Remarks

ON

RECENT ADVANCES IN THE TREATMENT OF SPRUE:

CALCIUM AND PARATHYROID.

BY

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In February, 1923, a preliminary note was communicated to the Royal Society of Tropical Medicine¹ advocating the employment of calcium lactate and parathyroid in sprue. In a subsequent paper, published in October, 1923,² five cases of sprue treated by this method were recorded, and, in the following December, a discussion on sprue and its treatment took place at a meeting of the Tropical Diseases Section of the Royal Society of Medicine. The paper contributed by the present writer, which was read at the discussion, was reported in full in the *BRITISH MEDICAL JOURNAL*,³ and, as a result of the publicity thus given to the theory therein detailed, this method has been tried by medical men in this country and in other parts of the world, and the results which have been recorded are such as to warrant a further communication on the subject. A series of cases is described in the present paper varying from those of mild character and recent origin to those of great severity and long standing. For purposes of comparison of the results obtained by this and other forms of treatment selection has been made from amongst those of whom I have fairly full notes, who are of nearly the same age, who show approximately the same degree of severity, or in whom the disease has existed for the same length of time. Appended is a table giving a few particulars of such as have been reported in sufficient detail to provide the information under the different headings.

CASE I.

This was an ordinary case, and the patient had been treated on the lines previously recognized. H. W. B., male, aged 40. The patient's foreign service had been as follows: 1901-4 China; 1905-6 East Indies; 1908-10 the Mediterranean. During these years he had no illness. From 1916 to 1918 he was in Mesopotamia and suffered from malaria and sandfly fever. From 1919 to 1921 he was again in China. Briefly the history of this present illness is that in August, 1921, he began to pass loose, bulky, and frothy stools of a light straw colour; his tongue became sore and tender, with small ulcers occasionally, particularly at the tip. Before his illness his weight was 157 lb. The symptoms continued with very little intermission until November, 1923, when he was admitted to hospital, having lost 20 lb. in weight. He was treated by the usual dietetic and regiminal measures. He was kept in bed and given milk only in increasing amounts. Nothing else was allowed for five weeks, after which time he was given a small sago pudding, eggs (one at first, later two daily), liver soup, and a rusk. The following was his day's nutriment at the end of thirteen weeks: 6 a.m., milk 1 pint; 8 a.m., milk 1 pint, 1 egg, 1 rusk; 10 a.m., milk $\frac{1}{2}$ pint; 12 noon, milk $\frac{1}{2}$ pint, liver soup, sago 3 oz.; 4 p.m., milk $\frac{1}{2}$ pint flavoured with tea, 1 egg, 1 rusk; 7 p.m., milk 1 pint, liver soup, arrowroot; 10 p.m., milk $\frac{1}{2}$ pint. Total 5 pints of milk. While on this diet he suffered a relapse, for which, the physician stated, "no explanation could be found." A sample of his blood was taken and the ionic or free calcium estimation was 9.5 mg. per cent. (the normal being 10.5 to 11.5). He had to go through the mill again, and finally was well enough to leave hospital on April 16th, after a stay of twenty-three weeks, five days. His weight then was 146 $\frac{1}{2}$ lb., an increase of 10 lb. on what it was on admission, but still 10 lb. below what he stated was his normal.

It is clear from a consideration of his symptoms that this was a comparatively mild case. There had been no cramps, the soreness of the tongue was but slight, and the loss in weight had only amounted to 20 lb. in two and a quarter years. Except for the relapse, which was not a severe one, but which occurred while he was on the strict regimen and had been so for thirteen weeks, this may be regarded as an average case.

We will now pass on to describe our series of cases referred to above, and will start by briefly narrating two mild cases in whom the disease had existed for almost the same length of time. The first was treated by the usual method of diet and rest, the second by the calcium and parathyroid method.

CASE II.

