Summit Lake is about two thirds of a mile long and a quarter of a mile wide in places. It is one of the chain of Portage Lakes. The other lakes, partly natural, partly artificial reservoirs, are south of the city. They are connected by channels and the Ohio Canal connects the waters of the others with Summit Lake. Some plankton and other aquatic work have indicated these lakes as satisfactory in their biota, though Summit Lake has been at times more or less polluted, and has a somewhat less varied fauna.

Craspedacusta has not appeared in any of the other lakes. All available specimens came from Summit from about September 6 to 17. The medusae were first seen and collected mostly by several persons living close to the lake shore. Collection was by buckets and dip nets from boats. The writer collected few himself, but obtained many others from the finders. In our own collection, we found scarcely any in sunny weather in midday, though this would supposedly be the best time for them to be near the surface, as recorded by several observers, as, for instance, Garman,[2] in Kentucky, who also noted calm water as most favorable. After I secured so few, local collecters said they took their large numbers at sundown. When finally we could get to collect at sundown, we found none, but the day was unusually cold and very windy, making the water very rough for a lake of this size. The water attains a depth of about 10 feet, where it was claimed most were collected.

Between 200 and 300 specimens were taken alive into the laboratory, but were probably overcrowded in collecting jars. They died off very rapidly, some disintegrating quickly. No exact date of their disappearance in the lake can be given, but certainly they were not seen over a period of more than half a month.

This is the second Ohio discovery. In 1926, also in September, Dr. R. C. Osburn, of Ohio State University, collected many medusae in an artificial pond near Coshocton, Ohio, about 58 miles southwest of Akron.

Dr. Brooks in his recent note on finding these medusae is mistaken in saying that seemingly his would make the fifth different locality for the medusae in the Western hemisphere. There will not be space for the citation of the records, most of which have been published in SCIENCE. My data on all these records, and papers of observers, indicate that there have been at least a dozen different localities in this country and one other in the western hemisphere.

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[2] SCIENCE, 60: 477, 1924.

"A CORRELATION CURIOSITY"

IN a recent issue of SCIENCE,[1] E. B. Wilson has obtained the probability that the three correlation coefficients correlating three variables should all be positive. Denoting the coefficients by r, s, t, it is stated that "the conditions on r, s, t are that they shall lie between +1 and −1 and that

$$1 - r^2 - s^2 - t^2 + 2rst \geqq 0.''$$

It may be of interest to note that these conditions on r, s, t lead to a rather surprising formulation of the problem. Putting $r = \cos A$, $s = \cos B$, $t = \cos C$, we have (i) the angles A, B, C lie between zero and pi, and

$$\begin{vmatrix} 1 & \cos A & \cos B \\ \cos A & 1 & \cos C \\ \cos B & \cos C & 1 \end{vmatrix} \geqq 0$$

Now it may be shown that these two conditions imply $A + B + C \leqq 2\pi$, and the three angles satisfy the triangular inequality. The writer has shown that these relations are the necessary and sufficient conditions that three angles are the face angles of a trihedral angle. Hence, the problem is equivalent to finding the probability that three angles selected arbitrarily between zero and pi be the face angles of a trihedral angle.

Assuming that the distribution of points (A, B, C) in the cube with vertices (0, 0, 0), (π, 0, 0), (π, π, π) (0, π, 0) is of uniform density unity (an assumption that in terms of the variables r, s, t is different from the one made in the paper under discussion) it is found that the probability equals one-third.

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HOW DID JOULE PRONOUNCE HIS NAME?

IN the summer of 1897, while being conducted through the physics laboratory of the University of Edinburgh by Professor P. G. Tait, I chanced to tell him that at the University of Strassburg Professor Wilhelm Hallwachs, in speaking of Joule, had given the ou the sound of ou in you, and that after the lecture an English student had told him that the ou should have the sound of ou in out. And I asked Professor Tait whether he could tell me how the name should be pronounced. He smiled and said, "Well, I used to work with him and I can only say that he always called himself Joule," sounding the ou as in you.

