and pain, there being two or three specks of blood on it. It was all formed and large, but instead of the faint yellow colour was rather greyish. Took thirteen glasses (six pints) of milk.

The daily record during the remaining days of September continued to be much the same. Towards the end of the month she left the sea-side for the country. The motions still consisted of a formed, very pale yellow cylinder, followed by a creamy-looking mass more or less large. She was at this time able to take and digest thirteen glasses of milk a day. There was still some abdominal tenderness.

During the first half of October the colder weather made itself felt injuriously, and the daily motions are reported as being partly formed, but with a large amount of the creamy mass, and on some days some fluid discharge. During the latter half of the month the motions were formed, sometimes hard, occasionally a small creamy mass, the colour remaining the same. Towards the end of the month the colour is reported as being rather yellower. Diet twelve or thirteen glasses of milk daily. There was still some abdominal tenderness.

During November the creamy mass which followed the formed part of the motion, with an occasional liquid discharge, continued intermittingly. On the 13th November the weight was 7 st. 2 lbs.,

being an increase of 8 lbs. since September 9th. Twice it is noted during the month that a loose motion was of a deep yellow colour. Milk taken during the month, twelve to thirteen glasses daily.

In December she came to town, and was kept in a warm room, and more protected from cold and change of temperature than she had been in the country, with the result that great improvement took place. Beef tea was added to her milk on December 5th, the diet consisting of eleven glasses of milk and two table-spoonfuls of beef tea; and on the 6th twelve glasses of milk and four table-spoonfuls of beef tea. On the 7th arrowroot was given in addition. On that day the dietary consisted of eleven glasses of milk, a coffee-cupful of arrowroot, and three table-spoonfuls of beef tea. For several days after this change of diet there was a formed motion in the morning with a liquid motion in the evening, and for a day or two the arrowroot was discontinued. The dietary on the 10th consisted of ten glasses of milk and four coffee-cupfuls of beef tea. The patient felt stronger. On the 11th it is noted for the first time that the perfectly formed motion passed was of a darker and more natural brownish colour. Bread was then added to the dietary, being gradually increased in quantity; whilst the quantity of milk was diminished, and the quantity of beef tea slightly increased. The dietary from the 11th to the 18th consisted of milk, bread and butter. The motions steadily improved in appearance and consistence. On the 19th a little boiled whiting was added to the dietary, but was withdrawn on the 23rd, on account of a liquid motion. Two days of exclusive milk diet (thirteen and fourteen glasses) cured the diarrhœa; and on the 26th beef tea was again added, and on the 27th bread.

She left town on the 2nd January for the south of England. The dietary consisted from this date until the 22nd January of milk, beef tea, and a small but gradually increasing quantity of bread; the motions being well formed, and very little stomach-ache felt. The tongue was not complained of.

On the 22nd January a little boiled whiting was taken, which was followed by a partly liquid motion, in consequence of which the diet was again restricted to beef tea and milk.

On the 28th January it is noted that the weight was 7 st. $10\frac{1}{2}$ lbs., a gain of $8\frac{1}{2}$ lbs. in the last eleven weeks. The diet was restricted to milk and beef tea until the 27th February, during which period the motions had been formed and of a natural colour and appearance. Bread was again added to the dietary, and from that time her progress was unbroken. There was a good deal of trouble for a time from constipation, for which enemata had frequently to be used.

The general health rapidly improved. On the 14th March she weighed 8 st., and on the 22nd it was noted that the tenderness in the abdomen, and the stomach-aches, were entirely gone, and that the movements were perfectly natural.

On April 9th she was able to take 4 ounces of beefsteak daily; and on the 19th, it is noted, boiled mutton, milk pudding, and fish. Chicken was added to the diet; and porridge, early in May, to counteract the constipation.

On May 31st it is noted that her dietary included roast mutton, beef, chicken, stewed rhubarb, spinach, butter, eggs, and bread.

