Station, New Haven, died suddenly November 20 following a heart attack. During his 19-year association with the Station he had become known for his development of methods for determining various constituents in plants.

Claude Fountain, 68, physicist, Naval Research Laboratory, and former president, Tennessee Academy of Science, died November 28 after a short illness.

George E. Shambaugh, 78, chairman, Department of Otolaryngology, Rush Medical School, and head, Otolaryngology Department, Presbyterian Hospital, died November 30.

Edgar J. Witzemann, 63, professor of physiological chemistry, University of Wisconsin Medical School, died November 30 after a short illness.

Godfrey Harold Hardy, 70, emeritsu professor of pure mathematics, Cambridge University, died December 1 at Cambridge.

Raymond Harman-Ashley, 67, chairman, Department of Chemistry, St. Lawrence University, until his retirement in June, and inventor of the chemist's slide rule, died at his home December 1 after a short illness.

William Pepper, 73, dean emeritus, School of Medicine, University of Pennsylvania, died in University Hospital December 3, of a coronary thrombosis.

David L. Taylor, 31, assistant professor of botany, Department of Botany, University of Illinois, died December 6. Dr. Taylor joined the Illinois staff in September.

Make Plans for—

Northwest Scientific Association, December 26–27, Davenport Hotel, Spokane, Washington.

American Society for Professional Geographers, December 27–30, Charlottesville, Virginia.

Association of American Geographers, December 29–31, Charlottesville, Virginia.

Mineralogical Society of America, December 29–31, Ottawa, Canada.

COMMENTS *by Readers*

We consider it our duty to offer the following information without delay, instead of waiting until we have accumulated enough data to write a detailed scientific report on our findings.

Surface tension measurements of solutions of sodium penicillin were carried out with the du Noüy tensiometer and the pendant drop technique. The results proved that solutions of sodium penicillin in distilled water are highly capillary active. The surface tension of a solution containing 10,000 units of penicillin sodium salt (Abbott)/cc. gave a surface tension of 31.7 dynes/cm.

Since the preparation, at least from a colloid-chemical point of view, must be considered to be composed of a hydrophilic cation and a hydrophobic complex anion comparable to soaps, it seemed only logical to assume that we are not dealing with true solutions, but hydrosols.

We therefore studied this preparation with a slit ultramicroscope. A highly colloidal system with particles ranging between approximately 100 and 500 mμ could be readily detected. The particles are anisometric, which is clearly evidenced by a very pronounced twinkling phenomenon. To make absolutely sure that this observation was not due to impurities contained in the commercial product used, we obtained, through the courtesy of Henry Welch, of the Federal Food and Drug Administration, a highly purified sodium salt of penicillin (F.D.A. Penicillin/Working Standard/Sodium Penicillin G/Potency 1,667 u/mg.), and dissolved it in triple-distilled water which, by itself, showed not the slightest indication of a Faraday-Tyndall cone. The solution, however, exhibited a very pronounced one, which clearly indicates that we are not dealing with a true solution, but with a colloidal sol.

Surface tension measurements of solutions of highly purified streptomycin calcium chloride complex of varying concentrations gave figures slightly above those obtained with distilled water at the same temperature. The preparation, if studied ultramicroscopically, however, shows very pronouncedly that it is a colloidal sol and not a true solution. The particle size of the dispersed phase averaged 65 mμ. That this sol is not capillary active might be due to the divalent calcium ion and its low degree of hydration. (ERNST A. HAUSER and RUTH G. PHILLIPS, *Massachusetts Institute of Technology,* and LT. (j.g.) JOHN W. PHILLIPS, MC USNR, *Naval Medical Research Institute, Bethesda, Maryland.*)

Lest some scientist needing a passport be discouraged by Dr. Bok's recent account of his unfortunate failure to obtain a passport within a limited time (*Science,* October 10, p. 341), may I describe a case in which the State Department acted with gratifying speed. One member of my recent Eclipse Expedition to Brazil mailed an application for a passport to Washington on March 25, and the passport was received by mail on April 3. No special telegrams were sent; no pressure was exerted by any government official. It seems to me that 9 days for a routine which normally requires three weeks represents excellent service. (CHARLES H. SMILEY, *Director, Ladd Observatory, Brown University.*)

The recent report of a study made by Davis and Briggs concerning the growth-promoting action of cellulose (*J. Nutrition,* 1947, 34, 295) reveals a not uncommon type of error in the design of diets which makes the results of their use questionable. In this study, glucose in the basal diet was replaced by cellulose. If the cellulose served as a source of carbohydrate in the diet, such a substitution would be justified. However, even if the data on "crude fiber" were acceptable as an index of digestibility, they indicate that the cellulose served mainly as an inert material, especially

when more than 5 per cent was fed. The replacement of glucose by cellulose therefore reduced the carbohydrate content or increased the proportion of protein, fat, and other constituents of the utilizable part of the diet, and this may explain the results attributed to the cellulose.