L. E. V., male, aged 42. First went abroad (to India) in 1914. The following year, on the North-West Frontier, he had a "slight attack of dysentery." There was no history of any other illness. In April, 1923, he suffered from diarrhoea, the stools being yellowish-white, bulky, and frothy, and he rapidly lost weight. He left for England at the end of the month and arrived on May 18th. During the voyage the tongue was sore, but the diarrhoea was less, and on arrival he felt better. From that time until admission to hospital early in January, 1924, the motions were never formed, nor of normal colour, and he continued to lose weight; the tongue was at this time very sore. On admission he was anaemic and wasted, and the tongue was red, glazed, and tender. Blood examination showed a reduction of red cells to 3,040,000 per c.mm. and the haemoglobin 70 per cent. The ionic calcium, estimated eighteen days after admission, was still only 6.9 mg. per cent. Five weeks later it was 9.1 per cent. Twelve weeks after admission the red cells had increased to 4,260,000 and the haemoglobin to 80 per cent. After a stay of sixteen weeks and five days he was discharged. He was still having three stools daily, and his diet was milk, sago, 2 eggs, 2 rusks, and pounded fish. The final note made was that he had "progressed favourably. To continue diet and report."

The next patient also contracted the disease in India and very nearly at the same time, and came under treatment after a similar interval.

CASE III.

W. E. J., male, aged 32. Went to India (Bangalore) in 1920. From November, 1921, to May, 1922, he was in Calcutta and thereafter in Bombay. In February, 1923, he suffered with diarrhoea, four or five actions daily, mostly in the morning; the stools were foul, bulky, whitish, and frothy; according to his doctor "typically sprue-like." He also complained of dyspepsia and acidity, and had a sore tongue. He improved under treatment; but only temporarily. The symptoms returned in April, 1923; he passed two large pale stools in the early morning. His normal weight was 176 lb., but by this time it had dropped to 149 lb. During July and August he lived on milk and oranges, and in the middle of September sailed for England. He felt somewhat better on the voyage, but from October 10th his motions became paler—nearly white—and his tongue more sore and tender. When seen on October 24th his weight, in clothes, was 163 lb.; the tongue was red and tender, with two small aphthae. He was unwilling to come into hospital, but promised to keep strictly to milk for a fortnight and to stay in bed. He was given calcium lactate 10 grains thrice daily, and extract of parathyroid (P., D. and Co.) 1/10 grain twice daily. At the end of the fortnight he reported that he felt much better; the soreness of the tongue had quite disappeared, he had some flatulence still, but only one stool daily, almost solid. The ionic calcium had risen to 8.9 per cent. He was now allowed (in addition to the milk) milk puddings, fish, chicken, and some green vegetables. When seen a week later (November 14th) his weight was 173 lb., he felt much brighter, was having usually one action a day—normal in size and darker in colour; occasionally a second stool. The tongue was well enough to allow of his smoking without discomfort. He was now allowed to get up, and the diet was further increased to include potatoes, carrots, spinach, tea, and toast. A week later (November 21st) he "felt well and hungry." He was told he might go on a fuller diet, to include mutton, and, if that caused no discomfort, beef, but not too much fat and no twice-cooked meat. It was considered that the food was now containing all the calcium he needed, so the lactate was stopped, but the parathyroid continued in full doses for another week. On May 28th he said he was quite well; his weight was 178 lb., and he started to come up to London daily for business. The ionic calcium was now normal—10.8 mg. per cent. The parathyroid was therefore reduced to half doses, and was to be left off altogether at the end of the succeeding week (the sixth after commencement).

On January 9th, 1924, he wrote: "Almost immediately after my last visit I knocked off the parathyroid, and, although I have eaten everything, including rich stuffs at Christmas, I feel as fit as a professional footballer. My weight just before Christmas was 186 lb. and my appetite is enormous." This patient returned to India the following month and has kept quite well.

So much for mild cases; next to compare two of moderate severity.

CASE IV.

F. F. G., male, aged 44. Went to Bombay in 1910 and, except when home on leave in 1914 and 1922, has lived in India or Ceylon ever since. Prior to March, 1923, his only illnesses were attacks of malaria and enteric in 1917. At that date, however, he began to suffer with a sore mouth and was passing large, loose stools of light colour. He was treated by dieting with milk and orange juice. In July he went to Simla, and was very bad for four months; the disease was called "hill diarrhoea." He returned to Ceylon in November, and there his condition was diagnosed definitely as sprue and he was put to bed for fourteen days on a diet of milk and eggs. He was then invalided home, arriving about the middle of January. His tongue was not sore then; his weight was 149 lb. and the ionic calcium was 7.7 mg. per cent. Three weeks later this had increased to 9.1 per cent. He stayed in hospital for thirteen weeks; during that period his weight increased to 166 lb. The diet he was then permitted was: Milk 6 pints, eggs 3, sago puddings 2 of 4 oz. each, pounded fish, rusks, and liver soup. He was discharged with the warning, as stated in the final note, "To continue diet programme for sprue. Report progress."

