DIET FOR MALNOURISHED PRISONERS OF WAR

BY

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A brief record has been made of 24 recently released British P.O.W.s admitted to hospital in this country for malnutrition and other conditions. The majority had done a long forced march and had been liberated only for periods varying from 2 to 7 days. Before admission 21 had suffered from severe diarrhoea, either during the march or after their liberation, on a sudden return to a full diet.

On receiving the first group one was appalled by their emaciation. However, since enteritis was also an urgent symptom, it was felt that caution in feeding was necessary. No literature on the subject of malnutrition was immediately available, but a decision about the diet had to be made quickly. The problem was to find one which, while suitable for the intestinal tract of men suffering from prolonged starvation, would also restore the depleted body tissues. A simple method was adopted which has, on the whole, proved satisfactory.

progress. Half the adult dose of vitamins, cod-liver oil, and iron was considered advisable for the first week, with an increase to the adult dose by the second week. Fersolate tablets seemed to be well tolerated. Plentiful supplies of oranges were available. Mist. opii, catech., et cret. was given two-hourly to the first batch of cases suffering from enteritis; but as this was ineffective in the severe cases—for which reduction from the third-week diet was necessary—it appears that the dietary treatment alone was responsible for clearing the enteritis in the milder cases.

Observations

Patient No. 3 was so ill on admission that it was obvious he could not be put on third-week gastric diet. He therefore received glucose fluids only, by mouth, and 1,000 c.cm. of intravenous plasma, followed by 1,000 c.cm. of glucose-saline in 29 hours. The result was dramatic; within 36 hours of starting parenteral treatment he asked for a poached egg. This was allowed with some misgivings, fortunately unfounded. From then on he was put on a third-week gastric diet, and finally reached sixth-week diet at the same time as the non-enteritic patients. In two other cases also—1 and 4—parenteral fluids were necessary, although these patients were kept on third-week gastric diet before this was realized. Case 1 had prolonged diarrhoea, and Case 4 repeated vomiting. They were both given glucose fluids by mouth, and 1,000 c.cm. of intravenous plasma. In each of these cases also the result was dramatic. (Case 4, now

Details of Cases

General Condition	Case	Age	Time P.O.W.	March	Enteritis*	Other Complaints	Loss of Weight	Weight on Admission	Weight 2 Weeks Later	Hb. on Admission	Hb. 2 Weeks Later
			Years				st. lb.	st. lb.	st. lb.	%	%
Poor	1	26	5	+	2, 3, 4	Pulmonary tuberculosis	4 2	7 2	6 10	72	78
	2	32	7/12	+	4	Bronchopneumonia	3 0	8 13	9 1	60	76
	3	26	5	+	1, 2, 3, 4	Gastro-enteritis	2 11	6 10	7 9	66	62
	4	29	3	+	2, 3, 4	Gastro-enteritis; pulm. tuberculosis	3 4	8 7	8 7	74	80
	5	25	5	—	3, 4	Gastro-enteritis; tuberculous pleural effusion	—	7 12	8 1	68	78
	6	52	5	+	1, 3, 4	? Beriberi	22 10.	10 4	10 5	60	68
Fair	7	24	7/12	+	2, 3, 4	Furunculosis Frost-bite of feet Lobar pneumonia	4 10½	9 3	11 3	72	78
	8	23	2½	+	1, 3, 4		1 10	8 4	9 2	78	84
	9	38	2½	+	1			7 10	8 6	68	78
	10	25	4 9/12	+	1		3 2	7 7	8 10	76	66
	11	26	1½	+	2*		2 7	9 7	10 7½	86	78
	12	23	1½	+	1, 2		2 2	8 8	9 12	72	78
	13	31	4 10/12	+	1		2 0	9 0	9 9	56	78
	14	42	1 10/12	+	2, 3, 4		2 8	10 5	10 13½	80	82
	15	41	4	+	2		2 1	8 13	9 12	72	76
	16	22	8/12	+	1, 2		2 4	7 10	9 0	—	70
	17	35	4	+	1		2 3	9 3	10 8	90	92
	18	27	4 11/12	—	—	Active pulmonary tuberculosis (early) Active pulmonary tuberculosis	1 11	9 3	10 0	88	80
Quite Good	19	28	4	+	1, 2, 3, 4		6	10 8	10 9½	90	90
	20	26	4 11/12	—	1		13	9 12	10 3½	98	86
	21	23	7/12	—	2		3	10 0½	10 6½	90	90
	22	28	6/12	—	—		1 3	9 4	9 6	88	84
	23	38	1 3/12	—	—		1 10	10 4	10 8	86	90
	24	35	1 3/12	—	—		1 1	8 7	8 10	90	90

* 1 denotes enteritis during the forced march; 2, enteritis during the period between liberation and dietary treatment; 3, enteritis on beginning dietary treatment; 4, enteritis after beginning dietary treatment.

