Animal protein thus formed about 30 % of the total protein intake.

During the second diet period the intake was raised by 500 Cal. from non-protein sources. The protein intake was kept unchanged. In the third diet period the protein intake was raised by adding 25 g. animal protein/day usually as fish (canned pilchards or fresh fish). This raised the animal protein to about 50 % of the total protein intake. The calorie intake rose by about 100 Cal. In the fourth diet period the protein content of the diet was raised by 20 g. protein/day usually as fish but the total calorie intake was maintained at the level of the third period. Thus the percentage of animal protein rose to almost 70 % of the total protein intake. During the fifth diet period the total calorie intake was raised by about 350 Cal. but the total protein intake was maintained constant at the level of the fourth period.

Nutrition of Domestic Rabbits

1. The Effect of Nutrition on the Carcass Composition of the Rabbit

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It has long been known that different rates of growth when caused by differences in the amount of food eaten profoundly affect the carcass composition of animals. Detailed studies on farm animals have been made by Moulton, Trowbridge & Haig (1922) for cattle, by Vergés (1939) for sheep and by McMeekan (1940 *a*, *b*, *c*) for pigs. Feeding *ad lib.* favours rapid growth of the late-developing parts of the animal, e.g. anatomically the loin or, chemically the deposition of fat, and therefore gives rapid maturity. Undernutrition stunts these late-developing parts because such food as is available for growth is used preferentially for those parts of the animal which are physiologically most important such as the skull and viscera. Undernutrition therefore produces a 'primitive' or late-maturing type of animal.

Many experiments have been carried out in which the effect of the qualitative nature of the ration on body composition has been investigated by chemical analysis of the whole carcass. In most cases the paired-feeding method was employed. With this technique the faster growing animal of a pair receives less food in relation to its requirements than its mate, and in general tends to lay down less fat in proportion to protein. This is especially true in the later stages of an experiment when one animal of a pair is considerably heavier than the other. Thus Mitchell & Hamilton (1936) found that, with pigs and rats, as the protein level of the ration was raised to about 25 %, the proportion of fat to protein laid down decreased. Johnson, Hogan

& Ashworth (1936) in paired-feeding experiments with rats found that their animals gained more fat and less protein on a ration containing 10% protein than when the ration contained 26%. Forbes, Swift, Black & Kahlenberg (1935) and Forbes, Voris, Bratzler & Wainio (1938) also found this to be the case between the levels of 10 and 45% protein. Hamilton (1939), using the paired-feeding method for (a) equal feed and (b) equal gain, found that below a level of 16% protein in the ration the ratio of energy to nitrogen of the carcass was increased. Beadles, Quisenberry, Nakamura & Mitchell (1933), using the paired-feeding method with rats, found that a ration containing the protein of Limburger cheese as sole source of nitrogen produced carcasses of slightly higher energy content and less protein than one containing the same amount of rennet-curd milk protein, but the difference was small and not easily demonstrated. The protein of the Limburger cheese had a biological value 6% lower than that of the rennet curd. The biological value of protein may, therefore, as would be expected, affect carcass composition.

Two experiments are recorded, both on chicks, in which the effect of protein level was investigated when food intake was not controlled. Halnan (1942) fed three groups of chicks on a basal low-protein ration, and on this ration supplemented by whale meat dried by two different methods. With the basal ration the fat content of the gain in empty weight was 12·5%, and with the two supplemented rations, 8·2 and 10·3%, respectively; the protein contents were 16·4, 19·0 and 18·1%, and the average gains in empty weight in 5 weeks were 134, 409 and 349 g. Thus, although growth was considerably more rapid on the high-protein rations, the carcasses were chemically less mature than those of the birds which received the low-protein basal ration. This is the opposite of the result obtained when growth rate is controlled by altering the quantity, as opposed to the quality, of the ration (Moulton et al. 1922; Vergés, 1939; McMeekan, 1940 a, b, c).

