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## The Correlation between Students' Grades in High School and College Physics

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positions of heads, is in agreement (within the error of our experiment) with the calculations of Adam (Proc. of Roy. Soc. (1921), (1922), (1923)), who found the area of cross section occupied by each saturated fatty acid chain on the surface of water was  $21.0 \times 10^{-16} \text{cm}^2$ , and this is equal to  $(4.58 \times 10^{-8})^2 \text{cm}^2$ .

In the experiments the peak width was over  $3^\circ$  whereas the width for the same radiation diffraction from a crystal was about  $0.4^\circ$ .

The experiments indicate clearly a definite space array. Comparisons of peaks in liquid and solid state at approximately the same temperature show that the computed spacings are not the same. The space array in the liquid is not crystalline, but is one in which molecular mobility is permitted and the resulting peaks represent the most probable spacings. A name is proposed for this non-crystalline, space-array state. The noun is cybotaxis and the adjective cybotactic.

This conception of the liquid state gives a description of a "solution" and contributes to various theories in connection with liquids. The experiments and discussion will soon be published in full.

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## THE CORRELATION BETWEEN STUDENTS' GRADES IN HIGH SCHOOL AND COLLEGE PHYSICS

CHESTER KING AND JOHN LEIST

This study was undertaken in order to find out to what extent the achievement of a student in college Physics was similar to his achievement in high school Physics.

The high school grades for the entire course of Physics were used in comparison to the first semester grades in college Physics. The data covers the records of students who entered college during a period of three years. The total number of students considered was one hundred twenty-one. With this group the formula proposed by Karl Pearson showed the coefficient of correlation to be 0.62. This is considered quite a marked correlation.

In the above group there were 81 boys and 40 girls. The coefficient for the boys was 0.44 and that for the girls was 0.53. This might be considered as added evidence that the girls are more dependable in their studies while in high school, and that the boys

apparently catch up with them in this respect by the time they get started in college.

It is interesting to note that the correlation is not dependent on the size of the high school since we regrouped the students according to the size of high school attended and find that the coefficient, although low, is practically the same for each group. For students coming from towns of 4000 or more inhabitants the coefficient is 0.37, while for the rest it is 0.365. This leads us to believe that, in so far as grading is concerned, the small and large schools rank the same.

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### EXPERIMENTAL TEST OF MAXWELL'S DISTRIBUTION LAW

J. A. ELDRIDGE

While objections have been raised to all the proof of Maxwell's distribution law there is probably little question it represents approximately the statistical distribution of velocities among the molecules of a gas. It is remarkable, however, that a direct experimental verification had never been made until Stern and Gerlach showed that the law was substantially followed when silver atoms were evaporated from a silver wire. A somewhat closer verification is being attempted by a similar method using as the gas cadmium vapor at low pressure. There are several applications of such a "velocity filter" to problems of kinetic theory.

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### DIRECT DETERMINATION OF THOMSON COEFFICIENTS IN SINGLE CRYSTAL ZINC RODS

L. A. WARE

The Thomson coefficients for single crystal zinc as a function of the orientation of the principal crystal axis are being directly determined by Nettleton's method. For a rod with an orientation angle of approximately  $45^\circ$  the coefficient shows a rise with increasing temperature over the range  $50-250^\circ$  C.

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