Amongst the cases treated by calcium lactate and parathyroid of which I have notes, that most nearly approaching

the last in severity is the following, and in this patient the disease had existed for nearly two years longer.

CASE V.

H. S., male, aged 48. Was abroad in Australia from 1907 to 1910, during which period he enjoyed perfect health. In October, 1920, he went to India, and in January, 1921, had an attack of malaria. The following March he began to suffer from diarrhoea, having some ten actions daily, frothy and light yellow in colour. This was stopped by treatment. In April, 1921, at Bangalore, he still suffered from malaria and at times passed loose stools. He sailed from India in September and arrived in England the following month. In November and December his mouth was tender and sore, but this was better at the end of December, the symptom returning worse than before in April and May, 1922; he also had dyspeptic symptoms—heartburn, nausea, and occasional vomiting. From June to December he was, on the whole, better and kept at work, though suffering at intervals with soreness of the tongue. In March, 1923, he had dyspepsia, diarrhoea with three or four actions daily, and a sore, ulcerated tongue. The diarrhoea was stopped by treatment at one of the London hospitals, but the other symptoms continued in spite of treatment of various kinds—bismuth, salol, opium, dieting with milk, eggs, soups, cereals, etc. His weight, however, which had fallen from his normal of 150 lb. to 136 lb., rose to 144 lb. In October the diarrhoea started again and the motions were large, loose, pale, and frothy—two daily as a rule—and the mouth was still sore. He came into hospital on October 30th. His weight then was only 118 lb. He was kept in bed on a diet of milk only, and was given calcium lactate 15 grains thrice daily, and parathyroid 1/10 grain twice daily. He began to improve at once. In a week his weight had risen to 121½ lb. and the ionic calcium was 7 mg. per cent., the total 9.9 per cent. His weight in successive weeks was 127, 133½, 142½ lb. By November 18th (less than three weeks after admission) his mouth was quite well, and he was feeling hungry; the stools were regaining colour, and his diet had been increased by the addition of milk puddings, eggs, rusk, and fish. In another ten days he expressed himself as "perfectly fit"; he was then taking full diet, had one action of the bowels daily, and this was formed and of normal colour. He left hospital on December 1st, after a stay of four weeks and three days, weighing 146½ lb. The ionic calcium had risen to 7.4 mg. per cent. in a fortnight, and to within normal limits—10.8 per cent.—at the end of three weeks, and remained there. More than six months later (June 20th, 1924) he called to see me. He stated that he had kept quite well, had had no sore tongue, dyspepsia, or diarrhoea, and smoked heavily. I seized the opportunity to take another specimen of his blood and found that the ionic calcium was more than maintained, being now 11.1 mg. per cent.

The next case is worthy of record as tending to show that, in spite of long persistence of the disease, the upset of the parathyroid is, nevertheless, probably functional only, so that when once the condition has cleared up there is apparently no necessity to continue treatment.

CASE VI.

