clines in the new-made recent coast prairies. Furthermore, these uplifts are most probably due to isostatic movements rather than to accumulations of gas.

Another interesting fact which is developing is that these oils are not associated with extensive beds of either plant or animal remains, but at one place, Saratoga, where they outcrop, they apparently originate in ferruginous sands, and this occurrence is strikingly suggestive of Mendeleef's theory that petroleum is formed by the action of warm waters on carbide of iron at considerable depths. But conclusions on this subject are as yet premature.

Robert T. Hill.

DISCORD AND BEATS.

To the Editor of Science: In a review of books on physics in a recent issue of Science, I find on page 259 the remark that the author "has defined 'discord' more sharply than the facts warrant, by failure to recognize Mayer's law, which expresses the duration of the residual auditory sensation as a function of vibration frequency, the equation being expressible in a curve which Professor Mayer published in 1894 (*Am. Jour. Sci.*, Jan., 1894)." That authors of text-books of physics discuss *psychological* problems may be very well; for it is certainly better for the student to learn some psychological theories in the physical laboratory than to learn them not at all. But, unfortunately, it is rare to find a physicist who is sufficiently familiar with the psychological literature. Permit me to make these two statements: (1) That a 'discord' cannot be defined by 'beats,' the psychologists have some time since agreed upon. The physicists—on the authority of Helmholtz, whose 'Tonempfindungen' appeared 40 years ago—still make use of this definition. (2) Mayer's curve, as recent experiments (*Zeitschrift f. Psychol. u. Physiol. d. Sinnesorgane*, **20**: 408–424; reviewed in the *Psychological Review*, **7**: 88–90, 1900) prove, does not express the dependency of the duration of an after-sensation on the frequency of vibration. The duration of the after-sensation does not seem to depend upon the pitch at all.

Max Meyer.

University of Missouri.

THE INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

To the Editor of Science: Can nothing be done even at this stage to secure a better system of classification for the international catalogue of scientific literature now under process of preparation under the general supervision of the Royal Society in London? In library management this country is, as probably every one is aware, in advance of most, if not all, countries, and the result of this is that the practical application of the science of classification to the cataloguing of books and articles has been carried farther in this country than elsewhere. Published systems of classification here are more complete, there is a larger literature on the subject, and a greater number of libraries have been catalogued on a classified system. I do not think anybody familiar with classification and its practical application will hesitate in condemning the classification which has been adopted by the Royal Society. In botany, it is ridiculously incomplete. It is impossible, as I know from experience, to classify material on this subject, in the shape of papers, without a system which is at least carried down to families; and in many cases one extended to genera is wise.

The classification in geology is equally inadequate and makes insufficient provision for the great extension which has taken place in physiographic geology in the last ten years.

If any one wishes to see what can be done in the line of careful classification for geological purposes, M. Mourlon's 'Classified Index of Geological Papers' on the Dewey Decimal System will offer a striking contrast to that presented by the meager array of classification in the Royal Society. Mnemonic aids are altogether omitted in this classification, no common system of number being used for common types of classification in different subjects. In the biological field, no effort has been made to follow a similar arrangement of homologous subjects.

In fact, I think, I speak within bounds in saying that no one versed in this subject can examine this classification without feeling that it is prepared by some one who has neglected to study what has already been done in this field.

There are two subjects which every one appears to think can be done by nature. One is editing a newspaper and the other is classifying. Any one who has had any experience in either will feel differently.

TALCOTT WILLIAMS.

SHORTER ARTICLES.

NOTES ON THE LIFE HISTORY OF ANOPHELES PUNCTIPENNIS AND ON THE EGG-LAYING OF CULEX PIPIENS.

SOME time during the latter part of May, 1901, a ditch about four feet in depth was dug for the water main to the new textile building on the campus. The ditch was dug in sections, one of which ran down a considerable slope just at the end of the photographic building. This section of the ditch soon became partly full of rain water. At the lower end the water was two and a half feet deep, but the water did not extend more than a third of the length of the ditch up the slope. At the upper and shallower end of the body of water, it soon became covered with a thin green slime, which upon examination proved to be wholly of *Protococcus*. In this shallow, slimy water on June 4 the writer discovered an abundance of larvæ of *Anopheles punctipennis*. They were recognized at a glance as larvæ of *Anopheles* from Dr. Howard's excellent drawings and descriptions of the larvæ of *Anopheles maculipennis*. Glass jars were immediately called into requisition, and many larvæ were carried to the laboratory, from a study of which the following notes were made. It might be of interest to say just here that there was also an abundance of larvæ of *Culex pipiens* in the same water in company with *Anopheles*.

Eggs.—It was with some surprise and a good deal of pleasure that a number of eggs were found on the surface of the water in the jars. Like *maculipennis*, they are laid at random on the water, but naturally run together and cohere in loose irregular groups or strings of from three to a score or more. Some were found floating on their sides, but the greater number seemed to be floating with the convex side, or 'back,' up and the concave side down. They differ somewhat from the eggs of *maculipennis* in shape. These eggs resemble an Indian canoe in shape, hence a cross section would be more or less triangular in outline. Seen from the side they are strongly convex above and concave below. One end is larger and blunter, while the other, as seen from the side, curves strongly downward, is smaller and more pointed. Above and on the sides the eggs are marked with a reticulate hexagonal sculpturing similar to *maculipennis*. Below, on the concave side is a dark wide line or band, extending nearly the length of the egg. It widens at each end into a club-like expansion. The writer could not be sure whether this was simply a band or a groove. Near the blunt end of the egg a transparent line runs from each side of the dark band obliquely down the sides of the egg. When the egg bursts, it breaks along these lines. At each end of the band are several dark, circular spots. The eggs varied from .45 mm. to .47 mm. in length. They hatched in 24 to 48 hours after being brought in, but no record was obtained as to the actual time of hatching after being laid, as none of the females laid eggs in captivity. It is probably safe to say, however, that they accord in this particular very closely with *maculipennis*.

Larvæ.—When first hatched the larvæ present a mottled appearance, owing to alternate dark and light transverse markings on the body. This appearance certainly suggests the spotted wings of the adult, although there perhaps can be no reason for thinking that the one in any way foreshadows the other. The larvæ retain this appearance up to the last molt, although it seems to grow less distinct with age. They lie in a nearly horizontal position just beneath the surface film of water, and when only slightly disturbed wriggle in a horizontal direction across the water instead of downward as *Culex*. When violently disturbed they wriggle downward. The more mature larvæ are more inclined to wriggle downward than the young larvæ, when disturbed. The feeding habits are almost identical with those of *maculipennis*, so fully described by Dr. Howard. The same rotary motion of the head with the under side uppermost in feeding was characteristic. There were no such differences between the larvæ of *punctipennis* and *maculipennis* as there were between the eggs of the