Ninety-one per cent. of the records were correctly assigned (20 errors). Three of us made 4 errors each, and one of us made 8 errors. One of us made no errors in one group of 20 records, and another of us in the other group of 20 records. One of us made no errors in either of the two groups of 20 records each. According to the law of probability, by chance one could expect to assign accurately 20 records once in 488,864,376 times, and 15 records once in 126,126 times. We feel that chance played practically no rôle whatsoever.

As was to be expected, the records of some individuals were more distinctive and consequently more easily grouped than were those of other individuals. The records of 6 of our subjects were strikingly similar and consequently difficult to classify. Such criteria as frequency, amplitude and form of the waves played their part in making accurate judgments possible. Also, we evaluated the records as a whole, considering such factors as trains of waves, stability of the base-line, and fluctuations in the frequency and amplitude of the waves. No other cues incident to photography, handling of the paper or differences in the width of the time-line could possibly contribute to the accuracy of our judgments, since always the records of *different* individuals were taken, developed and handled together. This means that cues arising from such sources would make the same individual's records unlike instead of alike.

Our conclusion is that not only can an individual be distinguished from other individuals by his brain potentials, but under relatively constant experimental conditions an individual's brain potentials are highly consistent from day to day.

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MICROSTRATIFICATION OF THE WATERS OF INLAND LAKES IN SUMMER

THE thermal stratification of temperate lakes into three general regions in summer, namely, epilimnion, thermocline and hypolimnion, has been known for many years. Recent investigations show, however, that there is also a sharply marked microstratification in the thermocline and hypolimnion which has not been found hitherto. This phenomenon was discovered by means of a new type of apparatus for measuring the transparency of water, which is similar to that employed by Hans Pettersson[1] on Norwegian fjords; it was used on several Wisconsin lakes during the past summer and gave some very interesting results, four of which are illustrated in Fig. 1.

[1] H. Pettersson, *Jour. du Conseil Int. pour l'Expl. de la Mer*, 10: 1, 1935.

The apparatus consists of a light source, which is a three candle power automobile light bulb, and a photo-electric cell for a receiver; each of these is mounted in a metal water-tight housing which has a flat glass window about three centimeters in diameter. The light and receiver are attached to a piece of galvanized iron pipe one meter apart, with the windows facing each other. A condensing lens immediately in front of the light focusses a beam of parallel light on the photocell window.

Insulated wires lead from the housings of the light and photocell to a wire cable which connects them with the battery and the reading instrument in the boat. The cable is 35 meters long. An amplifier, a series of resistances and a potentiometer are included in the circuit for the purpose of amplifying the current from the photocell and also for the adjustment of the microammeter to any desired zero point. In its latest form a rubber hose is attached to the iron pipe for the purpose of pumping up samples of water from the different depths and also an electric thermometer for taking temperature readings. A separate light source for taking measurements of light scattering is also included.

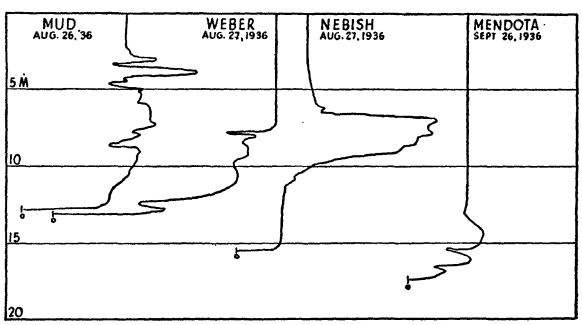

FIG. 1. Relative transparencies of the waters of four Wisconsin lakes at different depths.

The results obtained with this instrument show that the transparency is uniform throughout the upper stratum of water, or the epilimnion, which is kept in circulation by the wind (see Fig. 1). In the thermocline and hypolimnion, on the other hand, the water is stratified alternately into more transparent and less transparent layers. These layers may be only a few centimeters thick, as in Mud Lake, or they may be one or two meters thick, sometimes more. A marked decrease in transparency is always found within a meter or two of the bottom. Similar stratifications were found at different stations in the same lake, which indicates that it is not a local phenomenon.

