

LETTERS TO THE EDITOR

I enjoyed the article review by Robert Harris in the September, 1971 *Quarterly* (Review of "Carlsbad Caverns in Color" from *National Geographic Magazine*).

I think Mr. Harris will find a note in the *Journal of Chemical Education* of September, 1971, page 608 entitled "Instant Coral" [See below-Editor] of interest in support of his views. I had the pleasure of visiting the lakes referred to in the article in 1970 and everything is exactly as the author reports.

More confusion to the evolutionists.

Sincerely yours,
FRANK L. SCHNEIDER
Round Hill Lane
Port Washington, N. Y. 11050

CHEMICAL VIGNETTES*

ROBERT C. BRASTED

University of Minnesota, Minneapolis 55455

"Instant Coral," Jugoslavian Style

A magnificent combination of underwater beauty and solution chemistry is observable in one of nature's wonderlands, the Plitvicka Jezera (lakes) country a hundred miles south of Zagreb in Jugoslavia. Here are located a chain of some 15 lakes with coral-like deposits in a sylvan mountain setting with each lake feeding water to the one below by a system of water falls. The total lowering is not more than 50 m, but each water fall has an individual beauty with a drop that may be as small as several meters or as much as 20 m.

There are some who will justifiably question not only the travelog introduction to a *Chemical Vignette* but also the aquatic biology of "coral" formation. The column editor hopefully can explain the latter and pleads journalistic license for the former.

The water feeding into the first lake is part of an underground system that provides a magnificent example of metal salt equilibrium. Almost any general text of chemistry will provide the fundamental concepts of water hardness, but the stress is usually on boiling the temporarily hard water to deposit CaCO_3 while releasing CO_2 from the dissolved $\text{Ca}(\text{HCO}_3)_2$. Or, that over the centuries stalactites and stalagmites grow in caves, for basically the same reason (the former having to stick "tite" to the roof or they

will fall off, while the latter "mite" grow big enough to reach the ceiling and then again they "mite" not, which indicates the low degree of geological training on the part of your column editor).

These Plitvicka waters come out of their limestone underground beds so charged with CO_2 and loaded with $\text{Ca}(\text{HCO}_3)_2$ that the time factor for depositing calcium carbonate is more in the hour range than the century. Twigs, limbs, rocks, and even grass coming in contact with the water are soon coated with a white carbonate deposit. The lake bottom and shore are white with the encrustation. Just as do many of the mineral baths of the continent so do these lakes literally effervesce CO_2 when the water is agitated.

It seems that the lower lakes exhibit a slower carbonate deposition rate than that found in the upper lakes, however, an equilibrium is established as the water flow progresses, since the stream and lake beds (at times 10-20 m in lake depth) are limestone.

The color of the water is a distinctive green color due to an algae that flourishes in these hydrogencarbonate-charged waters. The concentration is not so great that trout cannot survive since many of the good eating size are observed (without a white crust).

An earlier *Vignette* pointed out a not-so-pleasant or beautiful natural phenomenon associated with underground waters coming from mine areas. Sulfides provided not only undesirable deposits but odor and taste to waters. Here we have somewhat similar chemistry but a much more asthetic result.

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A View on Evidence

During the past summer it was my privilege to participate for a third time in a field study of the Absaroka fossil forests. These fossil features in the Yellowstone area are in my judgment a particularly impressive example of ambivalence in the data produced by scientific investigation.

Many observers of the agatized stumps, logs and organic horizons in this area see evidence for successive growth over a span of years many times greater than indicated by the specifications given in the fifth and eleventh chapters of Genesis. Others on close analysis find features which are not satisfactorily accounted for on the basis of *in situ* growth, and which seem to indicate tidal deposit of flood-accumulated debris in a mud and rock slurry during a period of intense volcanic activity.

After analyzing the various interpretations which have been advanced and observing reactions of differing types of minds to these interpretations I have concluded that the presently available physical evidence can be accommodated to whichever viewpoint of earth history (conservative Biblical or unrestricted time models) one may prefer *a priori*. Until further

evidence has become available and adequately analyzed it would be unwise to claim that these fossil forests provide compulsive evidence in favor of either flood deposits approximately four thousand years ago or "normal" growth and volcanic sequences over tens of thousands of years.

There is a tendency to expect that sufficiently extensive and intensive scientific investigation will provide unassailable evidence in support of a model for earth history which conforms with the most obvious and straightforward reading of Genesis. Rather, we should emphasize that acceptance of God's Word depends on faith—faith which is supported by adequate, but not compulsive, evidence; and that one does not need to become skilled in scientific endeavor to find an ample basis for this faith. We ought to stress that no compulsive evidence is available *against* the testimony given to us by Moses, and that models can be developed which make it intellectually respectable to accept this testimony as an authentic revelation from God.

Cordially yours in our Master's service,
R. H. BROWN,
President, Union College
Lincoln, Nebraska 68506

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