The 1895 edition of the Standard Dictionary states that the ou is pronounced like u in rule, agreeing with Joule's own pronunciation, but the latest edition gives the ou the sound of ou in out. When I up-

[1] N. S., 76, No. 1979 (1932), p. 515.

braided Mr. A. G. Baker, publisher of Webster's New International, for the way his dictionary pronounced Joule, he defended himself by saying he had written to one of our leading American physicists, a man whom I deeply respect, and had been assured that the English physicists generally pronounced the name as though it were spelled Jowl. They doubtless do; they also says "figgers." But is not Joule himself the supreme authority as to the pronunciation of his own name?

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SCIENTIFIC BOOKS

The Mechanism of Creative Evolution. By C. C. HURST. New York, The Macmillan Company; Cambridge, England, The University Press. Pp. 365. 1932.

BOOKS on genetics are so numerous that any addition might well seem superfluous. The repetition of the same facts, arguments and diagrams has become rather tiresome, and in pessimistic moments we sometimes wonder whether we are not witnessing the growth of a dogma. If we are thus somewhat inclined to be discouraged or bewildered, Dr. Hurst's book comes like a breath of fresh air. The problems of genetics and evolution are restated in an original and extraordinarily lucid way, with full attention to the latest work of the experimenters, and the last findings of the cytologists. The illustrations are nearly all taken from other works, but they are extremely good and well chosen. The print is large and distinct so that the book is easy to read. No attempt is made to shirk difficult problems, as the book is not written as a text for elementary classes. Hurst himself has been actively engaged in experimental work for over thirty years, covering the whole period of modern Mendelism.

The term creative evolution is adopted from Bergson, but interpreted in a biological rather than philosophical sense. It is pointed out that in biology A + B are not equivalent to the sum of A and B, but rather to X, an unknown or unpredictable quality. This may at first seem contrary to the Mendelian theory, which has enabled us in so many instances to predict the results of matings. But just as in chemistry sodium and chlorine unite to produce a substance differing from both in properties and appearance, so also the interactions of living units are continually giving results which could not have been foreseen in advance. A mind contemplating the non-living universe could not be expected to predict life, the study of the lowest organisms would not lead one to expect the higher complex types, and least of all could the conscious and reflective mind of man have been surmised from a study of the beginnings of life.

We are charmed with the idea expressed by Tennyson in his "Flower in the Crannied Wall," and vaguely feel that somehow it contains the germ of all other life, but practically the conception is not valid. It is too much like saying that Tennyson's little poem is implied in the words it contains, which indeed would produce it sooner or later if arranged at random in all ways possible.

From such considerations Hurst develops a biological philosophy in contrast with the gloomy and deterministic prognostications of the physicist. Appealing to the past, with its story of increasing complexity and development, he imagines a future still more remarkable, but necessarily unpredictable by the human mind. Thus, like Wallace, he ends with metaphysical speculations which take us beyond the realms of experimental science, and will attract or repel according to the temperament and traditions of the reader.

All this, however, may be regarded as secondary to the main character and purpose of the book. Most of the chapters are devoted to a recital of the exact scientific facts in a manner wholly satisfactory to the mechanistically minded. There are said to be four great vital processes acting as random variables. These are mutation, transmutation, sex and natural selection. Especially valuable are the chapters dealing with transmutation and sex.

It has not been appreciated until recently how many "accidents" may happen to chromosomes, and how often those chance occurrences may give rise to new types. Closely related to those matters are the facts concerning polyploids, forms having various multiples of the basic number of chromosomes. The account of polyploidy is particularly clear and interesting, and from it we can see how new types, virtually new species, may arise independently at various times and places and yet be exactly alike. The same thing may happen after crossing, the hybrid progeny occasionally giving rise to new stable types which are fertile and remain constant. In other cases, as with cultivated fruit trees, perennial sunflowers, certain cacti, etc., a cross may give rise to new heterozygous strains which are then propagated vegetatively and so remain constant.

It is pointed out that the latest work of the experimenters is extremely hopeful for results of practical value. It has been shown that through the use of x-rays and otherwise the mutation rate can in certain organisms be enormously increased. While most