I did not see her until midsummer, when I found that the anæmia had entirely disappeared. She looked perfectly well, with a fresh healthy complexion; the only remnant of her illness being an unusual susceptibility to draughts.

On November 17th I had the opportunity of seeing her again, and found that she could eat food of any kind without discomfort. Occasionally she has an uneasy sensation of coldness in the right side, which may last for an hour or two at a time. She associates this with a pain which she states she had in the same part during the whole of her illness.

CASE 2.—G. N.—, a married woman who had been eleven years in China, consulted me on September 19th, 1890. She informed me that she had excellent health until she returned to the south of China in December, 1889. A fortnight after her arrival she was attacked suddenly by diarrhœa, which continued unchecked by treatment. Every morning about 6 o'clock she had a copious, watery, light yellow motion, accompanied by painful griping. For several days after the attack she had six to eight motions daily, but there was no sickness or other symptom of malaise. Opiates and astringents reduced the motions to one or two daily, but as soon as she left them off the diarrhœa became as severe as at first. Five months after the diarrhœa began she was put on a diet of milk and bananas, with the effect of diminishing the number of motions to two or three soft, white, and frothy stools daily. About the end of May, five months after she was attacked, she noticed that the mouth felt rough, and was very sensitive to sherry and water or anything hot. By the end of June, when living on puddings and chicken broth, her mouth became so bad that she could only swallow with pain and difficulty. Having been put to bed, and placed on exclusive milk diet without good result, she left for England in August. On the voyage home her diet consisted of milk, milk puddings, and cold beef tea, but during all this time the diarrhœa

and distress in the mouth continued. From the time that the mouth symptoms first began the feeling of soreness and stiffness had been continuous, and so great that she had to get up during the night several times and rinse her mouth with cold water; and her throat was so tender, that from the beginning even rice, unless cooked very softly, gave her pain in swallowing.

When I saw her in London, three days after her arrival, I found she was passing five to six loose motions daily, of a dirty greyish or faint yellow colour, mostly of a gruel-like consistence, each motion being preceded and followed by a considerable amount of pain in the bowels. She had a sensation of pain and dryness in the gullet from the throat to the stomach, and everything she swallowed gave her pain except milk or water. Even rice and sago, although very softly boiled, gave her pain. She got up five to six times every night to rinse her mouth with cold water, to relieve the feeling of dryness and stiffness. She was a pale, anæmic, thin, delicate-looking woman, with a small but regular pulse of 88. There was no fever, or any symptom of organic disease, except the intestinal symptoms; and the urine was normal. Hepatic dulness normal or slightly diminished; liver not tender.

The tongue was free from the usual fur, and marked out by shallow lines into numerous small fields of a pale red colour. On examining it with a magnifying glass the surface, particularly towards the front part, was seen to be composed of a great number of very minute thickly set papillæ, scarcely projecting at all. Solitary rose-coloured papillæ, slightly elevated, with a minute whitish sheath round the root, were dotted over the surface at a distance of one to two millimetres from each other, these papillæ extending over the edge of the tongue towards its under surface. Several dark red erythematous patches were observed on the soft palate.

She was put to bed and placed on milk diet, and after a week there was one formed whitish motion daily; at the same time the symptoms in the mouth became gradually relieved, and within a fortnight of treatment the mouth and throat were comfortable, and the projecting papillæ had ceased to be prominent. On the back part of the tongue, in the centre, there was the beginning of a very slight fur. The tongue was generally less red.

It is not necessary to relate this case in consecutive detail. Its leading features are as follows:

On a diet of five pints of milk daily she suffered from extreme constipation, and she was placed on a diet of milk, arrowroot, corn-flour, biscuits, and bananas, with occasionally bread and butter.

This diet relieved the constipation, and the motions showed a slight yellowish colour, although the motion was sometimes white without the yellow tint. On the surface of the tongue small islands of thin delicate fur could be observed.

