

The loss in antigenic properties in heated milks is presumably due to the coagulation of the whey proteins, for which there is some evidence of reversibility. A further reduction in antigenic properties of heated milks when fed is due to the fact that heating makes for more complete digestion, and thus diminishes the probability of the absorption of native proteins through the intestinal wall.

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The Normal Polynuclear Count in Man.

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Ever since Cooke's polynuclear count became generally used in physiology and clinical medicine, the figures for the normal count in man, as given originally by Cooke and as republished by Cooke and Ponder¹ have been accepted as correct. These figures are as follows:

	I	II	III	IV	V	Mean
Lowest normal count	15	34	40	11	0	2.47
Average normal count	12	25	44	15	4	2.74
Highest normal count	9	24	47	17	3	3.11

Cooke and Ponder's normal count is based on the average of the counts for 90 people of both sexes between the ages of 12 and 55, the greatest possible care being taken to exclude foci of infection. That their standard was exceedingly rigorous is indicated by the fact that these 90 "normals" took many years to collect.

But it has been suspected that the criterion of normality used by Cooke and Ponder was too rigorous, and that the counts of "normal" people, in the sense in which the term is generally used by physiologists and clinicians, are more left-handed than the above figures indicate. Kennedy² has reinvestigated the matter, using a less rigorous "health standard" more likely to be met by people "normal" in the ordinary sense. His conclusion, however, is that the figures given by Cooke and Ponder are substantially correct, and that an average polynuclear count with a mean of from 2.62 to 2.72 is met in a population of normal persons, whether normality is

¹ Cooke and Ponder, "The Polynuclear Count." London, 1927.

² Kennedy, *Quar. J. Exp. Physiol.*, 1933, **22**, 377.

judged by Cooke and Ponder's very rigorous criterion or by Kennedy's looser one.

Such figures may be correct for the inhabitants of England (Cooke) or Scotland (Kennedy), but they are certainly not correct for the inhabitants of New York. This fact is quite well known to physiologists here, but as no figures have been published, I have carried out a series of "normal" people here, using the same "health standard" as Kennedy's. My individuals, 100 in all, were people of both sexes who to the best of their knowledge had suffered from no acute or chronic infections for several months, and whom the clinician and physiologist would ordinarily call normal. My counts are as follows:

	I	II	III	IV	V	Mean
Lowest normal count	15	59	24	1	1	2.14
Average normal count	12	54	27	6	1	2.30
Highest normal count	9	40	38	12	1	2.56

These counts are quite incompatible with those of Cooke and Ponder and of Kennedy, for my highest count is less than Kennedy's average, and my average less than Cooke and Ponder's lowest.

There are only 3 possible explanations for this difference of result. The first is that Cooke and Ponder's average count is obtained only in persons conforming to their very rigorous "health standard", and that Kennedy obtained the same sort of figure with his less rigorous "health standard" by "counting high", *i. e.*, by using Cooke's criterion for determining nuclear lobation less rigorously than did Cooke and Ponder. This possibility can be excluded because Dr. Ponder tells me that he and Kennedy, who have often worked together, count identically. The second explanation is that I "count low", *i. e.*, that I apply Cooke's criterion too rigorously. To exclude this possibility I have had my counting checked by Dr. Ponder and also by Mr. Macleod, who has worked both here and in Scotland with Ponder. The last explanation is that the average normal polynuclear count differs according to locality, being higher in England and Scotland than in New York. Considering the factors which maintain the polynuclear count in a steady state, this is not so unlikely as appears at first sight, and Mr. Macleod is at present engaged in making polynuclear counts on normal blood obtained from all parts of the world with a view to deciding the matter. The indications at present are that considerable local variations in fact exist.