ing the pupil). Just how rapidly the major changes in coloration occur is unknown, although general opinion is to the effect that the "final" color is attained some time between the first month and the first year of post-natal life. However, general observation again suggests that throughout life marked changes occur. It is obvious that each of these factors must be considered in any adequate evaluation of the ethnological significance of iris color, as well as in any detailed study on the inheritance of this characteristic.

Through the cooperation of the department of obstetrics of the Johns Hopkins University, conditions favorable to the type of study just outlined have been placed at our disposal. Observations made so far present many new points of interest, which diverge from the commonly accepted opinions noted above. Moreover, problems have appeared which will call for a major series of investigations involving the cooperation of embryologists, oculists, chemists, physicists and others. By the end of the summer we hope to have a preliminary report ready, setting forth the import and complexity of the problem with the methods developed, and results of preliminary observations. In the meantime, we wish to invite the cooperation of anthropologists who are stationed in, or who plan expeditions to various parts of the world, in obtaining data on the iris coloration at birth, and on changes during the first year, for various stocks; especially those not available in the Eastern United States. Of special importance will be data on stocks which have been hybridized very little during recent times.

One of our ultimate goals will be the development of a scale which is both reproducible and graduated in more adequate steps of hue, saturation and pattern than any existing scale; and we are using methods by which our color standards can be specified in physical units; nevertheless, for present purposes, reports made in verbal terms will yield useful information. Descriptive terms such as those listed below, together with approximate descriptions of patterns due to intermixtures of color, are sufficiently differentiating to indicate variations of major importance. Such data are admitted to be unreliable, but where so little is known, rough data are indispensable to the planning of accurate measurements.

The following color terms include many of the differentiations of eyes at birth as so far observed, and are suggested as constituting the basis of a scheme which may give some uniformity of report for different observers. Of course, qualifying words may be needed in certain cases, and when the eye color falls outside of this list appropriate additional terms will need to be used.

Light yellowish brown	Light greenish blue
Dark yellowish brown	Dark greenish blue
Light reddish brown	
Dark reddish brown	Dark purple
Very dark brown	Lavender
Light blue	Pale red
Medium blue	Ruby red
Dark blue	Orange red
Very dark blue	
Gray blue	

Special points to be noted are indicated by the following questions:

(1) Is the iris of approximately a single color evenly diffused?

(2) If the iris is a mosaic of two or more colors, what is the relative distribution and general character of the pattern; *e.g.*, does one color form a ring at the edge of the iris, or an irregular patch, or does it occur in flecks or streaks? What relative proportions of the iris are occupied by the various colors? An approximate description of the pattern would be desirable.

(3) At birth is the iris cleared, or is there a hazy coat of slaty blue or other color uniformly distributed; or is part of the iris thus covered, part of it being cleared and having another color? How early does the hazy coat disappear and the iris become cleared, and what is its color at this time?

(4) During the first few months do eyes which initially are totally blue change to brown, and do in some cases eyes which initially are brown change to totally blue or a smaller area of brown?

(5) What is the color of the sclerotic coat of the eye; is it "white" or is it bluish, brownish, etc.?

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A FURTHER NOTE ON THE ANALYSIS OF ELECTROMYOGRAMS

IN a recent issue of SCIENCE, Davis, Forbes and Garceau[1] commented upon a method described by Travis and Hunter[2] for studying voltage-frequency relationships in action currents. Travis and Hunter may be criticized for not making clear certain points relative to the applicability of their method, but the method itself does not appear to deserve the criticism offered against it by Davis, Forbes and Garceau.

In the main Travis and Hunter's method is one for the treatment rather than for the elucidation of the origin and ultimate nature of action current potentials. It was designed to give an effective value

[1] H. Davis, A. Forbes and L. Garceau, SCIENCE, April 22, 1932.

[2] L. E. Travis and T. A. Hunter, SCIENCE, February 19, 1932.

for either regularly or irregularly appearing action current waves. However, it does not assume that the waves originally produced were made up of the frequencies revealed by the electrical analysis. The method appears to be an improvement over the practice of merely presenting and describing actual pictures of action currents. No physicist would venture to compare or describe waves from their pictures alone. He knows well that two waves may be quite similar pictorially but turn out to be very dissimilar when analyzed.

Although the method is certainly applicable to the study of repeating waves and much of value may be expected from such a study, it is the only means at our command now to evaluate quantitatively non-repeating waves. Inasmuch as records of action currents either of many muscle or of many nerve fibers present irregular waves due to the combined asynchronous activity of many individual units some such method as that of Travis and Hunter is absolutely necessary if we are to have any reliable quantitative treatment of the action currents. Even if action currents from single units consist of repeating waves the voltage-frequency method could be used to good advantage. However, because very few pictures published of such action currents present absolutely periodic waves this method seems almost as necessary for the study of the electrical activity of a single unit as of many functional units. This is particularly true since the method of Fourier analysis can not be applied to waves unless the waves are absolutely periodic in form, frequency and amplitude. Such periodicity is the rare exception even in action currents from single units. Thus the statement of Davis, Forbes and Garceau that a "Fourier analysis may be applied to the oscillograms of the individual impulses" is not generally true.

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SCIENTIFIC BOOKS

The Wisdom of the Body. By WALTER B. CANNON, M.D., Sc.D., LL.D. W. W. Norton & Co., Inc., 1932, pp. 1–312.

THIS volume reads as though a college professor, with a mind rich in knowledge based on a lifetime of fruitful research in the laboratory, had set himself down upon his piazza in the cool evenings of the summer time and there recorded in simple but glowing language his thoughts concerning the facts and problems which had been uncovered by his life's work and were vibrating in his mind at the time. As to the language employed one might quote the fine description of the storage of water in the skin and in the muscles: "The entrance of water into these storage places appears to be a sort of *inundation.* I have already likened the lymph spaces to a swamp in which fluid stagnates. The analogy is implied also in the word inundation. We may think of the tissue spaces as being a sort of bog into which water soaks when the supply is bountiful and from which the water seeps back into the distributing system (the blood vessels) when the supply is meager." The use of lucid language of this sort justifies the author's expectation that the volume will be of interest not only to biologists but to the general reader as well. The book presents in comprehensible language the exquisitely sensitive regulatory mechanisms which maintain the units of the body in a state of nearly balanced equilibrium. Cannon terms this state "homeostasis," meaning thereby a condition which is relatively constant. The description of how homeostasis is maintained is accomplished without resort to complicated mathematical formulae but in straightforward talk of the obvious results of physiological experimentation.

In this manner the safeguarding of the fluid matrix is considered, and the homeostasis of the blood in regard to its content of water, of salt, of glucose, of protein, of fat, of calcium and of its neutrality of reaction. Also the regulation of body temperature is described. With great precision Cannon has revealed that the first action of exposure to cold is to cause a discharge of epinephrin into the circulation. This he determined by giving ice water to a cat the nerves of whose heart had been cut. Such a heart is very sensitive to an increased supply of epinephrin in the circulating blood, and an experimental application of cold, either internally as above or externally, resulted in a rapid increase in the heart rate. It is a matter of knowledge which we owe especially to Boothby that epinephrin increases the heat production, or in other words exerts a calorigenic action. In another place Cannon has called this increase of heat production through liberation of epinephrin from the adrenal gland the fine adjustment in the maintenance of body temperature, whereas shivering constitutes the coarse adjustment by which the heat production is increased to compensate for heat loss at the surface. The two factors, which were first clearly differentiated by Cannon, constitute the entity which Rubner called the "chemical regulation of body temperature" in contrast with the protection offered by