the crystals belong to various systems. This indicates a common substance in hemoglobin or a common structure in the various hemoglobin molecules.

5. *The importance of twinning in the formation of crystal aggregates and the constant recurrence of certain types of twinning in all of the hemoglobins.* These results will likely throw light upon the mechanism of twinning and be of importance in general crystallography.

6. *Differences between oxyhemoglobin and hemoglobin or reduced hemoglobin, in certain species.* Undoubted differences between the crystals of these two substances in the crystals of the same species have been observed.

We have gathered additional evidence leading to the conviction that other corresponding proteins, as well as certain fats and carbohydrates, will be found to exhibit similar generic specificities.

Our first memoir on this subject will shortly be published by the Carnegie Institution of Washington, under whose auspices this research is being conducted.

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The germicidal property of milk.

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Judged by the number of colonies that develop upon agar plates the bacteria in milk first diminish, then increase in number. The so-called germicidal property of milk occurs only in the fresh raw fluid.

For the most part our work plainly shows that no actual reduction in the number of bacteria occurs. However, when compared with the controls a restraining action is evident. The phenomenon, therefore, appears to be that of a weak antiseptic rather than that of a true germicide.

When milk is kept warm (37° C.), the decrease is pronounced within the first eight or ten hours. After this time the milk has entirely lost its restraining action.

When the milk is kept cool (15° C.) the decrease is less marked, but more prolonged.

The decrease in the number of bacteria is largely apparent, being due at least in part to agglutination.

The bacterial clusters may, to a certain extent, be shaken asunder. This fact goes far to reconcile the discordant results of the various investigations upon the germicidal properties of milk. Those who used dilution methods with vigorous agitation broke up the bacterial clusters and thus obtained a larger number of colonies upon agar plates than those who plated directly with different technique.

Some of the polymorphonuclear leucocytes in milk seem to possess the power of phagocytosis, judged by microscopical preparations. Phagocytosis, however, plays no essential part in the "germicidal" action of milk, for the decrease in numbers is quite as marked in the cell-free serum as in the sediment rich in leucocytes.

The germicidal action of milk is specifie. For instance, one sample restrained typhoid and *Staphylococcus pyogenes aureus* but not paratyphoid *A* or *B*.

Dilution experiments demonstrate the enfeeblement of agglutinins rather than the presence of a germicidal substance in solution.

The germicidal actions of blood and milk resemble each other in many particulars. The difference is largely one of degree. Blood serum acts more quickly and more powerfully than milk.

Freezing milk for ten minutes does not affect the phenomenon in question. In one experiment, freezing for 48 hours did not influence its restraining action upon typhoid, but destroyed it for *B. lactis aerogenes.*

Boiling milk or heating it above 80° C., destroys its "germicidal" properties. The effect of lesser degrees of heat varies with the microörganism. Thus, the restraining action for *B. lactis aerogenes* is weakened at 55° C., and almost destroyed at 60° C.; for typhoid it is not affected by heating the milk at 60° C. for twenty minutes, but is materially influenced at 70° C. for thirty minutes.

The "germicidal" action of milk varies in different animals and in the milk from the same animal at different times. At most, the action is variable and feeble. It cannot take the place of cleanliness and ice, but may be taken advantage of in good dairy methods.