A similar error, made by Guerrant and Dutcher (*J. Nutrition*, 1934, **8**, 397), led to the erroneous conclusion that cellulose had a vitamin B and G sparing effect. The replacement of sucrose by cellulose or agar in their basal diet reduced the carbohydrate content of the diet and hence also the vitamin requirements. Since then, Mannering, Orsini, and Elvehjem (*J. Nutrition*, 1944, **28**, 141) tested the effect of cellulose by adding it to their basal diet, and no vitamin sparing effect was found. It may be contended that the addition of purified cellulose to the diet requires an increase of minerals (Harriet Morgan. *J. Amer. med. Ass.*, 1934, **102**, 995), protein, and/or other constituents of the diet to maintain a balance, but the data on this subject are controversial (F. Hoelzel. *J. Amer. med. Ass.*, 1939, **113**, 351) and the greater error appears to be made by simply replacing utilizable nutrients by cellulose.

In short, cellulose should evidently be regarded as an inert or nonutilizable material unless there is evidence that it can be utilized by the species to which it is fed. A loss of "crude fiber" by the passage of cellulose through the digestive tract cannot be accepted as evidence of digestibility. This was indirectly indicated about 25 years ago when "Cellu Flour" was analyzed at the Connecticut Agricultural Experiment Station (Bull. 127, 1921, p. 230). A low "crude fiber" content was found, although this flour proved to be a satisfactory nonnutritive substitute for ordinary or starchy flour in the diabetic diet. The "digestion" of cellulose which is assumed to occur on the basis of "crude fiber" determinations may therefore mainly be a mere modification of the cellulose such as is produced in the manufacture of dietetic cellulose like "Cellu Flour." This modification is not produced by enzymes or bacteria.

It is not intended to imply by the foregoing that cellulose in the diet is of no value. On the contrary, its value for some species may be due chiefly to its relative inertness. In our longevity studies on rats (*J. Nutrition*, 1946, **31**, 363; 1947, **34**, 81), we used a basal or low-residue omnivorous diet and other diets consisting of the basal omnivorous diet and added cellulosic bulk-formers. The results obtained thus far indicate that suitable cellulosic bulk-formers tend to prolong the life span and can apparently do this without a stunting of growth (skeletal size, such as seems to have occurred in rats fed diets including ground No. 300 cellophane by McCay and his associates (*J. Nutrition*, 1934, **8**, 435). The details concerning our study will be reported elsewhere when the study is completed. A source of cellulose should evidently be included in the normal diet for man and other omnivores even if cellulose does not promote growth. (F. HOELZEL and A. J. CARLSON, *Department of Physiology, University of Chicago.*)

I wish to comment on "An Auditory Afterimage," by Rosenblith, Miller, Egan, Hirsh, and Thomas (*Science*, October 10, pp. 333–335).

If the curves in Fig. 1, A, are plotted to a log scale of time, they fall on straight lines that have simple equations of the form Duration = a + b log t, where a and b are constants that can be read from the chart. The equations are:

Lower curve, Duration = $-6 + 6\frac{1}{2} \log t$
Upper curve, " = $-9 + 9 \log t$

The symmetry of these constants may be significant.

Attention is called also to an error in Fig. 1, B. The zero point on this log scale is at an infinite distance to the left of the point shown. The ordinate "0" should be 5. (DUFF A. ABRAMS, *801 2nd Avenue, New York City.*)

The recent article by Stephen S. Visher on "Starring in *American Men of Science*" (*Science*, October 17, pp. 359–361) seems constructive and desirable as far as it goes, but perhaps in one minor respect it should go a little further.

Apparently Dr. Visher contemplates a continuation of the policy of restricting the electorate to those previously starred, or to an additional number selected by some small committee who would add "competent experts" to the voting group. If we could rely on the assumptions (1) that substantially all the voters would vote fairly and impartially, (2) that substantially all the voters would take pains to see to it that newly added fields secured fair participation, (3) that substantially all the voters would give at least several hours careful consideration to the formulation of their votes, such a procedure might work fairly well. It is believed that assumption (1) is fully warranted, but that (2) is quite questionable and (3) even more so.

It is submitted that anyone of sufficient standing to be included in the volume at all should be sufficiently mature and well informed to be able to make a constructive contribution by voting, and therefore it is suggested that a democratic basis of selection be followed. A tentative outline of procedure might be as follows:

(1) Expand the fields to 5 or 10 times their present number with a brief, succinct definition of any field for which an adequately descriptive title is not found.

(2) Mail a ballot to each individual listed in the previous edition, and to each individual to be included in the forthcoming edition.

(3) Include with the ballot a list of the designated fields, and ask each recipient to designate the field in which he belongs.

(4) Request each voter to vote for a fixed number, say 10, whom he considers *most outstanding in the voter's field*, even though the recipient of the vote is active chiefly in some other fields, and regardless of whether or not the recipient is listed in the volume.

(5) Star as nearly as may be the same percentage in each field. Ten per cent seems a desirable figure.

The fact that newcomers to be listed for the first time in the forthcoming volume will not be known to voters, except by their activities and publications elsewhere, might be said to place a minor handicap on newcomers. To the extent that there is such a handicap, it is believed the handicap is desirable. It will tend to postpone, and perhaps prevent, the starring of the meteoric individual who happens to register some spectacular achievement, but whose record of achievement is not sustained over a period of years. (DONALD H. SWEET, 330 *South Wells Street, Chicago.*)