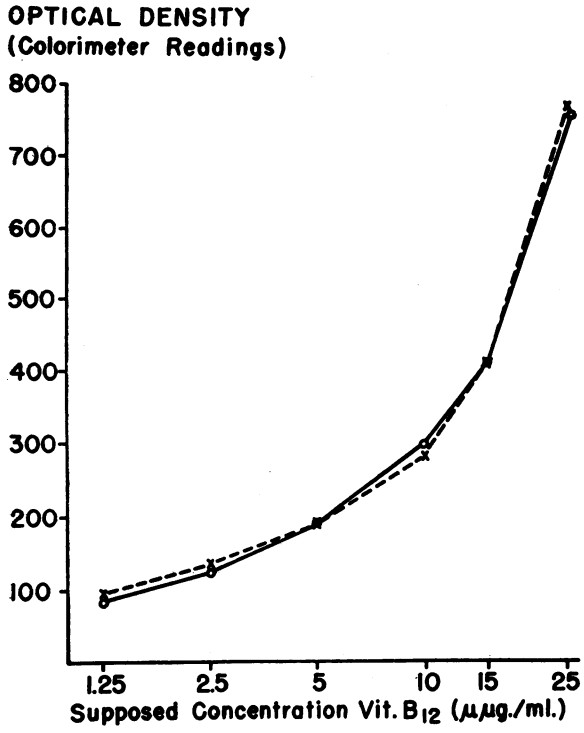

FIG. 1.

The normal range of vitamin B_{12} concentration in human serum was found by Mollin and Ross (*4*), to be from 100 to 720 μμg/ml, with a mean of 358 μμg/ml. These results were obtained in England, using *E. gracilis* as test organism. Rosenthal and Sarett (*5*) in this country have found, by the *L. leichmannii* assay technique, a normal range of 80–420 μμg/ml, with a mean of 200 μμg/ml. Figures from this laboratory, using the Euglena method of assay, also tend to be lower than those reported by Mollin and Ross.

A possible source of this discrepancy could be a difference in the potency of the British and American standards of crystalline vitamin B_{12}. It was thought desirable therefore to compare the potency of a British[2] and an American[3] preparation of crystalline vitamin B_{12}. Both products had been assayed by the respective manufacturers to contain 20 μg vitamin B_{12}/ml.

Freshly prepared dilutions of both standards were compared by their growth promoting effect for *E. gracilis*. Parallel dilutions were added to basal medium to give supposedly final concentrations ranging from 1.25 to 25 μμg/ml. The density of growth of the *Euglena* for each dilution was recorded with a photoelectric colorimeter, using a red filter. Each dilution was tested in quadruplicate, and the readings averaged.

Growth pattern curves for the two preparations of vitamin B_{12} have been constructed by plotting optical density against the logarithm of the supposed concentration (Fig. 1). The curves are almost identical. The potency of these two preparations is therefore similar.

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[2] Cytamen, Glaxo Laboratories, Ltd., England.
[3] Rubramin, E. R. Squibb & Sons, New York, N. Y.

References

1. THOMPSON, H. T., DIETRICH, L. S., and ELVEHJEM, C. A. *J. Biol. Chem.*, **184**, 175 (1950).
2. ROSS, G. I. M. *Nature*, **166**, 270 (1950).
3. ———. *J. Clin. Pathol.*, **5**, 250 (1952).
4. MOLLIN, D. L., and ROSS, G. I. M. *J. Clin. Pathol.*, **5**, 129 (1952).
5. ROSENTHAL, H. L., and SARETT, H. P. *J. Biol. Chem.*, **199**, 433 (1952).

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Fossil Deposits Under the Entrance of Carlsbad Caverns

FRAGMENTS of pottery and sandals, wall paintings, and nearby mescal roasting pits indicate that the entrance to Carlsbad Caverns has long been used by the desert Indians as a natural shelter. Cave breathing provides the sheltered area with warm air in winter. During the summer, forced evaporation of the moist cavern breezes, as they come in contact with the hot, dry, desert air, makes the cave cool. This natural air-conditioning and the presence of a few small seeps of water provided a nearly perfect camping site for hundreds or even thousands of years (Fig. 1).

Apparently, victims of the hunt were taken to the cave entrance, the discarded bones thrown into the hole at the rear, which leads into the deeper parts of the caverns (Fig. 2). Remains left on the floor were often washed into the same hole by rain water. Once through this hole, the water fell to the floor of the main corridor, where its velocity decreased and its load of sediment, plant and animal remains, and guano, was deposited.

For hundreds of years, guano accumulated and formed a valuable source of rich, natural fertilizer.

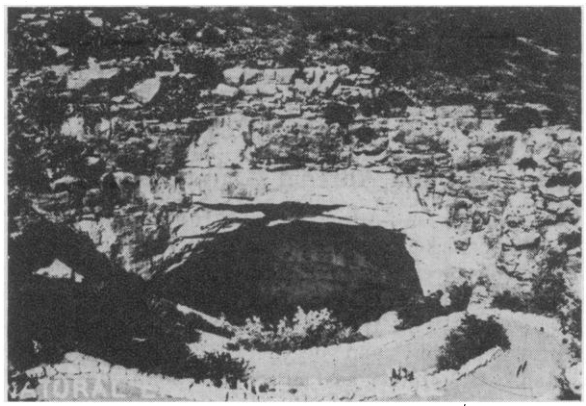

FIG. 1. Present entrance to Carlsbad Caverns. (Photo courtesy H. Hemler, Carlsbad, N. M.)