Fraps (1943) obtained similar results by varying the protein level in the ration. He found in addition that increasing the bulk with oat hulls reduced the fat in the carcass, but in this case growth was also reduced. Addition of oil to the ration gave fatter carcasses but growth was no greater.

McClure, Voris & Forbes (1934), using the paired-feeding method, found that the carcasses of rats which received vitamin B_1 contained more fat than those which were deficient, although the growth rates of the two groups were about the same. Here again chemical maturity was unrelated to the rate of growth.

Kennard, Holder & White (1922) found that addition of a mineral mixture to a basal ration deficient in minerals gave greater protein and less fat deposition. Deficiency in minerals can therefore also affect carcass composition.

During the war of 1939–45 experiments were carried out in this laboratory on the efficiency of various natural rations for meat production in domestic rabbits. Amongst these experiments was one with two groups of rabbits, fed on different rations, of which the growth rate was very nearly the same while their fat deposition was widely different, and the results of this experiment are described in this paper.

EXPERIMENTAL

Genetic history of the animals

All animals had the same sire of mixed Flemish-Giant and Belgian-Hare breeds. They were the offspring of five does of the same breeding. Offspring of all the does, except one, were represented in both groups. In addition three animals had litter-mates in the opposite group. The numbers of the mothers of the animals used for the experiment are included in Table 2.

Plan of experiment

The animals were fed from birth till weaning on a stock ration of cereals and protein concentrates with hay, carrot and cabbage. When they weighed approximately 1000 g. (at 7–8 weeks) they were placed on the experimental rations in individual hutches and were fed for 7 weeks, except for animal no. 92 which was fed for 9 weeks. They were then starved for 24 hr., slaughtered and the carcasses were analysed for edible matter.

Rations

Stock ration

The stock ration had the following percentage composition: maize meal 25·0, Sussex-ground oats 9·9, middlings 29·6, bran 14·5, decorticated earth-nut meal 14·5, dried brewer's yeast 5·3, sodium chloride 0·2, bone meal 0·5, calcium carbonate 0·5. In addition 0·5 % cod-liver oil was given and fresh cabbage or carrot and hay *ad lib.* The concentrate ration was made up into pellets in a pelleting machine. All animals were given water.

Weed ration

The weed-fed group received weeds only. About 70% of the weeds consisted of sow thistles, which are much more palatable than other species, but considerable quantities of shepherd's purse were fed, and small quantities of other species of weeds. Blocks of common salt were put in the hutches and water was always available.

Potato ration

All the potato-fed group received cooked potatoes and hay *ad lib.* and 10 g. carrot daily. Two animals received 100 g. cabbage/day. Four of the eight animals received supplements of casein. All received 0·5 % NaCl on the dry-matter basis, and water was always available. Details of the food intake of the two groups are given in Table 1. The casein was steamed with a little starch to make a cake which the animals would eat up quickly without scattering.

Carcass analysis

The animals were slaughtered by dislocating the neck, and put in cold storage. The dressed carcass, feet, pelt, kidneys, liver, total edible offal (brain, tongue, kidneys, heart) and inedible offal (excluding gut content) were weighed. The dressed-carcass weight was taken as the weight of the carcass after removal of the pelt, inedible offal,

edible offal and feet. Care was taken to minimize evaporation during dissection by covering the carcass with wet cloths and working as quickly as possible. Dissection losses ranged from o to 2·5%. The fat round the kidney and that over the shoulders and the pubic region (other dissected fat) was removed from the carcass and weighed.

Table 1. *Food intake of rabbits during the feeding trial*

Rabbit no.	Potato dry matter (g.)	Total dry matter (g.)	Protein (g.)	Protein in dry matter (%)
		Potato-fed group*		
66	3005	4988	844	16·9
67	3959	5885	944	16·0
69	3785	4966	488	9·8
73	2112	3642	335	9·2
74	2236	5211	789	15·1
75	2570	4638	619	13·3
81	3610	5047	583	11·6
86	3062	4794	543	11·3
Mean	3042	4896	643	12·9
		Weed-fed group		
80	—	5209	970	18·6
84	—	3939	759	19·3
85	—	4452	834	18·7
92	—	7011	1300	18·5
100	—	4763	991	20·8
104	—	4392	933	21·2
108	—	5167	1102	21·3
114	—	5325	1238	23·2
116	—	3871	987	25·5
118	—	5299	1278	24·1
Mean	—	4944	1039	21·1

* Animals nos. 66, 67 and 74 received a supplement of 20 g. casein daily, and animal no. 75, 10 g. Animals nos. 81 and 86 received 100 g. cabbage daily.