The curve for Nebish Lake differs from the others in that a three-meter layer of water in the thermocline was more transparent than the epilimnion. In Mud

Lake the two layers in the thermocline that were more transparent than the epilimnion were only a few centimeters thick. In some series certain layers in the hypolimnion were more transparent than the epilimnion.

Preliminary tests show that part of the material which causes the lower transparency can be removed from the water with a high-speed centrifuge. In one case Daphnias were found in considerable numbers in the layer with low transparency; plate counts also show that bacteria are more numerous in the layers with minimum than in those with maximum transparency.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

USE OF THE LANTERN FOR OBJECTIVE EXAMINATIONS

THIS method has been used with large classes in elementary physiology in the General College and other divisions of the University of Minnesota.

At the beginning of the term each student is assigned to either an odd or an even numbered seat. Sometimes the class is merely divided into odds and evens and told to take seats accordingly. The odds are known as Division A, the evens as Division B.

Each student receives a stapled packet of about 25 mimeographed slips, 11 by 4½ inches, pink for A's and blue for B's. Students are instructed to bring these slips to lectures. The slips have space for student's name and 25 numbered blanks for answers to questions. At the top is instruction for A's to answer only "A" questions, B's only "B" questions.

Slides of ordinary type and size are used. The usual slide holder permits illumination of an area 3 by 3½ inches. Judicious whittling will increase the area exposed to 3¼ by 3½, the cover glasses being bound together only at ends. On this area six short questions can usually be typed, three A's and three B's. If questions are longer, four are typed on each slide.

The "Radio-Mat" method of typing slides is used. However, as sold, these expose an area of only 2¼ by 3 inches. We find it cheaper and more convenient to buy the red copying paper and Cellophane in letter-size sheets, cutting the copies into proper size before mounting between glasses.

Any of the ordinary objective types of questions may be used. Omission of unnecessary words and use of understood abbreviations shorten questions and increase number on each slide.

A sample slide, alternative answer type, is shown below. Students understand the symbol / as separating alternative answers and equivalent to the word "or." The same questions are given to both divisions but in different order.

A1 Conditioned reflexes investigated: Pavlov/Sherrington/Cannon/Magendie.

A2 Example involuntary non-reflex activity: constriction pupil/ciliary action/goose flesh/swallowing.

A3 Chief motor tracts cross: cerebrum/cerebellum/medulla/cord.

B1 Respiratory center located: cerebrum/cerebellum/medulla/cord.

B2 Example smooth muscle reflex: sneezing/winking/knee jerk/blush.

B3 Autonomic N.S.: wholly efferent/wholly afferent/mixed.

Teachers having lanterns for opaque projection could doubtless make direct use of typewritten questions.

A quiz may include any number of questions. We have used ten to fifty. Usually one purpose has been to take a roll call and check tardiness. Unannounced quizzes of ten questions served these purposes.

Almost no cheating has been observed. Although in adjacent seats, the odds and evens are too busy concentrating on their respective jobs.

Slides are filed for use with future classes. Usually copies of questions are posted after quizzes.

Last year we experimented with two lanterns. This method has the advantage of permitting a larger number of questions on view at a given time, "A"s on one screen, "B"s on the other. It also makes it easier to use multiple choice answers, questions on one slide, answers on the other.

Several members of the physiology staff made useful suggestions, especially Drs. Hugo Miller and Carroll Bellis.

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APPARATUS FOR PRODUCING CUMULATIVE AND ORDINARY TYPE KYMOGRAPH RECORDS SIMULTANEOUSLY

A QUANTITATIVE representation of physiological data given by the ordinary type kymograph record would, in many instances, be of advantage, particularly so in the comparison of sets of data. A method has been described[1] by which this may be accomplished in measuring the activity of small animals. The present article presents a method applicable to a much wider range of experimentation. A simple muscle preparation will serve to illustrate the method.

[1] K. M. Wilbur, SCIENCE, 84: 2177, 274, 1936.