

double their initial weight. Rats 85 and 86 were stunted the first 28 days and grew the last 11 days, during which time they attained a figure double their initial weight. The principal feature of this series is the fact that the ultimate cost of growth was confined to narrow limits even when the animals had been stunted during the earlier period of the experiment.

The second class includes rats which were undergoing experiments of longer duration than the above series, or where the diet ultimately displays an inadequacy. In the case of all the animals of this second class, the results are calculated from the data recorded during the period in which the subject reached its maximum growth and do not include the final period when the curve was almost flat and the gain for the period was only a few grammes. Rats 41-7 were fed on diets which finally proved inadequate so that the animals ultimately died. These animals resemble those of the first class in their metabolic economy. The remaining members (rats 49-56) grew for a longer period and terminated their maximum rate of growth about the 80th day. These animals utilized the energy less efficiently, the cost of new tissue being 30-100% more than that observed in all previous cases. This may be accounted for in part by the fact that this experiment was carried out during the winter months and the animals were kept in metal cages without any bedding. The room temperature often fell to a low level and some of the energy undoubtedly went to balance the heat lost through radiation.

The energy intake per 100 grms. live weight of rat (Table 16, cf. Fig. 4-6) yields interesting information. In these short term experiments the energy intake is approximately the same, with slight variations, whether the animals are growing or declining in weight. In the case of rats 25-34 and 80-86 the intake for the 8-12 day period ranged from 30-46 calories per 100 grms. live weight. Rats 25, 26, 31 and 32 were kept on accessory-free diets throughout and eventually died. During the 24-28th day interval they were declining but nevertheless the energy consumption remained at the same level. Rats 27-28 and 29-30 were consuming inadequate diets and declining during the early period of the experiment. On the 20th and 24th day, respectively, they were given food mixtures sufficient for all requirements and the decline was immediately converted into a rapid growth increment. This was accompanied by a corresponding energy intake, an increase of 75% for rats 27-8 and 100% in the case of 29 and 30, over that of the early period of the experiment. In these cases there was a compensatory increment to the growth rate, since these animals reached approximately the same weight in the last 20-24 days as that attained by animals who were growing throughout the whole experimental period. In the final