This fat was analysed separately from the rest of the meat. The remainder of the carcass was cooked in a pressure cooker for 15 min. and the edible matter was then removed from the bones for analysis. The meat was minced and dried and was then analysed for protein (total $N \times 6·25$) by the Kjeldahl method and for fat by ether extraction. The gross energy was obtained by calculation, taking for protein a value of 5·7 Cal./g. and for fat 9·46 Cal./g. (Breirem, 1935).

To obtain an estimate of the initial carcass composition of the rabbits at weaning, a group of six weaned rabbits 7–8 weeks old and closely related genetically to the experimental animals was killed and the carcasses were analysed in a similar manner. These animals had received the same stock ration which the potato-fed and weed-fed groups were given up to the time of weaning. In estimating the increase in edible matter of these latter groups during the feeding trial, the average amount of edible matter/unit weight of the baby rabbits was multiplied by the individual weights of the animals at the start of the trial. The figures obtained were taken as the initial amount of edible matter in the carcasses of the animals. The increase in edible matter was calculated by subtracting the estimated initial edible matter from the edible matter found at the end of the experiment. The estimate of initial edible matter is not strictly

correct because the chemical composition of the carcass changes with increasing size of the animal. However, there was no correlation between the live weight and composition of the baby rabbits analysed; moreover, the composition of baby rabbits at about 1000 g. live weight is not very variable. Therefore, although the potato-fed group was heavier than the other group at the beginning of the feeding trial, there was no evidence that this introduced a bias in the estimation of their relative production of edible matter.

RESULTS

Fig. 1 gives the mean growth curves of the two groups up to 14 weeks and also of a further group of closely related animals (all of them from the same litters) which were fed on the stock ration throughout. The two experimental groups grew at very nearly the same rate from birth to slaughter. The rate of growth was about three-quarters of
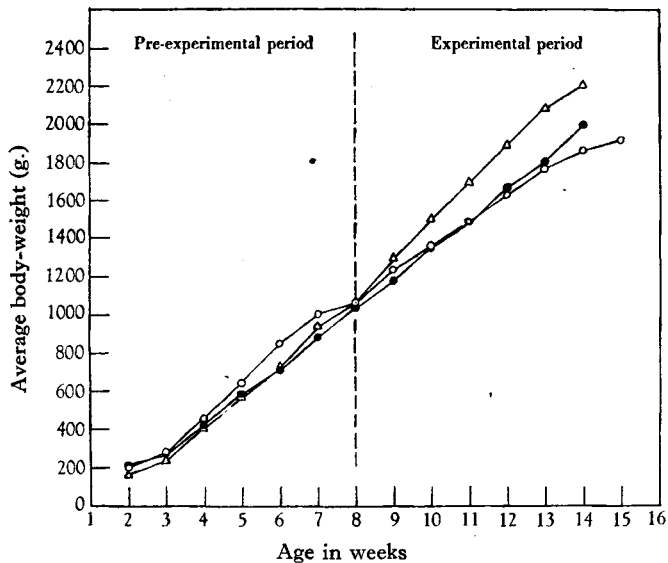

Fig. 1. Composite growth curves of three groups of rabbits fed on a stock ration up to weaning and thereafter on the following three rations: cooked potatoes and hay (with a casein supplement in some cases), weeds only, and a stock ration. The vertical dotted line indicates the approximate age of weaning. ○——○ Potatoes and hay (+casein in some cases); ●——● weeds; △—△ stock ration.