She left London for the country, after three months, in fair health, but received a severe chill on the journey, and all her symptoms relapsed with great severity. During the months of January and February her mouth, especially, became distressingly bad. Eventually, by remaining in bed in a warm room and keeping on exclusive milk diet, these symptoms became relieved, and she again came to town. Since this time her history has been one of fairly steady progress, marked by a series of relapses. Bread, small portions of grilled rump steak, boiled mutton, tapioca, corn-flour, successively produced relapses of diarrhœa with sore mouth, after she had been for a period quite comfortable on milk diet. Three times, including the period previously alluded to, severe prolonged relapses have been produced by chill, each time in travelling.

January 30th, 1892.--Her progress has at last reached a stage in which, with much improved general health, she can, as a rule, take bread, fish, and chicken. Recently a relapse was produced by sucking the juice of an orange on two successive days; but after three days of milk diet the symptoms entirely disappeared.

Early in January she had a slight attack of influenza, and after her recovery, whilst on a diet of bread, milk, and fish, she observed that, for the first time since her illness began, the motions, which were formed, were of a slightly brownish-yellow colour. During the slight relapse which was produced by the orange juice she observed that the soft motion passed was of a yellowish-brown colour.

If we exclude the period preceding the time when she first came under my observation, it is to be noted that for fifteen months the motions, which were often perfectly formed and solid for weeks at a time, were either quite white, or of a greyish-white, or of a very slightly yellowish colour, before the ordinary healthy brownish shade was observed.

In order to test whether the fæces contained sulphides, five grains of reduced iron were given, after she had been a fortnight under my care, and when under exclusive milk diet the motions were formed, solid, and white. The first effect seen was a streak of steel-grey iron on one side of the cylinder-shaped motion, and apparently quite distinct from it. After two days the motions became of a very light slightly greyish tint, as if permeated by minute particles of unchanged iron. After she had taken nine powders, in addition to this greyish tint, partial coatings or sheaths of metallic iron

adhered to different parts of the surface of the motion. These casts of iron sheathing were two to three inches long, and about half an inch or more broad. The ordinary black colour produced by iron was entirely absent.

As Dr. Begg, of Hankow, has found santonin of benefit in cases of this affection, I tried the drug with this patient, although she told me she had used it without effect before leaving China. She gave it a thorough trial during the long relapse of two months which was produced by exposure to cold in travelling; but it was found to be without the slightest effect in checking the symptoms.

The result of a microscopic examination of the stools has been given in the text.

CASE 3 (Tropical Diarrhœa, June 23rd, 1887).—M. A—, a strongly built man, æt. 54, has been twenty-seven years in Bombay. Has always been a temperate man, and has been home five or six times during that period. Three years ago he had malarial fever, from which as a young man he had not suffered. Whilst in India, in the beginning of May, diarrhœa began, which has lasted ever since. On the homeward voyage he had five or six motions daily, mostly in the morning. He has been home three days, and the diarrhœa continues, there being three to four motions each morning. The dejections are copious, of a very light pale yellow colour, without mucus or blood. There is no pain in the stomach after taking food, and flatulence, to which he was for some time slightly subject, is no longer a symptom. He has an uncertain but not a bad appetite. He lost a stone and a half before leaving Bombay, and has continued to lose weight since. Now weighs about 12 stones or under. Pulse 68, regular; tongue ordinary size, slightly more pink than usual, covered with a whitish fur. Urine free from sugar or albumen, dark in colour, with a deposit of urates. Sleeps well.

There is a diminished area of hepatic dulness. Prescribed one grain of rhubarb with taraxacum twice daily, and every second morning fifteen minims of tincture of rhubarb, and ten grains of Epsom salts. Diet: farinaceous food, milk, eggs, boiled whiting, and beef tea.

June 26th.—Two motions: consistence better. (Yesterday, one in the morning and one in the evening.)

September 26th.—On the whole much improved. For the last ten to fourteen days his bowels have been regular, and the motions natural; but he gets easily chilled, and when he gets chilled the diarrhœa returns, in which case the motions are, as before, pale yellow and watery. To-day his tongue is coated, and he complains

of a constant bitter taste in his mouth. Prescribed a grain of rhubarb before dinner, and dilute nitro-hydrochloric acid after meals, with a bismuth and soda mixture when there is diarrhœa.