F. G., male, aged 63½. The duration of disease in this case was at least fourteen years (with periods of intermission), possibly longer. This patient was abroad in the West Indies from 1888 to 1898. In 1896 he had an attack of yellow fever, but no other illness except "ulceration of the mouth" (whether this was the earliest sign of his sprue it is impossible now to say). He returned to the West Indies for various periods between 1905 and 1920. In 1909 definite symptoms of sprue made their appearance—recurrent attacks of diarrhoea, with a tender, painful tongue, and loss of weight. During the ensuing eleven years there were intermittent periods of improvement, but in 1921 the diarrhoea, with large, frothy, pale, clay-like stools, became persistent. A diagnosis of chronic pancreatitis was made, but no treatment was of any avail. In 1923 the condition was definitely diagnosed as sprue, and he was treated accordingly by confinement to bed on a strict milk diet. This was continued for four months, and, though the diarrhoea was checked thereby, any attempt to increase the diet led to a return. For two months more he lived on milk and strawberries, with temporary relief, but again a relapse occurred, even while he was on this diet. He came to hospital on May 12th and exhibited the typical symptoms—sore and tender mouth and tongue, flatulence, heartburn, large, pale, frothy, porridge-like stools. His weight was 120 lb. Two days later he started the calcium lactate and parathyroid treatment. The diarrhoea ceased in a week, the motions became formed, and the colour was coming back; the soreness of the tongue disappeared in ten days. In a fortnight his diet was increased. Progress continued without interruption, and seven weeks after admission he left hospital on full diet, with no sore mouth, no tenderness of the tongue, and normal stools. He started to reduce first the calcium and then the parathyroid, and ceased taking either of them four weeks after leaving hospital. He went to Scotland and wrote from time to time to say that he was keeping well, and when he came to London, twelve months later (July 1st, 1924), he called to show himself. He looked the picture of health and his weight was 151 lb. He stated that he had had no symptoms at all since leaving hospital, that he ate any food without restriction, and that he had not taken a single dose of calcium or parathyroid since the previous July.

For comparison with this the following record of a case, also chronic, but not more severe and not of so long standing, is of interest. No parathyroid was given, but calcium only in the form of milk and pulvis Bataviae. It

will be seen that in the absence of stabilization the improvement was not maintained, but intermitted.

CASE VII.

H. C. B., female, aged 67. Lived in Shanghai from 1907 to 1910, and again, after six months at home in each case, from 1910 to 1913 and 1913 to 1919, when she returned home for good. In 1918 she suffered from diarrhoea with yellowish stools, sometimes frothy. From January to May, 1920, she kept strictly to a milk diet, and for six weeks of this period stayed in bed. Improvement was great, in fact she "considered herself well," but continued on a limited diet of milk, junket, and fruit. The following April she relapsed, having four or more loose motions in the twenty-four hours, and this had continued until she was admitted to hospital in October, 1923. At this time she was passing three to five loose, pale, frothy stools, and the mouth and tongue were sore. She was 26 lb. below her normal weight (119 lb.). She was kept in bed on milk and was given pulvis Bataviae. Within a few days the stools were less frothy, but a fortnight later they were again loose, large, and fermenting, and she had lost a further 2 lb. in weight. In another three weeks, though her weight was maintained (91 lb.), the motions were still bulky, frothy, and somewhat loose. A fortnight later there had been a gain of a pound, after which the improvement was more rapid, nearly 12 lb. being added in the ensuing month. After thirteen weeks in hospital the weight was 103½ lb. (112½ in clothes; still 7 lb. below what it was before the relapse in April, 1922) and the patient left, the final note being, "Improvement continued, patient left, with instructions as to diet."

As the last in this series of graded cases the following is of interest as being exceptionally severe, accompanied at one time by intense anaemia, the red corpuscles being below 1,000,000 per c.mm. The patient had submitted during the previous ten years to almost every form of treatment, as her history will show.

CASE VIII.

E. P., female, aged 56. Her illness began in 1914 at Shanghai. In November of that year she was thought to be suffering from dysentery and was treated with emetine. A week after this was stopped she was passing white, formed stools, later clay-coloured and loose. She then went to the Fukien Province, and took santonin for two weeks and lived on milk and fruit. There was no improvement. The following year she was very ill and returned to Shanghai for special treatment. She was made to rest and was strictly dieted for several months. She gained a little weight, but the improvement was not very marked.

At the end of 1916 she relapsed again, and was treated by a three months' course of injections of an autogenous vaccine made from the mouth and the stool. She improved greatly, but was still liable to loose, pale motions. In 1918 she went to South Africa and again relapsed. Early in 1919 she reached England and was treated with sodium cacodylate without obtaining any benefit. In August, 1919, she went to Bath and took santonin for several weeks, under supervision. She gained a little weight, but the symptoms did not improve. She had two relapses in 1920, and improved in a nursing home during the strawberry season, but was worse again as the autumn came on. In February, 1921, she came to hospital in London, and was strictly dieted and given pulvis Bataviae. She was in for seven months, and by that time was allowed fish, sago, eggs, and toast, in addition to milk. She returned to South Africa and the following year to China. In 1922 she had a severe relapse, and was ill with slight intermissions of improvement until September, 1923, when she again went to Shanghai for treatment. Her weight was then only 79 lb.; she was very anaemic, the red cells being 1,000,000 per c.mm. and haemoglobin 30 per cent. Her medical attendant started her on the calcium lactate and parathyroid, and she was soon allowed a diet comprising "underdone beef, mutton chops, fish, eggs, oyster soup, spinach, carrots, grapes, and mangoes." She kept under this régime for six months; the weight increased to 96 lb., and during the later months she had only one stool daily—formed and of good colour. She embarked for England in May, 1924, and stopped all medicine. She took ordinary food throughout the voyage, with good appetite, and in three weeks weighed 112 lb., and had "one well formed normal action daily, and no sprue symptoms."

