

O. L. Holmes

THE RELATION  
OF  
ALIMENTATION AND DISEASE.

BY

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SECOND EDITION

of the paper.

NEW YORK:

1892.

## XLIX.

EXPERIMENTS WITH "BAKED BEANS" AS AN EXCLUSIVE DIET,  
UPON STRONG HEALTHY MEN.

IN September, 1856, I engaged six strong, healthy men, in the vigor of life, ranging in age from 25 to 40 years, to feed upon a special line of diet solely, with the understanding that I would pay them \$30 per month each, if they submitted faithfully to the rigid discipline laid down. At the same time I explained to them the kind of food upon which I should require them to live, the exercise and other regulations marked out. All thought the diet and drinks could be easily endured, in fact, enjoyed, especially as they would have no manual labor to perform. They all entered upon the undertaking with the feeling that they would have a fine time at my expense. The diet consisted first of baked beans and coffee. This to continue for one month or until otherwise ordered by me. Exercise to be a two-mile walk, morning and evening. To retire at 9 p. m. and rise at 6 a. m. Drinks between meals, cold water.

On the 13th of September, the experiments began. Breakfast at 7 a. m., dinner at 12 noon, and supper at 6 p. m. I shall designate my six boarders by the letters A, B, C, D, E, F. All were strong, robust, free from disease, and having one regular movement of the bowels every day.

A	weighed	160 lbs.	Age 36 yrs.
B	"	145 "	" 30 "
C	"	155 "	" 40 "
D	"	166 "	" 34 "
E	"	172 "	" 28 "
F	"	148 "	" 25 "

The first day all felt well and enjoyed themselves greatly.

Towards evening began to bloat, but had no special feeling of discomfort. Slept well. Entered upon the second day feeling about as well as on the first, except that all were flatulent and constipated. Yet all had a scanty, hard movement of the bowels before evening. In the after part of the day they were very uncomfortable from the bloating. Took them on a brisk walk of two miles, which was something of a relief.

*The following table shows the condition from the third to the eighteenth day inclusive, during which time they continued the before-mentioned diet and drinks.*

DAY.	A.	B.	C.
3	Bloated badly. Constipated.	Bloated badly. Colic pains. Constipated.	Bloated badly. Colic. Constipated.
4	Badly bloated. Constipated. Movement with much wind.	Bloated badly. Colic. Slight movement with much wind.	Bloated badly. Colic. Slight movement; much wind passed.
5	Bloated badly. Constipated. Passed wind freely. Colic.	Bloated badly. Colic. Constipated. Dizzy. Bewildered.	Bloated badly. Constipated. Colic. Dizzy. Confused.
6	Bloated badly. Constipated. Ears ring. Dizzy. Colic.	Bloated badly. Colic. Constipated. Ears ring. Dizzy.	Bloated badly. Constipated. Ears ring. Dizzy. Passed much wind.
7	Bloated badly. Slight movement. Ears ring. Dizzy. Colic. Confused.	Bloated badly. Severe colic pains. Ears ring. Dizzy. Constipated.	Bloated badly. Constipated. Colic. Dizzy. Ears ring. Bewildered.
8	Bloated badly. Constipated. Ears ring. Dizzy. Passed much wind. Uneasy.	Bloated badly. Dizzy. Constipated. Passed wind freely. Confused. Ears ring.	Bloated badly. Slight movement with wind. Ears ring. Dizzy. Feels strangely.
9	Bloated badly. Constipated. Ears ring. Dizzy. Hands and feet prickle.	Bloated badly. A profuse thin passage with much wind. Dizzy. Ears ring.	Bloated badly. Constipated. Hands and feet prickle. Dizzy. Bewildered.
10	Bloated badly. Constipated. Dizzy. Hands and feet prickle. Ears ring. Strange.	Bloated badly. 2 profuse stools with wind. Feels easier. Dizzy. Ears ring.	Bloated badly. 1 profuse passage. Dizzy. Feels strange. Feet prickle.
11	1 profuse passage. Flatulent. Dizzy. Much bewildered.	3 large stools. Flatulent. Dizzy. Ears ring. Feels strangely.	2 profuse stools. Flatulent. Feels numb. Ears ring.
12	2 large stools. Feels better. Ears ring. Dizzy. Feet prickle.	5 large, thin movements. Ears ring. Dizzy. Feels strangely.	3 large stools. Feels lost. Head dizzy. Feet and hands prickle.
13	4 profuse stools. Hands numb. Head dizzy. Feels strangely.	7 large stools. Feels weak and strangely. Feet prickle.	4 profuse stools. Walks as if drunk. Feet prickle. Strange.
14	6 thin, large stools. Head vacant. Eyes staring. Feels strangely.	9 large stools. Feels drunk and weak in legs. Gait unsteady. Numb. Reels in walking.	6 large stools. Dizzy. Head numb. Ears ring. Legs and feet numb. Gait unsteady.

