nald H. Painter, Kansas State College, Manhattan, for taxonomic researches on the family Bombyliidae; Dr. G. B. Kistiakowsky, Harvard University, for researches on the rate of thermal isomerization in disubstituted diphenyl compounds.

DR. M. M. WINTROBE, of the Johns Hopkins Hospital, has received a grant from the Committee on Scientific Research of the American Medical Association. The object of this study is to measure the volume and hemoglobin content of the red blood corpuscles throughout the animal kingdom. Some of this work has already been done through the courtesy of the Mt. Desert Island Biological Laboratory and the National Zoological Park in Washington, D. C., with the aid of funds available to the Department of Medicine at the Johns Hopkins Medical School.

AN arrangement has been made between the Yerkes Observatory of the University of Chicago and the Perkins Observatory of Ohio Wesleyan University whereby half of the observing time of the 69-inch Perkins reflector will be available for extending the spectroscopic program of the Yerkes Observatory. The Yerkes Observatory has provided the necessary spectrograph, and will add a part-time observer to the staff of the Perkins Observatory for this purpose.

THREE years ago a grant was made by the Rockefeller Foundation to the University of Chicago for the support of biological research. The grant yields an income of $30,000 a year. It is administered by a committee of which Dr. Taliaferro is chairman and Dr. Carlson, Dr. Kraus, Dr. Lashley and Dr. Lillie are members. The grant has permitted some twenty investigations to be made, some of them extending their research over a period of three years. These investigations included Dr. F. C. Koch's study of the occurrence, physiological action and purification of the male sex hormone; Dr. W. H. Taliaferro's study of the immunology of parasites; Dr. G. K. K. Link's serological studies of fungi and viruses; Dr. A. J. Carlson's investigation of anemia of marked hyperthyroidism; Dr. Ralph S. Lillie's study of visible irradiation of the respiration of micro-organisms; Dr. R. W. Gerard's study of chemical changes in nervous tissue; Dr. H. H. Newman's efforts to collect data on left-handed individuals.

DISCUSSION

A CORRELATION CURIOSITY

IF three variables are correlated, how much more likely is it that the three correlation coefficients will be positive than that they will be negative? Dr. L. J. Henderson raised this question as interesting rather than important. It is well known that r_{xy}, r_{xz}, r_{yz} may be all large and positive, as near 1 as you please. If all three are negative, they can not all be numerically larger than $-\frac{1}{2}$. Setting $r = r_{yz}$, $s = r_{xz}$, $t = r_{xy}$, the conditions on r, s, t are that they shall lie between $+1$ and -1 and that

$$1 - r^2 - s^2 - t^2 + 2\,rst \geqq 0. \qquad (1)$$

Let r, s, t be interpreted as rectangular coordinates in space. Then if (1), taken with the equality sign, be regarded as a surface inclosing the volume defined by (1) taken with the double sign, we have a cubic which passes through the four vertices, A(1, 1, 1), B(1, −1, −1), C(−1, 1, −1), D(−1, −1, 1) of the cube of volume 8 with vertices at $r = \pm 1$, $s = \pm 1$, $t = \pm 1$, and which contains the six lines AB, AC, AD, BC, BD, CD, as (double) lines of the surface. In the four octants in which the vertices A, B, C, D are diagonally opposite the origin, the surface bulges out further (reaching those vertices) than in the opposite four octants. As (1) is not altered by two changes of sign in the three values r, s, t, it is clear that the volumes cut off by the surface from the octants $++\,+$, $+--$, $-+-$, $--+$ are all equal, and likewise the volumes in the octants $---$, $-++$, $+-+$, $++-$. The problem therefore reduces to finding the volumes in two octants such as $+++$ and $++-$.

Equation (1) may be solved as

$$t = rs \pm \sqrt{(1-r^2)(1-s^2)}. \qquad (2)$$

The distance between the upper and lower naps of the surface is $2\sqrt{(1-r^2)(1-s^2)}$ and this, integrated over the quadrant $0 < r < 1$, $0 < s < 1$, gives $\pi^2/8$. The total volume (1) is therefore $\pi^2/2 = 4.9358$ or about $\frac{5}{8}$ of the cube whose edge is 2 and within which all points representing (r, s, t) must lie. One value of t in (2) will be negative, r and s being positive, when the representative point (r, s) lies within the quadrant of the circle $r^2 + s^2 = 1$. If (2) be integrated over this circular quadrant, the result is, numerically, $\pi^2/32 + \frac{1}{8} = .4334$; subtracting this from $\pi^2/8$ we find $3\,\pi^2/32 - \frac{1}{8} = .8003$. The probability of three positive correlation coefficients is therefore .1622, which is also that of one positive and two negative coefficients; the probability of three negative or of one negative and two positive correlation coefficients is .0878; and the relative frequency is about as 1.85 to 1. The solution of a problem in geometrical probabilities such as this requires an assumption as to the density of distribution of the points, *i.e.*, as to the variables which are to be taken as independent. The coefficients r_{xy}, r_{xz}, r_{yz} have been assumed to be the independent variables. Some assumption as to how these coeffi-

cients arose might well lead to a quite different solution.