† These cases were fit to be discharged from hospital before they had been here two weeks.

State on Admission

Mental.—Most of the patients were still in a state of extreme elation; if some were not, it was because they were too exhausted physically. This state has gradually subsided to one of remarkable contentment while awaiting fitness for discharge.

Physical.—Apart from the first group (see Table) and the general emaciation, the bodily condition was fairly good. The clinical anaemia was not in proportion to the emaciation, and this finding was supported by the haemoglobin estimations. All the patients were clean, but one was recovering from very severe generalized louse-bites. There were no infectious skin diseases. Mild pyrexia was found in all the active cases of enteritis. Three patients were suffering from septic ulcers of the heels, the result of blisters occurring during the forced march. The condition of the teeth was generally bad. (No dental treatment had been available during captivity.) The abdomen was distended in nearly all cases, even in those not suffering from enteritis on admission. The active cases of enteritis were having loose watery motions—2 to 10 a day.

Treatment

It was decided to put the patients on a third-week gastric diet (modified Lenhartz), with the addition of three eggs daily, and to increase or decrease this diet according to the patient's

here 3½ weeks, has gained 10 lb. in 10 days: this satisfactory improvement cannot be shown in the Table. Case 1 has been here only 2 weeks.)

Apart from these three cases little difficulty has been encountered. The satisfactory cases were kept on third-week gastric diet for periods of from 48 to 72 hours, and then advanced to fourth-week and so on, slowly, until sixth-week diet, with meat, was reached (this stage was reached within 12 days by all except Cases 1, 2, and 4). Case 6 had developed vomiting—considered due to sweets given him by a neighbouring patient—but he also reached the sixth-week stage on the twelfth day.

The most marked gains in weight have been in the second group. This was to be expected, because the third group had lost relatively less weight, and the first group, besides delay in reaching a fuller diet, were nearly all suffering from some active disease. The weight-recording of Case 6 is interesting. On admission this man had severe painless oedema of legs and feet, present since the end of the march—i.e., about three weeks before admission. (Urine N.A.D.) The diagnosis of wet beriberi was considered. Unfortunately, the vitamin B₁ content of the urine was not estimated. The oedema diminished rapidly while on third-week diet with large intramuscular doses of aneurin. The weight-recordings for this patient are as follows: on admission, 10 st. 4 lb.; one week later, 9 st. 7 lb.; two weeks later, 10 st. 5 lb.; three weeks later, 11 st. 2½ lb.

It is highly significant that in such a small group of very recently liberated prisoners of war there are just over 20% of cases of pulmonary tuberculosis. Three of the 5 cases were unsuspected when

first admitted here. There is likely to be a high percentage of tuberculosis among our returning prisoners—first, because of the terrible degree of malnutrition present; and, secondly, because of the unhygienic conditions of the prison camps. Would it therefore not be wise to keep at least the definitely malnourished men under observation for 6 to 12 months, and x-ray their chests at two- or three-monthly intervals?

Conclusions

All cases suffering from malnutrition are liable to develop diarrhoea if put too soon on a full diet. The intestinal mucosa in malnutrition is often oedematous, and, even when it is not, it is reasonable to assume that the gastro-intestinal tract needs "re-education" in the digestion of a normal diet. In extreme malnutrition, body reserves may be so exhausted that not enough are left to supply even the enzymes necessary for digestion. In the less severe cases of malnutrition in which, however, enteritis is already present, milk-feeding might be regarded as an ideal method of "digestion re-education," if such were the only aim in the treatment. But another very important aim is to restore the depleted body tissues. Third-week gastric diet, including three eggs daily, provides an easily digested diet for the first two days' treatment, and is a safe means of observing the patient's digestive powers. From this starting-point advance can be made along the later stages of gastric diet, adding more protein if necessary. That patients do make a satisfactory gain in weight on such a diet is shown by results obtained in 14 days, 12 of which were spent on this diet.

The more severe cases of malnutrition should be put on parenteral fluids without delay. Plasma, although not regarded as an ideal substance for parenteral nutrition, has proved very satisfactory in three fairly severe cases of malnutrition, and may well be used temporarily when supplies of protein hydrolysates are not available.

Summary

Twenty-one cases of malnutrition in recently liberated prisoners of war have been treated by first putting them on third-week gastric diet with additional protein, and then increasing the diet slowly until it is a normal one; this stage was reached on the twelfth day after admission. During the first two weeks the majority of the patients showed a satisfactory increase in weight, and the enteritis present in some cases on admission cleared rapidly.