DAY.	A.	B.	C.
15	8 thin large stools. Dizzy. Walks with difficulty. Ears ring. Feels drunk and lost.	11 large, thin stools. Feels weak and strange. Hands and feet prickle.	9 large, thin stools. Ears ring. Staggers in walking.
16	9 large, yeasty stools. Head feels empty. Tired and strange. Walks unsteady.	11 large yeasty stools. Dizzy. Head empty and strange. Hips, feet and legs numb. Feet drag.	8 large, yeasty stools. Feet and hands prickle. Bewildered. Gait unsteady. Reels in walking.
17	7 large, yeasty stools. Ears ring. Feet and hands prickle. Legs and feet numb. Gait unsteady.	12 large, thin, yeasty stools. Feels very weak and bewildered. Feet and legs numb. Walk unsteady.	10 large, yeasty stools. Ears ring. Dizzy. Weak. Reels in walking.
18	10 thin, yeasty stools. Dizzy. Bewildered. Strange. Heart palpitates on exertion. Very unsteady in gait. Feet and legs numb.	13 thin, yeasty stools. Ears ring. Dizzy. Hands and feet prickle. Heart palpitates and breathing short on any exertion. Feet and legs numb. Walks with difficulty.	12 thin, yeasty stools. Dizzy. Weak. Reels in walking. Feet drag. Feels empty and strange. Breathing begins to be oppressed. Heart pains.

DAY.	D.	E.	F.
3	Bloated badly. Constipated. Ears ring. Dizzy.	Bloated badly. Slight movement. Ears ring. Dizzy.	Bloated badly. Slight movement. Colic pains. Head swims.
4	Bloated badly. Slight movement with much wind. Ears ring. Dizzy.	Bloated badly. Constipated. Colic. Ears ring. Confused.	Bloated badly. Constipated. Colic. Ears ring. Bewildered.
5	Bloated badly. Slight movement. Passed wind freely. Ears ring.	Bloated badly. Constipated. Ears ring. Bewildered. Colic.	Bloated badly. Constipated. Colic. Ears ring. Confused.
6	Bloated badly. Constipated. Colic. Ears ring. Confused.	Bloated badly. Constipated. Ears ring. Colic. Dizzy. Bewildered.	Bloated badly. Constipated. Dizzy. Colic. Confused. Uneasy and restless.
7	Bloated badly. Constipated. Dizzy. Ears ring. Passed wind.	Bloated badly. Constipated. Ears ring. Some deafness. Colic. Dizzy.	Bloated badly. Constipated. Ears ring. Dizzy. Uneasy and bewildered.
8	Bloated badly. Constipated. Dizzy. Ears ring. Feels strangely.	Bloated badly. Slight movement. Ears ring. Feels lost and strange. Feet go to sleep.	Bloated badly. Constipated. Ears ring. Dizzy. Hands and feet prickle. Bewildered.
9	Bloated badly. Thin movement with wind. Hands and feet prickle. Dizzy.	Bloated badly. Profuse, thin movement with wind. Colic. Ears ring. Dizzy.	Bloated badly. Constipated. Dizzy. Hands and feet prickle. Feels strangely and confused.
10	2 profuse movements. Flatulent. Dizzy. Hands and feet prickle.	Bloated badly. Constipated. Feels lost. Hands and feet prickle.	Bloated badly. Ears ring. Constipated. Hands and feet numb. Feels strangely.
11	4 large, thin movements. Head feels empty. Feet prickle.	2 profuse stools. Ears ring. Dizzy. Eyes staring. Feet prickle.	1 large, thin movement. Colic. Dizzy. Feet prickle. Strange.
12	5 large, thin stools. Ears ring. Confused. Feet prickle.	4 large, thin stools. Walks as if intoxicated. Feet and hands prickle.	3 large stools. Head numb and vacant. Feels lost and strange. Feet prickle.
13	6 large stools. Ears ring. Reels in walking. Confused.	5 large stools. Feels weak and exhausted. Dizzy. Ears ring.	6 large, thin stools. Forgetful and feels strangely. Feet and hands prickle. Dizzy.

