spray which he recommends in the article referred to above. For many years we have used a 3 per cent. carbolized sweet oil. This should be sprayed or poured into the ear in sufficient amount to penetrate the paper-like structure which the mites construct. Any oil or member of the petroleum derivatives is instantly fatal to all insects and mites. Kerosene has the advantage of being more rapidly diffusible and penetrating than sweet oil; it is also more or less irritating and no doubt produces a smarting when applied to the sensitive inner surface of the ear. On the other hand, sweet oil acts less rapidly as regards penetration, but it is soothing and softens the scales, hastens desquamation of the dried epithelium and favors rapid healing; the phenol relieves the itching and antagonizes infection. The purpose of this note is not to criticize but simply to mention an additional therapeutic remedy for the disease.

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A METHOD FOR FACILITATING SCIENTIFIC READING

MUCH time is needlessly consumed by scientific workers in trying to locate in a journal or book some data they vaguely recall having read. I am not unusually impetuous, but it must be confessed that this particular loss of time has been extremely aggravating on occasions. For a period I projected, as psychologists now call it, my memory failings into the construction of the journals. I have said many bad things about editors for not furnishing a complete functional index with each volume, an index that would tell the research worker on just what pages lactic acid is mentioned or just where in the six hundred odd pages there are charts showing the development of fatigue effects in muscular work.

Perhaps I have wanted too much, but one must be consistent and maintain that there is at least some justification for his outbursts of criticism. At any rate the alphabetical list of authors or titles furnished annually by the journals does not provide fullest aid in locating missing tables and figures.

Criticism does not go very far. So it became necessary to make up for the editors' continued neglect. After trying several schemes I have decided that the one I shall describe leaves least to be desired. This is the adoption of visual tabs such as are used in office filing systems.

Whenever I chance across a reference to, or data on ventilation I now paste a strip of light lavendar paper about 5 mm by 20 mm on the upper edge of the page—provided, of course, it is my book or journal. In case it is a table of data that is being marked I write a "T" on the visible portion of the colored tab, which is about 5 mm square. If the tab happens to be indicating a chart the letter "C" is marked on the visible part, or "R" in case it marks a reference I am certain is not in my library or I do not have abstracted.

The complexity of such a functional index is limited only by the ingenuity and color discrimination of the user. At present I am using 26 colors without confusion, and with much saving of time and patience. Whenever I want research material for a class lecture or an article, for instance, on individual differences all I have to do is to thumb through the tops of my library and browse through the pages indicated by the blue tabs. If it is sex differences I am most interested in for the moment I open only the pages marked by the blue tabs with "sex" printed (by hand) on them; if it is racial differences only the blue tabs sub-divided by "race" are used as a guide in the reading. In an evening a hundred tables of data or charts or sagacious remarks can be located with a rapidity that brings great comfort and confidence.

Reprints can profitably be indexed in a similar fashion when they are read. Filing of these leaflets is usually accomplished in many modes which vary with the seasons. When a visual tab system is used to guide reference reading reprints may be filed in the easiest way to preserve their shape. The most economical way to do this is to punch two holes near the stapling and fasten two dozen or so together with large brass staples into a compact booklet. Related subjects can be stapled together, and those reprints that it is difficult to tell just where they belong in any rational classification—they are many—can be placed wherever the shelves need filling since the visual tabs will make the contents readily available on a moment's examination.

Colored tabs can be made from kindergarten paper which is easily obtained; the heavier the stock the better. These can be cut into strips 5 mm wide. Then these long strips can be cut *part way* across every two centimeters of their length, leaving about 1 mm of the stock holding the tabs in each strip together.

The best way to keep order in a hundred or more such strips has seemed to be to paste them on a piece of cardboard about 6 cm wide and as long as the number of colors (not strips) being used and anticipated indicate. The strips should be "tacked" on with a *small* area of paste along the long edge of the cardboard, so that the long axis of the colored strip is at right angles to the long axis of the cardboard. Several strips of the same color may be placed one

above the other, and as soon as the supply of tabs in any color is used up another set of strips may be prepared and pasted on this card.