Three severe cases were given intravenous plasma until fit to be treated like the milder cases.

Just over 20% of the cases have active tuberculosis; hence the advisability of keeping all malnourished prisoners of war under observation for developing tuberculosis for some time after discharge from hospital.

My thanks are due to the medical superintendent for permission to publish these results; to Dr. I. Davies and Dr. H. Evans for their advice; and to the staff of the Whitchurch E.M.S. Hospital for their co-operation in treating the cases.

IMPAIRED WORKERS IN INDUSTRY AMERICAN EXPERIENCE AND SUCCESSES

BY
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"Physically impaired workers employed in factories are just as efficient in the jobs they hold as their unimpaired fellow workers." This is the conclusion which official American investigators have arrived at after a careful and detailed study of *Impaired Workers in Industry*,* covering 300 establishments with 63,382 impaired workers. The statement conforms to the general experience in this country of the results of methodical and comprehensive rehabilitation of injured workers and their resettlement in industry. It may be taken as another hopeful indication that the Disabled Persons (Employment) Act is a step in the right direction.

The U.S. is, in general, much advanced in the art of special research in the economic and social field. Investigators in that

country know well how to make the best use of statistical methods. The present inquiry provides a good many interesting details of a problem whose complexity should not be underestimated. Of the disabled workers covered by it 87% were reported to be just as efficient as the unimpaired doing similar work, and the 8% reported as more efficient outweighed even the 5% reported as less efficient.

Absenteeism may be regarded as a part of inefficiency. The handicapped worker in many cases finds it more difficult to get a job, but once he has it he is anxious to keep it and to prove to himself and to others that he is as good as, or better than, his fellow workers. It is, therefore, not surprising, indeed, it is highly gratifying, that in the matter of absenteeism the physically handicapped had a better record than the normal worker. Of the former, 44% were reported as having an absentee record no worse than that of their fellow workers, while 49% had better records; only 7% were absent more than the normal worker.

Accident Proneness

In addition to occupational efficiency and absenteeism there is the problem of the position of the disabled in relation to accidents. Employers have at times been reluctant to employ partially disabled workers, fearing that their handicap might involve the risk of further, possibly even more serious, accidents. Latest experience has indicated, however, that such workers may, through being more careful than their fellows, show a smaller injury risk. In the American inquiry only 2% of the firms stated that some of the employees attempted to obtain compensation for the aggravation of an old injury. As to new accidents the physically handicapped generally experienced fewer injuries; in 38% the accident rate was no higher than in the workers without disabilities and in 51% it was lower; in 11% only was it higher. Similarly, changes of job were less frequent among the disabled.

These results lead to another question which still awaits some clarification. We know through the investigations of the Medical Research Council and the Industrial Health Research Board that generally a relatively small percentage of workers in an establishment encounter a relatively high percentage of accidents. This accident proneness has lately been reaffirmed by another American investigation, which showed that in shipyards 23,188 injuries were received by 8,599 individuals, and that more than half of the workers reported two or more injuries in a year; about 20% of the workers experienced 50% of all reported injuries. Does this definite tendency to accident proneness indicate that injured workers are more liable to sustain another injury than normal workers?

The American report on *Impaired Workers in Industry* seems to supply an answer to this question. The rehabilitated worker is not a person who can be fitted into any industrial job. The utmost attention must be paid to his handicap, to the history of his case, and to a series of psychological and sociological factors if the advantages to be derived from his restored efficiency are not to be lost. The Department of Health for Scotland, in a report on *Health and Industrial Efficiency* in 1943, said that persons invalidated out of the Forces as medically unfit for further service "fared badly" socially, medically, and "in relation to work" when left to themselves. The American report, in the statement quoted at the beginning of this article, cautiously speaks of "the jobs they hold." This means that all the good features of efficiency, reduced absenteeism, and fewer accidents presuppose that the impaired worker finds the right job and the right kind of occupation.

Selective Employment

The report makes it clear that the crux of the problem is not just placing the disabled worker in employment but placing him in a suitable job. It will be noted with interest in Britain that of the industrial firms concerned only 7% reported that in their establishments there was no physical examination of the disabled before employment nor had an analysis been made of the jobs suitable for them; 17% reported that applicants were examined physically before being employed, but were not placed on the basis of job analyses; 15% reported

* The investigation was prepared for the U.S. Bureau of Labor Statistics in the Bureau's Division of Industrial Hazards by Clarence A. Trump and Frances J. Montgomery, see *Monthly Labor Review*, October, 1944.