the maximum rate as shown by the growth curve of animals fed on the stock ration throughout. Of the two experimental lots the potato-fed group grew rather faster up to weaning, while the weed-fed group made the greater gains after weaning. If carcass composition depended only on growth rate one would expect that either the carcass composition of the two groups would be approximately the same, or that the weed-fed group would lay down rather more fat because it grew faster than the other group at the latter end of the feeding period at an age when fat deposition is normally active. Table 2 gives the growth of the individual animals during the experimental feeding period, the estimated initial dressed-carcass weight and the final dressed-carcass weight. Table 3 gives the weight of kidney fat, fat removed from over the shoulders

Table 2. *Live weights and dressed-carcass weights of rabbits which received the potato ration and the weed ration*

Rabbit no.	Mother no.	Live weight			Dressed-carcass weight*		
		Initial (g.)	Final (g.)	Gain in 7 weeks (g.)	Estimated initial (g.)	Final (g.)	Gain in 7 weeks (g.)
				Potato-fed group			
66	B2	1342	1882	540	691	1186	495
67	B2	1136	2034	898	585	1219	634
69	B2	1348	1975	627	694	1185	491
73	B4	1086	1575	489	559	904	345
74	B4	1147	2157	1010	591	1253	662
75	B1	1035	1814	779	533	968	435
81	B3	1150	2008	858	592	1138	546
86	B1	954	1636	682	491	961	470
Mean	—	1149	1885	735	592	1102	510
				Weed-fed group			
80	B3	1092	1988	896	562	1121	559
84	B1	978	1536	558	504	888	384
85	B1	1042	1696	654	537	911	374
92	B1	910	1993	1083	469	1195	721
100	B7	867	1894	1027	447	1079	632
104	B7	863	1759	896	444	989	545
108	B2	997	2060	1063	513	1167	654
114	B4	1136	2152	1016	585	1280	695
116	B4	1020	1956	936	525	1011	486
118	B4	951	2026	1075	490	1248	758
Mean	—	986	1906	920	508	1088	581

* Weight of carcass after removal of the pelt, inedible offal, edible offal and feet.

Table 3. *Dissection data for carcasses of rabbits which received the potato ration and the weed ration*

Rabbit no.	Kidney fat (g.)	Other dissected fat* (g.)	Feet (g.)	Pelt (g.)	Kidneys (g.)	Liver (g.)	Total edible offal (g.)	In-edible offal (g.)	Killing out percentage on live wt.†	Killing out percentage on empty wt.†
					Potato-fed group					
66	31·4	23·4	25·0	262	14·2	51·0	82·0	156	63·0	68·1
67	22·6	25·2	29·1	259	14·9	48·3	80·4	159	59·9	68·5
69	26·3	29·3	28·1	247	14·8	58·0	88·3	176	59·9	67·6
73	14·8	20·1	27·5	159	9·0	35·5	62·6	150	57·3	68·0
74	19·9	40·8	30·5	231	18·9	78·8	119·0	204	58·1	66·5
75	2·9	6·2	31·6	211	14·3	70·5	109·3	175	53·3	65·3
81	32·2	37·2	28·5	225	12·7	80·0	110·8	160	56·7	64·9
86	15·5	19·4	29·1	176	11·3	53·7	83·3	167	58·7	66·2
Mean	20·7	25·2	28·7	221	13·8	59·5	91·9	168	58·4	66·9
					Weed-fed group					
80	8·7	5·0	31·2	268	15·9	65·2	98·3	179	56·3	64·9
84	1·3	0·8	25·0	206	13·1	52·5	80·7	129	57·8	65·3
85	0·0	0·0	29·7	197	14·2	51·2	80·9	144	53·7	64·7
92	11·0	13·0	28·8	244	15·9	62·2	96·9	170	60·0	66·2
100	5·5	5·3	36·0	274	16·1	51·0	88·3	186	56·9	64·3
104	7·3	4·6	30·5	242	16·5	59·6	98·9	175	56·2	63·9
108	6·0	7·3	33·3	261	15·8	53·4	86·9	187	56·7	65·9
114	8·8	14·8	36·8	283	19·0	73·0	112·5	212	59·5	66·3
116	4·2	3·2	30·7	248	18·6	63·1	102·9	178	51·7	64·3
118	14·7	12·0	27·2	282	14·6	79·0	111·8	189	61·6	67·8
Mean	6·8	6·6	30·9	251	16·0	61·0	95·8	175	57·0	65·4

* Fat from over the shoulders and the pubic region.