The strips may be arranged according to the spectrum or by the alphabetical order of topics they are to indicate. I have found the latter more convenient, especially with the subject each color indicates written opposite the strips of that color on the cardboard holder. I have two such holders in use in daily reading, one at the laboratory and one at home. The preparation of additional strips furnishes constructive amusement to children who find kindergarten entertainments to their liking.

I have still to be convinced that a functional index, with almost the completeness of a dictionary, should not be demanded by the readers of scientific journals. In the meantime it is up to the readers to convince the editors of a serious omission in their commonly gratuitous undertaking.

DONALD A. LAIRD

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A PROPOSED BIOGRAPHICAL ENTOMOLOGICAL DICTIONARY

AMERICAN entomologists and arachnologists should be much interested in the project of Professor Embrik Strand to publish a Biographical Entomological Dictionary containing the autobiographies of all entomologists and arachnologists who have done scientific work as authors or as collectors in all parts of the world.

This project has been explained in *Entomological News,* May, 1924, page 178, also May, 1924, pages 227–9, and in *The Entomologist* for March, 1924, page 68. However, the response from American entomologists has not been very great. The project has several auspicious features that should warrant wholehearted and prompt support: (1) There is no question about the publication of data; (2) the editor appreciates the desirability of individuality in the form of the biographies; (3) it is not necessary to be saving of space, since the editor suggests that all the main points in the life of the individual, even though they may have nothing to do with the professional career, should be included; for example, work in other biological fields than entomology or arachnology.

All persons who have done work with insects or spiders are urged to send an autobiography to Professor Strand at the earliest opportunity. Professor Strand's address is: Professor Embrik Strand, Director of the Systematic Zoological Institute, Universität, Kronvalda bulvars 9, Riga, Latvia.

To facilitate the assembling of the autobiographies of Americans, it is suggested that they may be sent to Dr. H. P. K. Agersborg, Department of Biology, The James Millikin University, Decatur, Illinois, or to Professor C. L. Metcalf, 201 Natural History Building, Urbana, Illinois, who will be glad to forward them by registered mail to Professor Strand.

H. P. K. AGERSBORG

C. L. METCALF

SPECIAL ARTICLES

CAN THE HYDROGEN ION CONCENTRATION OF LIVING PROTOPLASM BE DETERMINED?

THE various determinations that have been made of H-ion concentration in organisms are applicable in the case of plants only to the cell sap, and in the case of animals usually to no more than body fluids bathing the exterior of the cells. To assume that the results correspond to the cH of the protoplasm in contact with these inanimate fluids would be unjustifiable, as the following experiments will demonstrate. The subject of study is *Pelomyxa palustris,* a multinucleate Amoeba which frequently attains the giant size of 3 mm or more in diameter. Its markedly vesicular or foam structure renders this organism peculiarly suitable for colorimetric tests of cH; for, since it is desirable that the indicator should be as uniformly distributed as possible, and since it is impossible, as far as I am aware, to impart a visible coloration to living protoplasm itself, the nearest approach to ideal conditions is afforded by such an intimate foamy admixture of protoplasm and vacuolar fluid as *Pelomyxa* presents. The average diameter of the vacuolar vesicles is one third to one half that of the nuclei, but larger and smaller ones also occur. Neutral red was the indicator used. It is absorbed readily from dilute solution and forms in the vesicles a much more concentrated solution than in the external liquid. Granules in the protoplasm also stain deeply, but their color is little affected by the cH of any medium in which they may be placed and so is of no use as an indicator.

The tint of the neutral red in the great majority of the vesicles is practically uniform and corresponds sometimes to a neutral and sometimes to a very slightly acid medium. It is more acid than the water outside—a relation which seems to hold whenever the cH of cell vacuoles is compared with that of the bathing fluid. Comparing therefore the three media, cell sap, protoplasm and external liquid, we see that the neutral red has a different concentration in all three media and the H-ions in at least two of them. Why, then, should we assume that their concentration in the protoplasm agrees with that of the internal rather than the external liquid or indeed with either?

There is, however, more convincing evidence that the protoplasm is deliminated sharply as regards