

SCIENTIFIC PROCEEDINGS.

ABSTRACTS OF COMMUNICATIONS.

One hundred eighth meeting.

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Vice-President Wallace in the chair.

91 (1551)

Additional experiments showing the production of fat from protein.

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A dog, which had been fed for two days with 1,000 gm. of meat daily at 8 a.m. and which had had at 5 p.m. on the same two preceding days the usual standard diet containing about 70 gm. of carbohydrate, was given 1,000 gm. of meat at 8 a.m. The respiratory quotients for the fifth, sixth and seventh hours after giving this quantity of meat were 0.842, 0.845 and 0.845. Computed on the basis of the metabolism of protein which is the equivalent of 1.44 gm. of urinary nitrogen per hour, there appeared to be a retention of material derived from protein which, if it had been burned, would have shown respiratory quotients in the successive hours of 0.708, 0.688 and 0.685. This indicates that the carbon-containing material derived from protein which was retained in the body had a respiratory quotient approximately the same as that of fat.

For the three hours by direct calorimetry 85.32 calories were found. By indirect calorimetry, if the retained carbon be calculated as having been deposited in the form of fat, 83.58 calories may be calculated as the heat which should have been expected to

arise under those circumstances. Had the carbon been retained as glycogen the calculated heat production would have been greater (about 4 calories per hour).

This work confirms in three successive hourly periods the work previously published by Atkinson and Lusk¹ concerning the formation of fat from protein under experimental conditions similar to the ones here described.

The experimental data follow:

DOG XVIII.

Experiment 68—Basal metabolism—April 14, 1920.

Indirect = 14.25 calories
 Direct = 14.31 "
 R. Q. = 0.82

Experiment 70—After 1,000 grams meat.

5th hour:	N—CO ₂ 13.46	N—O ₂ 12.17	N—cals. 38.17
	Resp.—CO ₂ 10.10	Resp.—O ₂ 8.72	Deposit cals. 11.32
	3.36	3.45	Indirect cals. 26.85
	R. Q. of deposit = 0.708		Direct cals. 27.52
6th hour:	N—CO ₂ 13.46	N—O ₂ 12.17	N—cals. 38.17
	Resp.—CO ₂ 10.45	Resp.—O ₂ 8.99	Deposit cals. 10.43
	3.01	3.18	Indirect cals. 27.74
	R. Q. of deposit = 0.688		Direct cals. 29.07
7th hour:	N—CO ₂ 13.46	N—O ₂ 12.17	N—cals. 38.17
	Resp.—CO ₂ 10.56	Resp.—O ₂ 9.09	Deposit cals. 10.10
	2.90	3.08	Indirect cals. 28.07
	R. Q. of deposit = 0.685		Direct cals. 28.73
	Total indirect	= 82.66 calories	
	" direct	= 85.32 "	
	" indirect		
	as calculated:		
	on C retained as		
	fat	= 83.58 "	
	on C retained as		
	glycogen	= 96.8 "	
	Urine nitrogen	= 1.44 gm. per hour	

¹ Atkinson, H. V., and Lusk, Graham, "On the Problem of the Production of Fat from Protein in the Dog," *Proc. National Academy of Sciences*, 1919, V, 246.