Review plan of indexing and abstracting to include (1) the species that now have only bionomic value and (2) the entire literature published before 1913, the year in which the *Review* began its appearance.

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SELECTION OF FOOD BY THE CILIATE CHILODON

THE work of Schaeffer[1] indicates that amoeboid protozoa are capable of selecting their food. The same investigator[2] also found that such was the case with the flagellate, *Jenningsia diatomophaga*. However, as stated by Bragg[3] (p. 433), "the ability of a ciliated protozoon to select its food is still open to question." From his own observations, Bragg concludes (p. 441) "that *Paramecium trichium* has a limited ability to select its food, (but) that the individuals vary in the amount of selective action which they show. . . ." Calkins,[4] on the other hand, doubts that the continuously feeding *Paramecium* is capable of exercising any selection.

A pertinent observation in this regard was made by the writer upon the feeding habits of an unidentified species of *Chilodon* (continuous feeder). In water which had been fertilized with 0.45 gram of fish meal per liter, and which contained, in numbers per cubic centimeter, 5,152,000 cells of *Scenedesmus,* 124,000 cells of *Chlamydomonas* and 1,900 *Chilodon,* it was found that the ciliates had gorged themselves upon *Chlamydomonas.* Very few individuals, however, were found to have ingested *Scenedesmus,* and then only sparingly, although these algae were present in much greater numbers. Thus, it would appear that, under these conditions at least, *Chilodon* is definitely capable of selecting its food. The degree of selection was greater than that observed by Bragg for *Paramecium,* although, as indicated by that author, individuals varied in the selective action exhibited.

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THE CHEMICAL ATOMIC WEIGHT OF CARBON

IN the 1937 report[1] of the International Committee on Atomic Weights, the chemical atomic weight of carbon was raised from 12.00 to 12.01. This change was made on the basis of the precision combustions of hydrocarbons by Baxter and Hale,[2] whose result confirmed the higher value indicated by gas density and mass spectrographic evidence. In view of the present interest in the atomic weight of carbon it has seemed advisable to make a preliminary report on a determination of atomic weight of this element by the analysis of benzoyl chloride according to the classical method of titration with silver. So far as we can determine, this is the first time acyl halides have been used for this purpose.

Benzoyl chloride was prepared from purified benzoic acid and phosphorus trichloride. The first of these substances was obtained by the oxidation of toluene with alkaline permanganate and was purified by crystallization from water, and finally by sublimation. Phosphorus trichloride was twice distilled in vacuum in an all glass apparatus and the middle fraction was taken for the preparation. The benzoyl chloride was purified by repeated fractionation in evacuated apparatus constructed entirely of pyrex glass. Samples for analysis, weighing approximately 14 g, were collected in small glass bulbs.

For analysis the carefully weighed sample bulb was broken under a 50 per cent. aqueous solution of pyridine under which conditions rapid hydrolysis of the benzoyl chloride occurred. After the collection of the glass fragments in the usual way, the solution was acidified with nitric acid, and the chloride balanced with pure silver. The endpoint was determined nephelometrically.

The analyses of five samples, covering eight distillations, have yielded a value for the atomic weight of carbon very close to 12.010. Since these samples represent the extreme fractions, it seems unlikely that the final value will deviate greatly from this figure.

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THE PUBLICATION OF TROLAND'S PSYCHOPHYSIOLOGY

THE fourth volume of the series of the late Professor Leonard Troland (Harvard University) covering psychophysiology remains unpublished because the publishers of the earlier volumes feel that they should have a guarantee of about $2,500, to be repaid from sales. One of Professor Troland's colleagues has expressed willingness to put the manuscript into shape for publication, and said: "Troland considered this final volume the final and best statement of his views. None of Troland's other books have been subsidized, and most of them have made money, but I can appreciate the (publisher's) attitude towards the fourth volume in a period like the last three or four years—a

[1] Asa A. Schaeffer, *Trans. Tenn. Acad. Sci.*, 1912–13, p. 59; *idem., Jour. Exp. Zool.*, 20: 529, 1916; *idem., Jour. Animal Behavior*, 7: 220, 1917.

[2] *Idem., Trans. Amer. Micros. Soc.*, 37: 177, 1915.

[3] Arthur N. Bragg, *Physiol. Zool.*, 9: 433, 1936.

[4] G. N. Calkins, "The Biology of the Protozoa," p. 607. Philadelphia, 1933.

