The effect of depletion–repletion on calorie utilization. By C. C. MAHENDRA and D. S. MILLER, *Department of Nutrition, Queen Elizabeth College, London, W8*

The permanency of the effects of undernutrition has been shown to depend on the timing, severity and duration of the period of undernutrition (McMeekan & Hammond, 1940; Widdowson & McCance, 1963). Species differences have also been noted (Critchton, Aitken & Boyne, 1960). In spite of these and other differences, several workers (Osborne & Mendel, 1915; McCance, 1960; Praeder, Tanner & von Harnack, 1963) have commented on the rapid rate of growth when rehabilitation followed a period of undernutrition, and our own work with adult rats confirmed this observation.

Four groups of twelve adult rats were maintained on two diets containing either urea or zein as the nitrogen source. One group on each diet received a soya supplement for the last 24 days whilst the other received the supplement during the first 24 days of the 48-day experiment. Thus one group on each diet was initially depleted and then repleted whilst the converse occurred with the other group. Faster growth rates were obtained on the supplemented diet after previous depletion than when the rats were fed the supplemented diets before the depletion, despite similar food intakes. Carcass analysis did not show any increased tendency towards water retention and hence a more efficient utilization of calories, protein or both would seem to occur during rehabilitation.

Net protein utilization (NPU) assays of a stock diet by the method of Miller (1963) showed that the values were not affected by the state of nutrition prior to the assay. In order to assess the effect of previous depletion on calorie utilization, the thermic energy of the stock diet was estimated in normal and depleted rats by the method of Miller & Stock (1969).

Table 1. *Assay value for stock diet**

Dietary treatment	NPU_{st}	Thermic energy as % intake
Without depletion	80	$20{\cdot}1 \pm 0{\cdot}50$
With depletion†	80	$16{\cdot}1 \pm 0{\cdot}32$

*Amvilac No. 2.
†Fed a non-protein diet for 5 days prior to assay.

The results are shown in the table and demonstrate that rats fed on a non-protein diet for the 5 days preceding the assay produced significantly less thermic energy than rats that had been on stock diet throughout ($P<0{\cdot}00005$). The lower thermic energy and hence a better utilization of calories, would explain the rapid growth during rehabilitation.

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Dietary intakes of geriatric patients in hospital. By ELIZABETH EVANS and ANNE L. STOCK, *Queen Elizabeth College, University of London, London, W8*

The provision of adequate diets for elderly patients living in institutions demands special attention, since the well-documented problems of large-scale catering (Platt, Eddy & Pellett, 1963) are combined with the attendant problems of old age which range from mechanical difficulties of feeding to anorexia.

Individual weighed food intakes have been obtained over an 8-day period, from fourteen men (age range 63-91 years) and twenty-five women (age range 61–94 years) all of whom were resident in three geriatric wards in an Essex hospital. Nutrient intakes have been computed using McCance & Widdowson (1960) food composition tables and are shown in the table.

Table 1. *Mean daily nutrient intakes per head in three geriatric wards in the same hospital*

	Rehabilitation ward	Medical ward	Long-stay ward
Calories (kcal)	1320	1410	1560
Protein (g)	41	49	61
NDpCal%	8·5	9·3	9·9
Fat (g)	49	55	67
Iron (mg)	5·3	8·1	8·5
Calcium (mg)	790	750	880
Vitamin B_1 (mg/1000 kcal)	0·40	0·37	0·45
Vitamin B_2 (mg/1000 kcal)	0·82	0·71	0·78
Nicotinic acid (mg/1000 kcal)	3·04	3·44	4·94
Vitamin A (i.u.)	1310	1760	3500
Vitamin D (i.u.)	26	48	112
Vitamin C (mg)*	27 (7)	30 (7)	40 (9)
Number	16	14	9
Mean age (years)	80	78	77
Daytime activity	Sitting in day-room	Mostly lying in bed; some active	Occasionally sitting in chairs

* Values in parentheses obtained by chemical analysis of food samples.

Calorie intakes were low compared with those obtained by Brown (1968) and were lowest for patients with the highest energy requirements as judged by activity. Protein intakes *per se* were adequate (Berry, 1968) and protein quality expressed as net dietary protein calories % was similar to that found in other hospitals (Pellett & Eddy, 1964). However maximum protein utilization may have been limited by calorie restriction (Miller & Payne, 1961). Fat-soluble vitamin intakes were generally low; vitamin A intake was correlated with total protein intake ($r=0{\cdot}78$, $P<0{\cdot}00001$) and

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