When seen on June 30th, her weight was 120 lb., the stool was dark and firm; she was having only one action daily, no dyspeptic symptoms and no discomfort, and, in her own words, "feels strong and well, and eats anything." Opportunity was taken to obtain a specimen of her blood, and analysis showed that the ionic calcium was 10.6 mg. per cent.

The above contrasted cases suffice to show that with the administration of calcium and its regulation by parathyroid the disappearance of symptoms occurs early, the ionic calcium returns rapidly to normal, ordinary diet can be resumed in a shorter time, and the beneficial effects are generally steady and permanent. The following case is recorded in order to stress the point that the treatment must not be dispensed with directly the symptoms clear and the ionic calcium attains the normal; in other words, this condition of things requires to be stabilized, and the drugs must be reduced gradually with a view to seeing that the patient is able to carry on the processes unaided

Table of Cases of Sprue treated by Calcium Lactate and Parathyroid.

Initials.	Sex.	Age.	Length of Illness.	Main Symptoms Cleared in—	Result.	Remarks.
P. L. W.	M.	Years. 46½	2 years	5-6 weeks	—	Too early for certainty; keeping well two months later.
A. McG.	M.	28	11 months	4 "	—	Still well six months later.
F. W. W.	M.	31	5 "	3 "	Much improved	Parathyroid stopped after three weeks (? reason); relapse over two months later.
L. G. T.	M.	28	5 years	7 "	—	Keeping well two months later.
J. P.	F.	? 40	2 "	7 "	—	Keeping well two months later.
M. C.	F.	40	2 "	4 "	Recovery	Still quite well sixteen months later.
E. P.	F.	56	10 "	? 4 months	—	Keeping well three months later; continued to take parathyroid after symptoms cleared; "afraid to leave off."
J. P. D.	M.	50	3 "	6 weeks	?	Left well nine months ago; no news since.
H. H. S.	M.	48	1½ "	4 "	Recovery	Well seventeen months later.
L.	F.	?	?	10-14 days	—	Keeping well three months later.
F. G.	M.	63½	14 years	4 weeks	Recovery	Still quite well twelve months later.
R. H. M.	M.	21	1 year	3 "	"	Quite well twelve months later.
M. S.	F.	50	Over 5 years	2-3 "	Death	See text, Case (1), M. S. Sprue symptoms cleared, died of pernicious anaemia.
H. S.	M.	48	2 years	3 "	—	Keeping quite well seven months later.
E. J. W.	M.	32	8 months	17 days	Recovery	Returned to India; well seven months later.
D. G. H.	F.	40	4½ years	?	Improved	Left hospital in five and a half weeks; no news since.
D. W.	M.	51	15 months	14 days	Death	See Case (2), D. W. Died from pernicious anaemia.
J. C. S.	M.	?	1-2 years	6 weeks	Recovery	Returned to duty in China.
J. S.	M.	54	2½ months	3 "	"	Well six months later; remained at work abroad.
E.	M.	?	?	4 "	"	Last report: Keeping well, doing full work.
J. T.	M.	43	7 months	4 "	—	Keeping well three months later.
W. C. A.	M.	53	At least 6 months	24 days	—	Keeping well three months later.
W. G.	F.	?	4 years	8 weeks	—	Keeping well four months later.
H. C. S.	F.	51	6 "	6 "	Improved	Very introspective; return of dyspepsia, from which she had suffered all her life; no recent news.
M. E. M.	M.	7	16 months	8-9 "	—	Keeping well seven months later.
J. E. F.	F.	56	Began 24 years ago	3 "	—	This patient relapsed about every two years. Too early for certainty; keeping well.
H. E.	M.	45	12 years on and off	?	—	Too early for certainty; keeping well.
R. C.	M.	54	12 months	5 weeks	—	Too early for certainty; keeping well.
W. B. S.	M.	58	13 "	—	Improving	Has been under treatment less than one month.
A. B. W.	F.	34	12 "	4-5 weeks	Recovery	Returning to India.
M. S.	M.	?	At least 12 months	3 "	"	Well twelve months later; returned to China six months ago.
A. C.	F.	50	2 years	5-6 "	Much improved	Up and about; progressing well; severe case.
McC.	M.	56	? 20 "	—	Improved	No report for several months; had dysentery also (amoebic); remained weak and very anaemic.