DAY.	D.	E.	F.
14	5 large, thin stools. Dizzy. Ears ring. Feels intoxicated.	5 large, thin stools. Feels numb and strange. Ears ring. Feet and hands prickle. Legs and feet numb.	7 large, thin stools. Ears ring. Feet and hands numb. Feels strange and vacant. Legs and feet numb.
15	10 large, thin stools. Ears ring. Feels light headed. Legs numb.	8 large, thin stools. Hands and feet prickle. Feels strangely.	10 large, thin stools. Reels in walking. Feels tired and strange.
16	11 thin, yeasty stools. Head dizzy. Ears ring. Bewildered.	9 thin, yeasty stools. Ears ring. Feels weak and vacant. Legs numb.	10 large, yeasty stools. Bewildered. Weak. Eyes vacant. Feet prickle.
17	9 thin, yeasty stools. Ears ring. Reels in walking.	8 thin, yeasty stools. Dizzy. Ears ring. Hands and feet prickle. Feet and legs numb and drag in walking.	9 thin, yeasty stools. Bewildered. Eyes vacant and glaring. Feet and hands prickle. Feet drag in walking.
18	11 thin stools. Feels numb all over. Weak and smothering feeling at times. Walks with difficulty. Feet drag.	10 thin stools. Feels weak and bewildered. Begins to feel as if he could not breathe freely. Feet drag. Cannot walk straight. Legs and hips numb.	12 thin stools. Reels in walking. Ears ring. Feet and hands numb. Nervous. Heart palpitates on exertion and breathing oppressed. Legs and hips numb. Feet drag in walking.

Symptoms of Progressive Paralysis or Locomotor Ataxy began to show themselves in all six cases on tenth day. These paralytic and peculiar symptoms increased each day after the tenth. On sixteenth day the disease was so marked, that not one of the six could walk straight without support. All wobbled and dragged their legs, not being able to lift them clear of the floor.

*Diet changed to Meats.*

DAY.	A.	B.	C.
19	9 thin, yeasty movements. Flatulence and dizziness began to pass away after the morning stool.	11 thin, yeasty stools. After breakfast began to feel better and improved all day.	9 thin, yeasty stools, after which dizziness subsided and felt quite cheerful by evening.
20	3 stools moderately thin. Numbness passing off. Head clearer. Feels quite well.	4 stools, thin and yeasty. Feeling quite well and improved all day.	3 stools moderately thin. Rapidly improving.
21	2 stools of fair consistence, and feels quite well.	3 stools. Feels well and gaining all day.	2 stools; feels well and gaining rapidly.
22	1 stool. Feels well and unusually bright.	2 stools of fair consistence, and feels well.	1 healthy stool. Feels perfectly well.

