600 feet of lake water above it, exploding at the surface. He states that these "guns" have now suddenly ceased, "with no sound reported for the last summer," and that they are probably silenced forever. The interpretation given is that the many gas wells which have recently been drilled in the Wayne-Dundee field not far from Seneca Lake have diminished the gas pressure in the Oriskany, so that the gas no longer escapes into the lake.

This hypothesis is ingenious and at least plausible on the evidence presented, but the purpose of the present communication is to state that Professor Fairchild's obituary of the "guns" comes before their demise, for the writer heard these sounds as recently as last October.

During many years the lake "guns" were heard on innumerable occasions when the writer lived adjacent to Seneca Lake and, as a youth, spent month in and month out on it and in it, camping, swimming, sailing, boating and fishing. Each autumn at the present time he returns to the same scene for a vacation, and this is spent in a way which should bring to notice most of the audible lake sounds; that is, in working alone from morning till night laying stone masonry on a rock cabin situated actually in the lake waters, at the base of a cliff (which may incidentally be instrumental in concentrating sounds which proceed across the lake). This is at Glenora, close to the Dundee gas field, and it was from there that the "guns" were heard last October. The previous absence of reported observations of lake "guns" in 1934 may have been due to the fact that it is the fishermen who most frequently report them, and that last autumn the bass fishing was so poor that relatively few fished.

In itself the hypothesis of escaping gas bubbles is not new, having been commonly current among the native residents of Seneca's shores for many decades, but its association with the depletion of the nearby gas fields, credited by Professor Fairchild to Mr. A. M. Beebee, geologist of the Rochester Gas and Electric Corporation, is a new and ingenious hypothesis which probably will acquire standing if the lake "guns" actually become silent later on.

Interested readers will find in Davison's "Manual of Seismology" a discussion of phenomena of a similar description, under the section "brontides." "Guns" are evidently heard in several localities—Italy, the Philippines, Africa, Haiti, Belgium—though their cause is unknown. Those heard at Seneca Lake seem to be most frequent in the autumn and in the daytime —in fact, the writer has never heard them after dark. Their direction is vague, and like the foot of a rainbow, they are always "somewhere else" when the observer moves to the locality from which they first seemed to come. No large bubbles or volumes of gas have actually been observed broaching on the surface of the lake, but is it not probable that a large single volume of gas, starting from the bottom of the waters 600 feet below, would be broken up into very many small bubbles during its upward passage through that amount of water? Theoretically, this should not occur, but actually, due to some form of instability, it possibly would.

Finally, is it not likely that gas from the Oriskany, seeping upward through the 450 feet of drift between that horizon and the top of the drift filling, would be stopped and held temporarily by the layers of fine compact lake-bottom clay which have accumulated there since the recession of the Wisconsin ice; and then, when a sufficient volume of gas had thus become pocketed under the clay (perhaps in a large "blister"), the latter would suddenly give way and cause the explosion, not at the surface, but at the bottom of the lake. The sound would then be transmitted upward from the bottom by the water, emerging with the vague non-directional origin so often noted in connection with the phenomenon heard.

Since the above was written, Mr. E. R. Dobbin, of Geneva, N. Y., has stated in *The Syracuse Herald* (April 25) that at Kashong, near Dresden, N. Y., the Seneca Lake guns "were quite as distinct last summer as formerly, perhaps not so frequent. They have also been heard quite distinctly this spring . . . the Seneca Lake guns," he adds, "are still in existence."

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NUTRIENT MEDIA WITH STABLE HYDROGEN-ION CONCENTRATION

PROFESSOR SAM F. TRELEASE and Helen M. Trelease in a recent issue of SCIENCE[1] emphasized the fact that one of the important problems in the culture of higher plants in artificial media is that of maintaining the hydrogen-ion concentration of the culture solution within limits favorable to growth. They propose for this purpose the use of physiologically balanced solutions. It is not possible to judge their very interesting idea from the contents of their short note.

In writing this note I should like to draw attention to my work, covering a period of over ten years, which has dealt with this question. The results of this work have appeared in several publications and have been fully described in recent papers.[2]

I take this opportunity to give a very brief summary of my studies. These investigations showed that the slightly soluble phosphates plus NH_4NO_3 are

[1] SCIENCE, 78: 438–439, 1933.