[1] *Jour. Am. Chem. Soc.*, 59: 219, 1937.

[2] *Jour. Am. Chem. Soc.*, 58: 510, 1936; 59: 506, 1937.

period of uncertainty for the publishers of anything, even best-selling novels."

Since the National Research Council, so I understand, is the residuary legatee of the Troland estate, perhaps you may be willing to publish this note by way of an appeal to any interested person or organization that is in position to make the guarantee, and thus render a service to science. Unless something is done promptly, the book may be lost.

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SCIENTIFIC BOOKS

COLORIMETRY

Handbook of Colorimetry. Prepared by the Staff of the Color Measurement Laboratory, Massachusetts Institute of Technology, under the Direction of Arthur C. Hardy. Pp. 87, Figs. 30, Charts 23. The Technology Press, Mass. Inst. of Tech., Cambridge, Mass., 1936. Price $5.00.

THIS publication contains a detailed description of the method of computing certain colorimetric quantities from spectrophotometric data, together with elaborate tables and graphs greatly facilitating the computations. Its scope can best be indicated by listing the chapter headings and giving a brief abstract of the most important features of each chapter.

(1) *The Physical Basis of Color Specification.* The material in this chapter is general, introducing the reader to the idea of spectrophotometric analysis and giving him a brief preview of the rest of the book.

(2) *Sources of Light.* This chapter discusses the types of illuminants under which samples are ordinarily viewed, such as incandescent illuminants of various color temperatures and the various phases of daylight. Special attention is properly devoted to the three illuminants recommended for colorimetric use by the International Commission on Illumination and known as I. C. I. illuminants A, B and C. Illuminant A is a Planckian radiator or black body, in practice a gas-filled tungsten lamp, operating at a specified color temperature; illuminant B is a combination of illuminant A with a specified light filter yielding a chromaticity and relative energy distribution (in the visible spectrum) approximating those of average noon sunlight; illuminant C is a combination of illuminant A with a filter yielding an approximation to average daylight. Tables are given of the relative energy distribution of each of these three illuminants, values being given at each millimicron from 380 to 780 mμ. Relative energy values are also given at every 10 mμ from 360 to 750 mμ for sunlight above the atmosphere and for average Washington noon sunlight.

(3) *Spectrophotometry.* The effect on the spectral transmission of changing the thickness of a transparent material and the concentration of a transparent solution is discussed and illustrated. The subjects of specular and diffuse transmission and reflection are briefly considered. One statement in this chapter should not be overlooked—". . . it is obvious that every color specification must be accompanied by a complete statement of the geometry of the illuminating beam and the geometry of that portion of the reflected (or transmitted) beam that is evaluated in the measurement."

(4) *The Laws of Color Mixture.* The subtractive and additive methods of mixture are briefly discussed and illustrated. A table of wave-lengths of complementary lights is given; when these lights are mixed together additively in pairs in the proper amounts, they will yield the chromaticity of I. C. I. illuminant C.

(5) *Determination of Tristimulus Values by the Weighted Ordinate Method.* Data are given and the procedure is outlined for computing from a table of spectrophotometric data the amounts of the three hypothetical I. C. I. primaries which the I. C. I. standard observer would require in additive mixture to match the color in question. The three numbers thus computed serve as a fundamental definition of the color of the sample for the specified conditions of illumination and observation used in obtaining the spectrophotometric data. Tables of the tristimulus values for the spectrum of an equal-energy stimulus and for the spectra of illuminants A, B and C, respectively, are given at each millimicron from 380 mμ to 770 mμ (to 740 mμ only for illuminant C).

(6) *Determination of Tristimulus Values by the Selected Ordinate Method.* In this alternative method of deriving tristimulus values the numerous multiplications necessary by the weighted ordinate method are eliminated and the computational labor is reduced to a determination of values of the spectral transmission or reflection quantities at the selected ordinates followed by a simple adding of the numbers so selected. Tables of 30 and 100 selected ordinates for each tristimulus distribution are given for illuminants A, B and C.

(7) *Trichromatic Coefficients.* The respective ratios of each of the tristimulus values to their sum are defined as the trichromatic coefficients (trichromatic coordinates, trilinear coordinates). These coefficients serve to specify the chromaticity of the color. Trichromatic coefficients on the I. C. I. basis are given for a few selected illuminants, and for the spectrum at each millimicron from 380 to 780 mμ.