† Dressed-carcass weight expressed as a percentage of weight of animal.

live weight, this difference is statistically significant ($P = 0.01$) although litter differences are estimated as error in applying the simple t-test. In the fatty tissue round the kidney and in that over the shoulders and the pubic region (other dissected fat) there was a very marked difference between the two groups. With the exception of rabbit no. 75

Table 5. *Estimated gains in edible matter of dressed carcasses of*
rabbits during the feeding trial

Rabbit no.	Dry matter (g.)	Protein (g.)	Dissected fat* (g.)	Total fat (g.)	Gross energy (Cal.)
		Potato-fed group			
66	168·4	88·0	22·7	69·7	1160
67	195·4	119·7	21·7	73·9	1380
69	175·1	81·2	25·0	82·8	1246
73	101·4	65·9	10·4	30·5	663
74	199·5	112·6	29·9	83·8	1435
75	56·8	60·4	− 6·9†	− 7·4†	275
81	190·4	100·3	38·5	87·3	1395
86	122·2	90·0	10·4	27·6	773
Mean	151·1	89·8	18·9 ± 5·0‡	56·0 ± 12·3‡	1041
Mean/1000 g. gain in dressed-carcass wt.	296·3	176·0	37·0	109·8	2039
		Weed-fed group			
80	114·0	100·1	− 5·6†	5·8	625
84	62·0	69·8	− 10·7†	− 13·5†	286
85	50·3	75·4	− 11·8†	− 29·2†	154
92	158·5	133·2	4·0	16·8	918
100	125·6	105·4	− 4·0†	8·1	431
104	105·3	86·4	− 2·6†	6·3	552
108	135·5	120·7	− 5·0†	5·8	493
114	179·4	134·7	1·0	34·3	1134
116	91·4	91·4	− 7·4†	0·1	522
118	181·1	128·7	7·6	46·5	1171
Mean	120·3	104·5	− 3·5† ± 1·9‡	8·1 ± 6·9‡	629
Mean/1000 g. gain in dressed-carcass wt.	206·9	179·8	− 6·0†	13·9	1081

* Sum of kidney fat and fat removed from over the shoulders and the pubic region.
† Negative sign denotes an estimated loss of fat.
‡ Standard error of the mean.

the carcasses of the potato-fed group contained 3–4 times as much of this fatty tissue as those of the weed-fed group. Rabbit no. 75 had coccidiosis from which it rapidly recovered but the disease may have affected fat deposition.

From the figures in Table 4 it may be seen that there was a very marked difference between the two groups in the quantity of edible fat and that the difference was greater in 'dissected fat' than in the total fat of the carcass. The fatty tissue round the kidney develops late in the rabbit. It seldom weighs more than 8 g. in animals of this breed at 8 weeks old, but may weigh as much as 50 g. at 15 weeks. Its deposition would, there-fore, be particularly sensitive to dietary effects in an experiment of this nature. The edible dry matter of the carcasses of the potato-fed group was greater than that of the weed-fed group and the difference corresponds roughly to the difference in fat content.

Protein deposition was, on the other hand, about the same in the two groups and there was no inverse relationship between the edible protein and fat deposited.

The difference in fat content resulted in a considerable difference in gross energy of the edible matter of the carcasses and, therefore, in the nutritive value for human consumption of the meat of the two groups.