before all support is removed. As a rule it has been found that the fuller diet provides all the calcium needed, and this element can be first left off, the regulator—parathyroid—being continued in full doses for another week or so. This is then reduced, and, as a rule, can be stopped in its turn a week to a fortnight later.

CASE IX.

W. F. W., male, aged 31. Foreign service: Calcutta 1913; China and Japan 1914; Red Sea, Bombay, and Persian Gulf 1915-16, and again in 1919. India, China, and Japan 1921 to December, 1923. He suffered from enteric fever and dysentery in 1918.

Sprue symptoms first appeared in October, 1923, with five or six copious, white, frothy stools daily. The tongue was sore, he complained greatly of flatulence, and he lost much weight. On admission to hospital on February 4th, 1924, he was put on calcium lactate 15 grains thrice daily, and parathyroid 1/10 grain twice daily. Blood examination showed red cells 4,210,000, white 6,000 per c.mm., haemoglobin 80 per cent., and ionic calcium 8.1 mg. per cent. In three weeks there was marked improvement, and the parathyroid was stopped. The blood, when examined two days later, gave normal ionic calcium (10.6 per cent.). The amelioration was maintained for four or five weeks, when the symptoms reappeared and the calcium was found to have dropped again to 8.5 per cent., and treatment had to be resumed.

In the next case the calcium lactate was given in full doses, but the parathyroid in only half the usual quantity. It will be seen that the improvement was marked, but a little slower as compared with some already recorded.

CASE X.

T. L. G., male, aged 28. In Egypt and the Dardanelles 1914-15; in India and Ceylon from 1916 to 1924. In 1923 he had an attack of malaria and suffered from "low fever" subsequently. In

October, 1923, he began to pass whitish stools, not very loose at first, but later looser, copious, and frothy, and he lost weight—28 lb. in four months. Two months after the first signs appeared his tongue became sore and shortly afterwards ulcerated. From January 7th to February 15th he kept on a rigid diet of fruit and milk, and when he came to hospital on March 13th his weight was 126 lb. 11 oz.; there were ulcers on the inner surface of the lips and on the buccal mucous membrane. The ionic calcium was low (6.8 per cent.), the red cells 3,380,000, the white cells 5,800 per c.mm., haemoglobin 75 per cent. The calcium and parathyroid were started on March 18th, but the latter only in half doses. He was kept on milk for a fortnight and the diet then gradually, but fairly rapidly, increased. Five weeks later there were no aphthae but still some tenderness of the mouth and tongue; this in turn disappeared in another week. By April 10th the red cells had increased to 4,270,000 per c.mm., and the haemoglobin to 80 per cent., and by April 24th to 4,860,000 and 85 per cent. respectively. He left hospital after a stay of eight and a half weeks, having put on 15 lb. in weight, and "feeling well; no sore mouth, stools normal."

All the above-mentioned patients have been under treatment in England, but it is most gratifying to find that equally successful results are being obtained in the endemic foci of the disease. Over twenty have been reported to me, and the following four are selected for very brief notice because the reports were sent from different parts of the globe—one each from the West Indies, India, Persia, and China.

