other lists of publications and to synonymy. A chronologic list may be printed with the date at the beginning of each citation, as stated, or with each date centered over all the citations that belong to it. In synonymy, as the workers in any one field of biology are relatively few, an author's surname is usually adequate for identification, and for this reason it is customary to omit the author's initials unless they are needed to distinguish two authors having the same surname.

The rule in the Geological Survey citations is to change Roman numerals to Arabic figures, with the single exception of page numbers. In some publications Roman pagination is used for the preliminary matter (title page, table of contents, etc.) and the main text starts with Arabic 1, so that a publication may have, for example, both page xii and page 12. Obviously Roman page numbers can not safely be changed to Arabic in a citation. (In passing it may be said that any good reason for using the cumbersome Roman numerals in the original publications, except for the preliminary pages, would be hard to find. They are especially objectionable as used for plate numbers. "Plate CCXXXVIII," for example, is not only hard to read but occupies much space. In a publication with many plates the space saved by using Arabic numerals would be an item worth considering. It is time the Roman numerals were abandoned.)

In citing a paper contained in a serial publication the title of the paper should be included, as well as the title of the serial. A citation that gives merely the title of the serial affords no adequate clue to the subject of the paper cited and consequently does not indicate whether or not consultation of the paper itself would be desirable for a reader who wishes to pursue the subject further.

Although in citing a paper in a journal whose numbers are paged consecutively in each volume it is not necessary for certain identification to include the number (as "vol. 18, No. 3"), it is a convenience, in referring to journals that have not yet been bound, to know the particular number that contains the paper cited—that is, it may save turning over several numbers until the right one is found. This added convenience may justify the space occupied by including the number in the citation.

The page numbers given in a citation should be those containing the particular matter to which reference is made. For example, in citing an authority for a specific statement the pages on which the statement is to be found should be given—not the pages covering the whole article. Most bibliographies, however, are intended to cite complete articles or publications and should therefore give the limiting page numbers, or, for a separate publication, the total number of pages, in the form "484 pp." A bibliography recently submitted gave only the first page of the article for each citation, which, although enough information to enable any one to find the article cited, gave no clue to the length of the article—an item which might have an influence on the decision whether or not to consult it.

Where questions of priority are involved, as in descriptions of new species, the date given at the end of the citation may include the month and day of publication—if ascertainable—as well as the year. The exact date may be difficult or impossible to determine, except for a serial publication that appears at regular intervals. For other publications even a date printed on the publication itself may not be absolutely reliable, as the printer must guess it in advance, and circumstances may invalidate his guess.

Since the publication of the original article the U. S. Geological Survey scheme has been adopted by the National Bureau of Standards. The obvious advantages of uniformity would seem to recommend it to other publishing scientific organizations.

BERNARD H. LANE,
Editor

U. S. GEOLOGICAL SURVEY

VISION, AND VASCULARITY OF THE EYE

WITH the cooperation of a number of colleagues, I have made a study of the correlation of the sense of vision with the vascularity of the eye, of which this is a preliminary report. Though it is generally recognized that gross alterations in the vascularity of the retina is associated with variation of vision, it has been assumed that these variations are predicated upon damage of the retinal and choroidal tissues. It has been known, for instance, that thrombosis of the retinal artery, with resultant hemorrhages in the retina, results in loss of vision. Our study indicates, however, that there is a quantitative relation between the varying vascularity of the eye and its resultant nutritional status, and the sense of vision.

This study was suggested by parallel work on the vascularity of the ear recently published by me, and the desire to determine what effect the method utilized for altering the vascularity of the ear, galvanization, might have upon other tissues and organs of the head. In subjects with normal eyes it was not found possible to materially alter vision except by the "make" and "break" of the current, due to the rich vascularity of the eye; though it was found possible in many cases to check vision and create a sensation of "blackness" by pressure upon the carotid arteries. In cases in which the vision and the vascularity of the eye were materially reduced by disease process,

such as choroiditis and retinitis with attendant vascular thrombosis, gross changes in vision associated with parallel changes in the size of the vessels of the eyegrounds have been demonstrated. They have been induced by galvanization—negative galvanization causing dilatation of the vessels and marked improvement in vision, and positive galvanization causing constriction of the blood vessels and diminished vision. I have thus found it possible in these cases to improve sight or to reduce vision almost to the point of blindness, at will, by means of galvanic stimulation. The reversible improvement and impairment of vision as a result of dilatation and contraction of the vessels by galvanization, offers proof of the quantitative dependence of the sensation of vision upon the vascularity of the eye. In a number of cases with rapidly failing vision, it has been found possible, by means of galvanic therapy, to improve the sight of the subject to a useful level and to maintain at that level for long periods of time.

E. M. JOSEPHSON

NEW YORK CITY

SCIENTIFIC APPARATUS AND LABORATORY METHODS

ABSORPTION DEVICES AND METHODS

THE devices and methods for the collection of sweat thus far improvised are somewhat complex. In addition there are many extraneous forces which might influence the collection. For example, sweat collected from an individual placed over a rubber sheet is subject to contamination by secretions other than those from the skin. An arm surrounded with a jacket subjects the part to abnormal production. Sucking up sweat by a syringe is cumbersome and although it is of little value for quantitative estimation, good qualitative results are obtained.

The author proposes other means and methods for the collection of sweat for qualitative and quantitative estimation. It is our opinion that the perspiration of an individual is a very important factor in his well-being and that any practical method for the collection and estimation of the amount secreted in the various parts of the body should have great prognostic and diagnostic value. First, however, it is necessary that the method be simple and accurate and furthermore, that the apparatus be so constructed that it may be applied to any part of the body over a measured area of skin or mucous membrane. The logical method of accomplishing such results presents itself in the form of a chemically inactive but efficient absorbent which can be placed in a cup (made of chemically inert material), the opening of which has a definite known area and which opening can be apposed to a given skin surface. This cup can be constructed of varying shape and size so as to fit the site to which it is to be applied. Likewise the absorbent is cut so that it fits snugly over the area. In order that the quantitative results may be estimated, the absorbent is weighed before and after applying to the skin surface and the time of application noted. For qualitative estimation it is necessary to know the chemical composition of the absorbent, to extract the absorbent, test the extract qualitatively and therefrom compute the results.

It must be realized that normally the amount of sweat secreted varies with the metabolism of the individual, the construction of the skin, the part of the body, the temperature and humidity of the environs, the circulation of air, the cleanliness of the parts, the type and amount of clothing, the diet, etc. We must also note that sweat will vary qualitatively and quantitatively in certain pathological conditions. In addition, sebaceous glands, epithelium and the predominant type of sweat gland will influence the composition of sweat in the different parts and under different conditions. In order that all factors be taken into consideration it is necessary that the cup containing the absorbent be varied in construction and that the methods be altered so as to fit the need.

For the above reasons the author has illustrated the simple and altered types of cup with absorbent. The cup in each case can be fastened to the skin surface by adhesive, belt, elastic or whatever means may best suit the part to which it is to be applied. We first used vaccination shields, the holes of which had