DAY.	D.	E.	F.
19	11 thin, yeasty stools during the morning, after which began to improve and felt quite well by night.	10 thin, yeasty stools before 10 A. M., after which improved rapidly, and at night felt well.	11 thin, yeasty stools. After breakfast began to improve fast. Greatly better by evening.
20	4 stools moderately thin. Numbness disappearing. Dizziness going fast.	4 stools. Feels well and gaining rapidly.	5 thin stools. Feels well and improving rapidly in all respects.
21	2 stools. Gaining rapidly. Feels well and clear headed.	1 stool. Feels well and gaining rapidly.	2 stools. Cheerful. Feels well and gaining fast.
22	1 good, hard, healthy stool. Feels well and happy.	1 healthy stool. Feels well and clear headed.	1 stool. Feels unusually well and cheerful.

My boarders, on the 19th morning, all presented such a forlorn, dilapidated appearance, that I feared I should lose my reputation as a caterer, and also all my guests, unless I changed my diet list. They had all lost heavily in weight, and were much debilitated.

A weighed	138 lbs.	Loss in 18 days	22 lbs.
B     "     "	116 "	"     "	29 "
C     "     "	136 "	"     "	19 "
D     "     "	143 "	"     "	23 "
E     "     "	147 "	"     "	25 "
F     "     "	126 "	"     "	22 "

When on the morning of the 19th day, I set before them nice beefsteaks, freed from fat and white tissue, they were all greatly delighted and ate ravenously of them. I gave to each 10 ounces of meat, with a good cup of clear coffee. Beef seasoned with butter, pepper and salt ; no other food or drinks. At dinner gave each 12 ounces of beefsteak, prepared as for breakfast, and half a pint of clear tea. The meal was hugely enjoyed.

All now began to breathe easier and to feel clearer about the head. Passages less frequent, though still large and numerous. During the afternoon, all were in a state of enjoyable relief, and were ready to speak a good word for their host and his house.

At supper, gave each 10 ounces of beefsteak, with a cup of

clear tea. The meal was greatly relished. The evening was a pleasant one, all having a sense of relief from the extreme flatulence, bewildered heads, oppressed breathing and numbness of previous days. Retired at 9 p. m. All slept soundly and were ready to rise at 6 a. m. on the 20th morning. For breakfast, gave to each 12 ounces of broiled steak and half a pint of clear coffee. Passages from bowels greatly lessened in quantity and frequency. Bloating almost gone. Heads quite clear, and all cheerful and happy. At dinner, gave each 1 lb. of nice broiled steak and half a pint of clear tea: meal greatly relished. All felt well and began to lose their haggard, shrunken look. Circulation good; heads clear; bloating gone; movements beginning to be quite natural and few in number. At supper gave to each 12 ounces of broiled steak and half a pint of clear tea. All felt well during the evening. Retired at 9 p. m. Slept soundly.

Called up on 21st day at 6 a. m. All feeling well and anxious for breakfast. Gave each 1 lb. of broiled steak and half a slice of bread, with half a pint of clear coffee. All enjoyed the breakfast. Half an hour after breakfast gave them a brisk walk of two miles. All well, and felt better, brighter and clearer than before the experiments began. Bloating, diarrhœa, ringing in ears and dizzy head all gone. At dinner gave to each 1 lb. beefsteak, 1 slice of bread and half a pint of clear tea. No diarrhœa; stools quite natural except more profuse. At supper gave each 14 ounces of broiled steak, half a slice of bread, and half a pint of clear tea. Meal greatly enjoyed. All gaining rapidly in strength and feeling splendidly. Retired at 9 p. m. All slept soundly.

Called up on 22d morning at 6 a. m. All in good trim, and loud in their praise of their host and his table. Gave each 1 lb. of broiled steak, half a pint of clear coffee and a slice of bread and butter. The meal was much enjoyed. All felt unusually well, clear headed and happy. Half an hour after breakfast gave them a long walk. At 12 m. each had 1 lb. of broiled

steak, a slice of bread and a cup of clear coffee, which they took with great relish.

After finishing the meal, I paid off my boarders and discharged them. With a feeling of regret and reluctance (I think on both sides) we separated. Still, they could not realize how I could keep up and "make both ends meet," while running a boarding house on this plan. I may add that I had throughout shared their diet, discipline and experiences in all respects.