Table 6. *Relative weights of joints of carcasses of rabbits after removal of kidney fat, and of fat from over the shoulders and the pubic region, expressed as a percentage of total weight*

Rabbit no.	Pelvis and hindquarters	Fore-limbs	Loin	Head and neck	Thorax	Tissue covering abdomen
			Potato-fed group			
66	33·0	12·9	19·0	14·8	13·7	6·4
67	33·7	11·8	16·3	16·0	15·1	7·0
69	32·8	12·1	15·9	17·1	14·8	7·2
73	35·3	13·1	15·5	15·1	15·3	5·6
74	33·2	11·9	16·7	15·6	15·7	6·8
75	34·3	13·6	15·9	15·0	15·4	5·9
81	34·4	11·7	15·8	16·5	15·1	6·4
86	35·5	12·2	16·8	16·0	13·8	5·6
Mean	34·0	12·4	16·5	15·8	14·8	6·3
			Weed-fed group			
80	34·3	12·3	17·3	15·3	14·4	6·3
84	34·0	13·1	17·8	15·8	12·7	6·5
85	34·5	12·0	16·3	16·7	14·5	6·0
92	33·8	12·9	16·5	15·9	15·3	5·6
100	34·1	14·5	15·3	16·2	13·5	6·3
104	33·5	14·4	17·7	16·1	12·5	5·8
108	32·9	12·5	18·3	16·1	13·0	7·1
114	35·5	12·3	16·6	14·4	15·0	6·2
116	34·1	12·9	17·4	14·4	15·4	5·6
118	34·0	12·4	17·9	12·9	16·7	6·1
Mean	34·1	12·9	17·1	15·4	14·3	6·2

Comparison of the gains in edible matter during the feeding experiment (Table 5) shows a much more marked difference in the fat deposition of the two groups of animals. The weed-fed group produced hardly any fat at all. The average amount was one-seventh of that laid down by the potato-fed group. The difference was again greater in the 'dissected fat' than in the carcasses as a whole. The majority of the weed-fed group actually lost 'dissected fat'. Rabbits nos. 84 and 85 lost their entire store and yet these two animals made reasonably good growth.

From the carcass analyses it appears that the weed-fed group was less mature chemically than the potato-fed group. It is of interest to find out whether this difference in chemical maturity is correlated with any gross difference (other than deposition of depot fat) in anatomical maturity. Table 6 gives the weights of the joints of the carcasses, after removal of the 'dissected fat', expressed as a percentage of the sum of the weight of the joints. There are no significant differences between the two groups. From the measurements it appears that either chemical maturity does not run parallel with anatomical maturity or, more probably, that both groups of animals were anatomically mature (except in the deposition of fatty tissue) at the time of slaughter.

DISCUSSION

It is demonstrated in these experiments that carcass fat in the rabbit as in other animals is not entirely dependent on the slope or shape of the growth curve. Carcass composition is of course affected by the rate of live-weight gain as Moulton *et al.* (1922), Vergés (1939) and McMeekan (1940 *a*, *b*, *c*) have shown, but the qualitative nature of the ration also has an important influence. It follows that the energy value of the meat in human nutrition cannot be assessed, even approximately, from live weight or dressed-carcass weight measurements. For example, the gross energy of the edible matter of the carcasses of the potato-fed group averaged 1863 Cal., whereas that of the weed-fed group was 1382 Cal. If Rubner's factors for energy in human nutrition, namely 9·3 Cal./g. for fat and 4·1 Cal./g. for protein, are applied, these figures become 1573 and 1095 Cal., respectively. Moreover, since the rate of growth and the shape of the growth curve of both lots of animals were approximately the same, energy content of the carcass cannot be predicted from a knowledge of the growth data.

