

## THE NATURE OF 'SOFTNESS.'

Naturally, the first step in undertaking the solution of this difficult problem was to ascertain the difference in composition of 'firm' and 'soft' pork, so that chemical analysis might be employed as an accurate discriminating agent in the examination of pork produced under varying conditions of food, exercise, &c., and that we might obtain standards that could serve as a basis for future work and comparison. Accordingly, we procured (February 1, 1899) from The Wm. Davies Co., Limited, Toronto, two (salted) Wiltshire sides, the one marked 'firm' and reported as of excellent quality; the other marked 'soft,' and stated as of very inferior quality. The former weighed 46 pounds; the latter, 44 pounds.

Both were frozen when received, but, nevertheless, there was a marked difference in the relative hardness of the two sides. As the sides thawed (at the temperature of the laboratory, about 70°F.) this difference—which was ascertained or measured by the resistance of the fatty portions to pressure by the finger—became still more pronounced. This was further evinced (February 2) in raising the ham by lifting as the sides lay on the table; the 'firm' remained fairly straight, whereas, the 'soft' doubled over. The relative softness is also shown in the accompanying photograph, the sides having been suspended the night previous. It illustrates the amount of 'drag' caused by the weight of the sides, similarly suspended by hooks. The extent of the 'drag' in the 'soft' side is much the greater.

The samples of the fat for examination were obtained by first cutting the sides (a) immediately in front of the thigh joint (socket of the femur in the pelvic arch), and (b) immediately in front of the first rib, and then taking the fatty tissue at each of these sections. Those taken at (a) are designated in the following tables as 'Loin'; those at (b) as 'Shoulder' (see photo). The precaution of confining the place or area from which the fat was taken was considered advisable from the fact that it has been stated that the fat varies considerably in composition, according to its position in the animal. Care was exercised in the preparation of the sample for analysis, to dissect out and reject all muscular tissue, blood vessels, &c.

The principal data obtained in this examination are presented in the following tables. Table I contains the percentages of the various constituents determined, in the fatty tissue of the two bacons:—

TABLE I.—Composition of Fatty Tissue in 'Firm' and 'Soft' Bacon.

	Firm.		Soft.	
	Loin.	Shoulder.	Loin.	Shoulder.
	p. c.	p. c.	p. c.	p. c.
Water.....	15.56	6.53	12.50	2.67
Salt.....	2.73	1.12	1.84	.48
Nitrogen.....	.504	.285	.243	.142
Fibre (nitrogenous tissue).....	3.15	1.78	1.52	.89
Fat.....	78.56	90.57	84.27	95.96
Olein in bacon.....	50.05	58.33	66.37	76.94
Palmitin and stearin in bacon.....	28.51	52.24	17.90	19.02

The fat proper consists essentially of olein, fluid at ordinary temperatures, and palmitin and stearin, solid at ordinary temperatures. It was hence conjectured that the percentage of olein would be found to be greater in the fat of the 'soft' than that

of the 'firm' and it is stearin in pure fats given in

Olein (calcul. Palmitin and Ratio of palm

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TABLE III.—

Melting point. Specific gravity. " " Sapon. equivalent Reichert number Iodine absorbed

\*In addition the fat of soft 1 investigation the composition, but its consistency linolein, which method of analysis rated and combined fats. From the the sake of similarity used, it is interesting

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