October 4th.—Has a clean tongue, and relishes his food. Still a slightly bitter taste in his mouth.

20th.—Was quite well for a fortnight, but had a slight relapse with the beginning of the cold weather. Is again well, and returns to Bombay immediately. The conjunctiva has a yellowish tinge, and there is still a bitter taste in the mouth.

He had not been long in India when the diarrhœa began gradually to return, and he came home again in the spring. I saw him on May 29th, 1888, and found him looking very ill. He was weak and thin, with a small, soft, and occasionally intermitting pulse. Conjunctivæ were yellow; the tongue natural; hepatic dulness considerably diminished. There was constant diarrhœa to a greater or less extent. The motion which I saw on that day was large, pulsaticeous, and putty-coloured. Prescribed farinaceous food and milk, and rest.

May 31st.—Motions slightly yellow; conjunctiva less yellow; no fever.

June 4th.—Motions not so thin nor copious, almost white. No fever.

11th.—Twice at night he had taken five grains of sulphur. Diarrhœa much worse, the motions being a dirty white colour, thin, watery, and frothy. To check the excessive diarrhœa six-grain doses of Dover's powder were given, with castor oil. To-day ordered two grains of rhubarb, and one and a half grains of grey powder.

12th.—Same symptoms and treatment.

The symptoms persisting, he was after several days put on pure milk diet, and all medicine was discontinued.

21st.—It is noted that the expression is better. On the tongue, which during the past week had been heavily coated with a fur, the fur to-day is not so thick. There have been two motions, fairly solid but very pale in colour, in twenty-four hours. Had taken sixteen glasses of milk. Pulse 60, fair strength, and regular.

25th.—Continues to look better. Two and sometimes three motions daily, solid but not hard, pale, milk-colour. Takes eighteen to twenty glasses of milk daily.

July 16th.—Pulse 72, strong. Complexion clearer. Face more filled out. Conjunctiva is still somewhat yellow. Thickish white fur on the tongue. Two motions daily.

20th.—For the last four days has had three motions daily, the third one on each day being loose and yellow. The weather has

been cold and wet, and he has been exerting himself. Tongue still slightly furred. Has gained 4 lbs. in a fortnight, and 10 lbs. during the last five weeks.

With rest, the diarrhœa disappeared. He left London for the country, but had a relapse for five days, during which time he had from four to five motions daily, which had to be checked with opium. The motions had a more yellow colour than when they were solid. Nevertheless he continued to gain weight, having gained three pounds from July 27th to August 8th, when he weighed 11 st. 2 lbs. 2 oz. Continues to take the same quantity of milk.

August 15th.—He wrote that the diarrhœa had entirely disappeared, there being only one motion in twenty-four hours, which was solid, and of a lightish yellow colour. His bowels had not been so regular for many years. Has still, occasionally, a bitter taste in his mouth. This symptom preceded the last relapse already referred to. Takes about five and a half quarts of milk daily.

22nd.—Sensible improvement in the colour of the daily motion. Gained two pounds in the week. Continues same quantity of milk.

September 7th.—Weighs 11 st. 9 lbs. Natural tongue. Hitherto has taken nothing but milk. Allowed arrowroot twice daily, and after four days bread twice daily.

October 18th.—Had a return of diarrhœa which lasted five days, which he attributed to sleeping in badly aired sheets.

31st.—As he was unusually sensitive to changes in the weather, which produced slight temporary relapses of diarrhœa, advised him to go to the Riviera for the winter.

On December 31st he reported that the motions were solid, and with more colour; that he had diminished the quantity of milk, and that he had substituted chicken and milk for porridge, which he had been taking for some time. His diet now consisted of fish, eggs, chicken, with vegetables and fruit, and his weight was 12 st. 7 lbs.