The failure of the weed-fed group to lay down more fat was presumably due to the fact that, owing to the bulk of the ration, they did not receive from it enough metabolizable energy to cover their requirements. Moreover, since sow-thistle leaves contain only small quantities of starch and sugar, it is probable that most of the non-protein energy absorbed was in the form of fermentation products from cellulose, polyuronides and fructosans. It has not yet been shown that fat synthesis from these products is as easy as from glucose or from the products of fat digestion. The nature of the products of digestion as well as their gross energy may thus be an additional factor preventing fat synthesis. It will be shown in a later paper that addition of potatoes to the weed ration gives normal depot fat deposition but at the same time a somewhat greater growth rate. The potato-fed group considered in this paper presumably received enough metabolizable energy for the subnormal (three-quarters of the maximum) growth rate which they exhibited. Since these were *ad hoc* wartime experiments with natural rations it is not possible to specify the dietary deficiency which limited growth. Half of the animals received a supplement of casein, yet these animals did not grow much faster than the remainder and laid down just as much fat, so that a deficiency of protein is hardly likely to have been an important factor affecting growth or carcass composition; the protein level in the rations of the remainder of the group was, however, low. There were no macroscopic signs of rickets or any other abnormality in bone growth. It is possible, however, that the potato ration was deficient in folic acid or the 'grass juice factor'.

As the weeds contained about 85% of water, the weed-fed group was consuming considerably more water than the potato-fed group. This water, about 1000 g./day, had to be warmed up to body temperature in the stomachs of the animals. This means that these animals were kept in an environmental temperature virtually lower than that in which litter-mates of the potato-fed group lived; this cooler climate might conceivably have required greater expenditure of energy to keep the weed-fed animals warm. On the other hand, roughly half of the potato-fed group was on experiment during the spring in an external climate on an average at least 10° F. cooler than that

during the summer, while all the weed-fed group was on experiment during the summer Furthermore, the latter group was generally within its zone of thermal neutrality at the time of day when it was feeding, and under these conditions it is improbable that subtraction from the animals' body of the heat necessary to warm the water in the weeds would increase the basal metabolism. Moreover, any such increase would be considerably reduced by utilization of a greater proportion of the heat increment of the ration to keep the animals warm (Swift, 1944). It is unlikely, therefore, that the amount of heat required to warm the water to body temperature seriously reduced fat deposition.

It seems axiomatic that depot-fat production in growing animals must ultimately depend on the plane of energy nutrition, that is the supply of precursors of depot fat in excess of what is required for maintenance, and protein and bone production, because fat production, being less essential to the physiological needs of the animal, can only call on the food nutrients after the other needs of the body are satisfied. However, when dealing with more than one ration, one cannot assess this plane of nutrition in terms of growth rate and shape of growth curve or in terms of net or metabolizable energy related to body-weight. In the experiments described in this paper, although the rate of growth and shape of growth curve of the two groups were about the same, the plane of energy nutrition of the weed-fed group was virtually lower than that of the potato-fed group, either because the former did not receive sufficient gross digestible energy relative to the amount of muscle growth which the ration would support, or because the digestible energy was chemically unsuitable for synthesis of depot fat.

SUMMARY

1. Two groups of domestic rabbits were fed on a stock ration till weaning and thereafter for 7 weeks on a ration of weeds and of potatoes and hay, respectively. Some of the potato-fed group received a supplement of casein.

2. Growth rates and the shape of the growth curves throughout the life of the two groups were approximately the same. Growth during the 7 weeks' period of the feeding experiment was about three-quarters of the maximum.

3. The average dressed-carcass weights, killing out percentage and relative weights of joints of meat of the two groups were approximately the same.

4. The carcasses of the potato-fed group contained twice as much total edible chemical fat as those of the weed-fed group, and four times as much chemical fat round the kidney and over the shoulders and pubic region.

5. During the 7 weeks' feeding experiment the potato-fed group laid down seven times as much edible chemical fat as the weed-fed group. The animals in this group laid down a fair amount of fat round the kidney and over the shoulders and pubic region while the weed-fed group laid down none at all in these parts.

6. The edible protein content of the carcasses of the two groups was approximately the same.

7. It is concluded that the fat content, and therefore energy value, of rabbit meat for human nutrition cannot be assessed from the live weight or dressed-carcass

weight, nor from a knowledge of the rate of growth or shape of growth curve, because fat deposition is profoundly influenced by the qualitative nature of the ration.

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