British Guiana.—E., male. Recovered after being in hospital in London for some months with dietetic treatment only, and was told he might return to his work. He left England in November, 1923, and a few days after sailing suffered from a relapse of his sprue, and arrived in British Guiana so bad, although he had kept

to milk throughout the rest of the voyage, that he wished to return at once to England for further treatment. His medical adviser, to whom I am indebted for these notes, suggested that he should try calcium and parathyroid. The first note after arrival, written on December 2nd, is, "Passed a stool, ivory-white"; and on December 3rd, "Stool the same; started calcium and parathyroid treatment at 8 p.m." He was kept in bed for a fortnight, and soon afterwards was able to take fish, meat, and chicken. The last note, dated December 30th, was, "Stool quite normal, brown; patient's weight 148 lb." (his normal was 152 lb., but on leaving England "in excellent health" it was only 135 lb.); and when his medical attendant wrote towards the end of January he stated that the patient "is now about his ordinary work, that of a manager of a large sugar estate, and is able to take his ordinary diet."

India.—Reported from Bombay and already recorded in the BRITISH MEDICAL JOURNAL of February 16th, 1924 (p. 306). In this instance the improvement was remarkably rapid, there being a distinct change for the better in three days, and the symptoms practically clearing within a fortnight. In this patient all the symptoms were present: "diarrhoea, loss of weight, increasing weakness, typical sprue tongue, with pain and burning in the mouth, and pale, copious, fermenting, very offensive stools."

Hong-Kong.—H., male. This man held a good position in China, contracted sprue, and came to England for treatment. He was treated in a private institution for many months by the usual methods; parathyroid and calcium being withheld. He then, against advice, returned to the East, being warned that he would probably not live to reach his destination. He was landed by stretcher from the ship, and his medical attendant there started the parathyroid and calcium treatment at once. "In three weeks he was up, and in five weeks resumed his work and has kept well since, taking ordinary food and feeling very fit."

Persia.—Lastly, a medical man in Persia wrote that he had been abroad for twenty-five years with the usual leave at intervals. In December, 1923, he was passing bulky, pale, clay-coloured, frothy stools, mostly in the early part of the day, and rapidly lost weight—18½ lb. in three weeks. He became very despondent when the symptoms continued unchecked by treatment, and anticipated retiring. He cabled for a supply of parathyroid. The result is best given in his own words: "I started treatment on February 27th, and on March 6th there was marked improvement. On the 22nd I was eating everything, and am now nearly up to my normal weight. I can do a hard day's shooting (aged 54) and keep my end up with anyone."

To make the story complete the following two cases, in which death ensued with symptoms of pernicious anaemia, are included. In one, the condition was of long standing and the parathyroid treatment was started only in the last few weeks of life, and even then an amelioration of some of the more urgent symptoms was obtained. In the other, severe anaemia appears to have been an early symptom; the sprue condition cleared up sufficiently for the patient (a medical man) to take ordinary diet and go about feeling so well that he wrote to the medical papers reporting his cure. On account of the persistence of the anaemia he was advised against returning to the East, but did so, and died on the way from pernicious anaemia, though the other (sprue) symptoms never returned.

(1) M. S., female, aged 50. Had suffered from sprue for some years and her weight had fallen from 126 lb. to 79 lb. She was very anaemic, red cells under 1,000,000 per c.mm., and the mouth very sore, in consequence of which she was unable to take nourishment, and was passing five or six motions daily—large, pulsatious, and frothy. A week after starting parathyroid and calcium the stools were reduced to three daily, and were darker and less frothy; and the ulcers in the mouth had cleared. She expressed herself as feeling much better and wished to get up, but was too weak. Her weight fell still further, and she died a few days later with all the signs of pernicious anaemia.

(2) D. W., male, aged 51. The disease, contracted in China, began acutely with sore mouth, typical stools, and progressive anaemia. On careful dieting the stools were reduced and the symptoms, with the exception of the anaemia, improved. In a month the red cells were only 2½ million per c.mm. and the haemoglobin 50 per cent. On attempting to increase the food relapse occurred, and he again slowly improved until he was able to take a fairly generous diet, so long as fats and untoasted bread were excluded. These immediately brought on a recurrence of symptoms. Fifteen months after the onset of disease he started the calcium and parathyroid, and wrote saying: "On the fourteenth day after, I felt so well that I took a huge meal to see what would happen—boiled pork, very fat, a large 'club' helping, followed by boiled suet pudding—and was none the worse. Since then I have eaten everything that I wanted to eat and have been none the worse!" After being in England about a year he wished to return to China, but, as the anaemia was not getting better, was advised against this step. However, as there had been no sign of a recurrence of the sprue symptoms themselves, he decided to go back. By the time he reached Singapore the anaemia was worse, and he died, shortly after reaching Hong-Kong, of pernicious anaemia.