[2] "Nutrition artificielle des plantes cultivées. I. Mélanges nutritifs à pH stable," *Annales Agron.*, Paris, 2: 809–853, 1932; 3: 53–72, 1933.

efficient in stabilizing the reaction in acid media. A study of the buffer capacity of different slightly soluble phosphates[3] showed that $Mg_3(PO_4)_2 \cdot 22H_2O$ can be used for alkaline media. As a result of an x-ray study[4] of these phosphates it was possible to show how to prepare and use them. These experiments enabled me to develop four nutrient mixtures:[5] (1) acid, pH 4.9–5.5; (2) slightly acid, pH 5.5–6.8; (3) neutral, pH 6.9–7.3; (4) alkaline, pH 7.5–8.0.

It is unnecessary to give further details of the work, which has already been published in complete form. I take this opportunity to emphasize once more that the details of the technique of my culture methods (including the aeration of the media to provide the roots with oxygen, the preparation of the salts, etc.) are of fundamental importance. These are fully described in my papers.

In my next work I shall discuss my experiments concerning the rôle of Mn, Si, I, Zn, Al, B, Cu, Li, Na, As, Ni, Co, etc., in mixtures of stable pH value.

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A RICH SOURCE OF β-CAROTENE

THE difficulty in separating the different carotenes and the danger of oxidation with increased handling have emphasized the desirability of working, where possible, with a source having only one form present. Since many of the richer sources contain mixtures of the two forms, it may be of interest to those working with the carotenes to know that the Perfection pimiento is a rich source of β-carotene, apparently free of α-carotene.

It has been shown[1] that with antimony trichloride α-carotene shows an absorption band at 542 mμ and β-carotene shows an absorption band at 590 mμ.

Using this method and the method of Zechmeister and Cholnoky[2] for the quantitative determination of carotene, dried pimiento shells were found to contain from 200 to 665 mg of β-carotene per kilogram. The quality of the fresh material and the method of preparation have considerable influence on the amount of carotene present in the dried product.

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WHAT IS A LOCUST?

ONE of the outstanding difficulties in teaching elementary entomology is the confusion concerning the word "locust." The so-called seventeen-year locust is of course a cicada, belonging to a totally different order from the true locusts. No doubt all teachers of entomology stress this point, but in the "Handbook for Boys," issued by the Boy Scouts of America, of which it appears that 4,792,871 copies have been printed, there is (p. 483) a picture of a cicada, labelled "Locust," without any qualification. This appears in an article by Dr. L. O. Howard, but as the text does not refer to this insect I infer that the illustration was added by the editor. Thus the popular error is reinforced on apparently good authority. Every effort should be made to substitute the unobjectionable term "cicada."

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THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

MINUTES OF THE EXECUTIVE COMMITTEE

THE executive committee of the association held its spring meeting in New York City on April 15. By courtesy of the chairman the sessions were held in the office of the Science Press, Grand Central Terminal.

The meeting was called to order at 10 A. M. by the chairman with the following members of the committee present: Cattell (*chairman*), Compton, Conklin, Curtiss, Fox, Livingston, Thorndike, Ward, Wilson, Woods. Dr. Hildebrand was unable to attend. Formal sessions were held morning and afternoon, and following the evening dinner discussion was continued until 10 P. M.

(1) The permanent secretary reported on the proposed project for aiding unemployed scientists through government funds for emergency relief. Under the reorganization of the C.W.A. relief funds are distributed to the states. While provision is made for research projects under state relief commissions, no place was found in government organization for a national project. A communication is to be sent out from the permanent secretary's office advising all correspondents concerning the present situation.

(2) In response to a request for approval of a special measure now before Congress to provide fellowships for unemployed scientists the permanent secretary was advised to call attention to the Science

[3] *Comptes rend. Acad. Sci. Paris*, 194: 1924–1927, 1932.
[4] "Phosphorsäure," Berlin, 3: 279–297, 1933.
[5] The term "nutrient mixture" has been found preferable to "nutrient solution." The reason for this choice is fully explained in the publication cited above.

[1] Karrer, Walker, Schopp and Morf, *Nature*, 132: 16, 1933.
[2] *Ann.*, 455: 70, 1927.