January 21st, 1889.—Reported that in order to keep the daily motion firm he required to retain milk as a considerable element in his diet. From this time he continued to progress and gain weight, and was able to extend his dietary, and within a short period was entirely restored to health.

There had never been at any period soreness of the tongue or throat.

CASE 4.—C. H—, æt. 31, consulted me on April 21st, 1890. He had been seven years in the East, and for three years had been in the Straits Settlements. Had not had malarial fever, but had had typhoid fever in Ceylon. In November, 1889, when living up country, he

was suddenly seized with acute diarrhœa, passing for several days eight or ten motions in the twenty-four hours. The motions were very pale at first, and afterwards some blood was passed. There was some straining and griping; but there was neither fever, nor sickness, nor thirst. On a slop and milk diet the symptoms became alleviated, but up to the present time he has never had fewer than three motions in the twenty-four hours. He has just arrived in England, and latterly has not been dieting, finding that whether he eats slops or solids makes little difference. He has now four or six motions in the twenty-four hours. The discharges are of a gruel-like consistence and a pale yellow colour, and large in quantity. There is a very little straining and griping just at first. He has some discomfort two hours after eating his food; but the tongue has never been sore, nor has there ever been any pain in swallowing. He had lost weight from 10 st. 5 lbs. to 8 st. 5 lbs. but latterly has got slightly heavier, weighing a little over 9 st. Hot and pungent food produces no appreciable pain. The abdomen was soft, not tumid nor tender; liver and other organs normal. Recommended exclusive milk diet.

May 12th.—Been on strict milk diet, taking about four quarts daily. Pulse 85, regular. Tongue fairly clean, being only very slightly furred, the filiform papillæ being distinct. Has had one motion daily, fairly formed, yellowish-white colour, not too copious, and passed without pain. All discomfort has disappeared since he began the milk. Has gained two pounds in the fortnight, and has felt well.

June 2nd.—Motions formed, but not hard, pale yellow colour, not excessive in quantity; one daily, but once or twice a week misses a day. Pulse 80, regular, small. Feels comfortable and stronger. Tongue rather large, showing the marks of the teeth, covered with an ordinary, but not thick, whitish fur; papillæ prominent. Takes from four to four and a half quarts of milk daily. Has gained nine pounds in three weeks. Hepatic dulness continues normal. Ordered breakfast-cupful of arrowroot twice daily for two days; afterwards an addition of corn-flour once daily for two more days. If doing well, to take in addition a cupful of beef tea or chicken broth thickened with corn-flour. Two days afterwards stale bread and butter to be substituted for the arrowroot. In four days two very lightly boiled new-laid eggs to be added. If any supervision of diarrhœa occurred to go back at once to exclusive milk diet.

9th.—Wrote to say that he was going on well. There was a motion once in two days, of a firmer consistence than previously. He now takes beef tea, stale bread and butter, and three quarts of milk daily. Feels stronger, and is getting stouter.

21st.—Continues to gain weight and strength. Motion is now perfectly formed, pale brown in colour; it is healthy in every respect. Ordered to take three eggs daily instead of two, and to add to his dietary bananas, cauliflower, and boiled or stewed white fish.

On July 9th reports continued health, and that the cauliflower and fish had caused no relapse. Strawberries and boiled mutton are now added to his diet, and they suit him perfectly. When seen on the 9th October he appeared to be in vigorous health. He stated that he occasionally had a sensation after eating as if his food were passing quickly along the bowel, but he had no diarrhœa, and could eat ordinary food without symptoms of dyspepsia.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. iv, p. 107.)

DESCRIPTION OF PLATES IV AND V.

The Symptoms and Pathology of Psilosis (Dr. THIN).

PLATE IV.

The tongue and palate in the case of Mrs. H—.

PLATE V.

The tongue in the case of Mrs. G. N—.

C B Burgess del.

Mintern Bros. Chromo.

Case of M^{rs} H.

C. B. Burgess del.

Mintern Bros. Chromo.

Case of M^{rs} G. N.