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THE HISTORY OF BAER'S LAW

IN his article, "Significance of Baer's Law,"[1] R. J. Russell mentioned that the so-called Baer's Law "was apparently first advanced by Babinet,[2] though it is customarily called Baer's Law because of its formulation by Karl von Baer in 1866."[3] However, both Babinet and Baer had their predecessor in P. A. Slovsov, author of the Russian book, "Historical Review of Siberia." This book, the result of a life-work, was practically a summary of everything that Slovsov knew or learned about Siberia. Speaking of the Yenissei River, Slovsov says: "The right shore is always (everywhere) high, as it is in all Siberian rivers running in the direction of meridians; since long we considered this condition as the result of daily rotation of the Earth globe."[4]

Slovsov's book was known to Baer, although apparently he worked out his theory quite independently of the former. Slovsov was given due credit by Baer, who expressed his surprise that Slovsov's ideas had remained quite unnoticed in Europe, and were not mentioned even in fundamental works on hydrography of Russia. Ideas of Babinet and other French scientific men, interested in this question, were known also to Baer, but the latter treated the problem in its physico-geographical application, while French scientific men approached it chiefly from a mathematical point of view.

Baer arrived at the discovery of his law in 1853, when he traveled down the Volga River to Astrakhan. On this occasion he was much impressed by the very pronounced difference between both shores of the river, the right one of which was unusually high, while the left one—low. Such an unsymmetry of valleys is very well expressed on many rivers in Russia running more or less in the direction of meridians, and was noticed by many scientific travelers of the last two centuries. Some of them tried to explain it by local geological structure, or dislocations; even the activity of the wind was taken into consideration, but no explanation was, as it should be, sufficiently universal to cover all observed cases. As was emphatically stated, in 1847, by a geologist, Major Wangenheim von Qualen, such a common phenomenon should depend in all cases on the same general cause.

While at Astrakhan, in 1853, Baer reported his observations and conclusions to a few friends in that town. The next winter, 1853–1854, he repeated his report before a larger audience in St. Petersburg. In 1854 he published in a Russian magazine (*Journal of the Ministery of State Domain*) a report on his travel, into which he included his explanation of the unsymmetry of the Volga valley. Later he published several Russian articles in different magazines on the same question. He did this not only to attract more attention to the problem but also to provoke its discussion. It is possible that at that time Baer learned of Slovsov's ideas about the same subject. In 1860 Baer published his article, "Ueber ein allgemeines Gesetz in der Gestaltung der Flüssbetten,"[5] in which he considered the matter in all its detail and in reference to rivers of the whole surface of the earth so far as they were known at that time. He was surprised to find that no scientific man, among those who had observed and described unsymmetrical valleys, had come to this conclusion. He attributed his discovery of the law to the fact that he had worked on such problems as rotation of winds and of sea currents and was accustomed to pay attention to the influence of the diurnal rotation of the earth on its surface.

Baer, a member of the Academy of Sciences, was a first-class scientific man. His authority was greater than the modest reputation of a Siberian worker. Slovsov, who published only in Russian, was considered more of a historian than a naturalist. Therefore, it is no wonder that Slovsov's share in this question has been forgotten completely, even in Russia. A better name for Baer's Law would be Slovsov's Law, or at least Baer-Slovsov's Law.

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GLACIAL STAGNATION IN OHIO

WITHIN recent years several papers have appeared on glacial stagnation, and there has been a revival of interest in the problem. There is promise of much good work to come out of investigations now in progress. Among the workers who are studying this problem is George W. White, professor of geology of the University of New Hampshire. He has spent several summers in field work in Holmes and adjacent counties in Ohio, and two papers have been published as a result of his endeavors.[1] The present writer had an opportunity to examine at first hand the area studied by Professor White. A careful inspection of

[1] SCIENCE, vol. 75 (1932), No. 1953, p. 584.
[2] In 1849.
[3] Correct year of the publication of Baer's article is 1860.
[4] P. A Slovsov, "Historical Review of Siberia," Vol. II, p. 196, 1844.
[5] Bull. Acad. Imp. d. Sc. de St. Petersbourg, Tome II, pp. 1–49, 218–250, 353–382.
[1] George W. White, "An Area of Glacier Stagnation in Ohio," *Ohio Journal of Geology*, Vol. xl, No. 3, April–May, 1932, pp. 238–258; "Glaciation of Northwestern Holmes County, Ohio," *Ohio Journal of Science*, Vol. xxxi, No. 6, pp. 429–453.