Some of the cases in the accompanying table (p. 307) have been reported to me by professional men abroad, and I wish to put on record my thanks to all those who have so done, and also to those in charge of cases in London and the provinces by whose kindness I have been enabled to

observe patients personally: To Dr. G. C. Low and Dr. P. H. Manson-Bahr, physicians to the Hospital for Tropical Diseases, the former for notes of control cases, the latter for according me the exceptional privilege of seeing his patients at any time; to Colonel C. Barry, I.M.S.(ret.), Major H. C. Brown, I.M.S.(ret.), Dr. O. Marriott, Dr. Chill (Singapore), Dr. McCracken (Shanghai), Dr. Scott (Teheran), Dr. Ozzard (British Guiana), Dr. Spence (Rangoon), Dr. Hathaway (New York), Dr. Collier (Oxford), and Dr. Fells (Bristol).

Summary.

A series of cases in progressive degrees of severity is recorded, comparing the results obtained under ordinary methods of treatment, expectant and empirical, with those treated with calcium lactate and parathyroid gland. Gratifying results are also being reported from the endemic centres of sprue in various parts of the world—the West, the Middle East, and the Far East.

The question of the ionic calcium and the value of its estimation is being made the subject of separate investigation.

REFERENCES.

¹ *Trans. Roy. Soc. Trop. Med. and Hyg.*, February 15th, 1923. ² *Lancet*, 1923, ii, p. 876. ³ *BRITISH MEDICAL JOURNAL*, December 15th, 1923, p. 1135; and *Proc. Roy. Soc. Med.*, Trop. Dis. Section, 1924, vol. xvii, p. 16.

A NOTE ON PSITTACOSIS.

WITH REPORTS OF TWO RELATED CASES.

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It has long been known that parrots, both from America and Africa, especially when imported in large numbers, often die in high percentages, both during the voyage and after arrival. It is also well established that the disease from which they suffer can be transmitted to human beings, and that this occurs with fair frequency and probably oftener than is recognized. Apparently the first recorded epidemic was in 1879 (Ritter¹), and every few years since then human epidemics have been reported in Germany, France, Italy, America, and this country. The specific bacillus (*B. psittacosis*) was isolated by Nocard in 1893 from the bone marrow of affected parrots, and in 1896, by Gilbert and Fournier, from human beings as well as parrots, in another small epidemic. It belongs to the same group as *B. enteritidis* Gaertner, *B. paratyphosus* B., and *B. aertrycke*. Its relations have recently been studied by H. M. Perry.²

In parrots the symptoms are loss of appetite, debility, drowsiness, drooping of the wings, and severe diarrhoea, sometimes associated with haemorrhage. Death may be preceded by convulsions. The mortality seems to be over 50 per cent. The disease appears to occur mainly, if not entirely, in newly imported birds, or those which have come in contact with them on their arrival. In fatal cases the bacillus is widely distributed throughout the body of the bird, and the dejecta are found to contain large numbers. It is apparently from this source that the disease is conveyed to human beings, and there can be no doubt that it was so contracted in the two following cases:

CASE I.

In the autumn of 1923 I was asked to see a lady with pneumonia in a town in Scotland. I had seen her previously at intervals since 1914. She had been originally a strong woman, but since nursing her father during a long illness, some years before, had been in poor health, and suffered from indigestion, anaemia, eczema, etc. These ailments were got rid of with some difficulty by the end of 1915, and except for a relapse in 1918 she had been increasingly stronger.

The present illness had begun five days before, with acute pain in the right side of the chest and a rise of temperature to 103°, but apparently no definite rigor. During these five days the temperature had ranged between 101° and 103.6°, pulse 108 to 120, respirations 28 to 36. When I saw her she was quite clear mentally, there was no cyanosis, the tongue was fairly clean and moist, the heart not dilated and sounds good, pulse 112, blood pressure (M.S.) 120. There was dullness with bronchial breathing at the root of the right lung and above it, with some crepitations and friction; lungs otherwise clear, very little cough, and no sputum. She looked unusually well for a patient in the fifth day