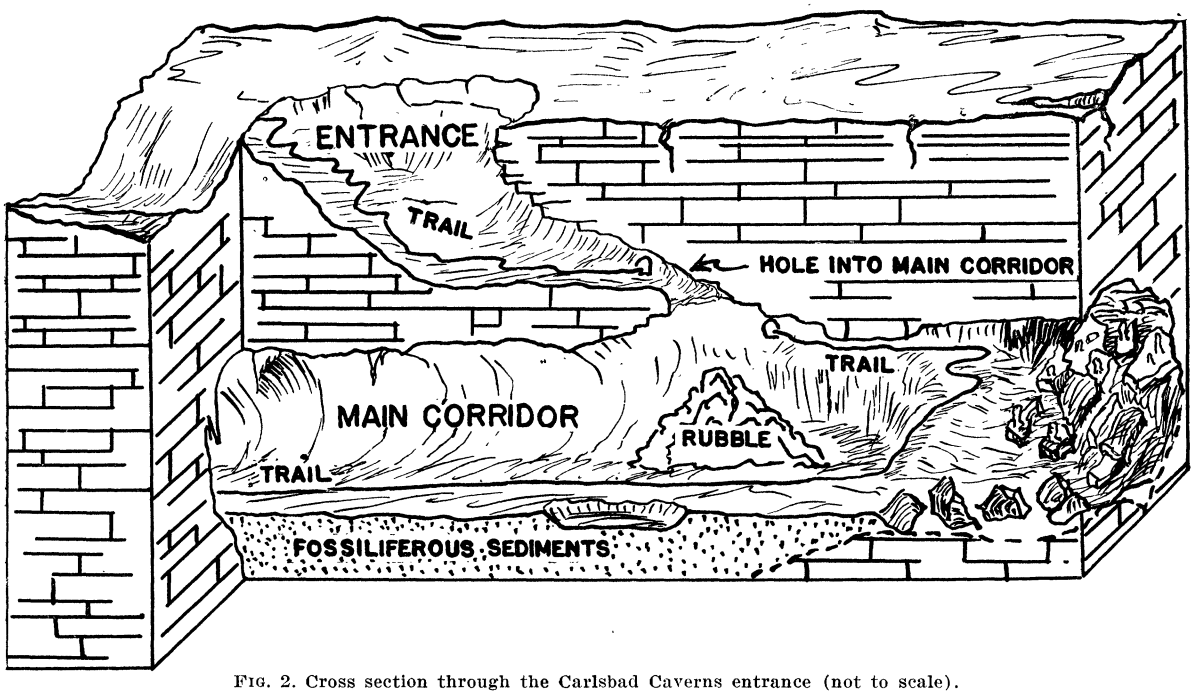

FIG. 2. Cross section through the Carlsbad Caverns entrance (not to scale).

Demands for this fertilizer by California citrus growers caused a mining company to remove the deposits and once again bare the fossiliferous sediments. One miner, J. L. White, became interested in the deeper, more scenic corridors and rooms. Stories told by him, and by those whom he guided through the caverns, created such a public demand to see the underground wonders that it was necessary to build trails to accommodate the increasing number of visitors.

Sediments of the fossil deposit were easily excavated and made excellent trail fill. It was the removal of this material that led to the original discovery of the gold mine of plant and animal remains. Careful sifting of the dirt has resulted in the finding of teeth, horned-toad scales, bones of bats, rodent skulls, ribs and leg bones of many types of mammals, furculas and skulls of birds, a section of bone that had apparently been used as a bead by an Indian, and numerous bits of wood and leaves. The importance of this deposit has finally been recognized. Its study and deciphering will eventually unfold a fragmentary record of the men, plants, and animals that once lived in or near the entrance to Carlsbad Caverns.

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A Simple Two-Dimensional Slide Rule for the Rapid Calculation of Time Intervals

A SIMPLE two-dimensional slide rule has been designed with which any desired units of time may be quickly and accurately computed. The same type of instrument lends itself to the computation of many other types of data provided they can be arranged in true arithmetic sequence and set up in tabular form. The instrument consists of two parts, a special overlapping chart of data and a sliding transparent window, with a measuring scale on the frame. Figures 1*A* and *B* show how this idea is adapted for counting time in days. The window used is 10 columns wide and of any desired length. On the main chart all the information is placed in the first 10 columns from the left, and the first 9 vertical columns are shifted up one row and duplicated, as in Fig. 1*A*. This arrangement allows any date or figure on the chart to be placed under the window in any desired position. This is the basic procedure to be followed in constructing any such chart.

If information is needed in two units, e.g., pounds and ounces, the width of the window and the basic chart would be equal to the number of smaller units in the larger unit, e.g., $16(a)$ in the case of pounds and ounces. The whole chart would be $31(2a\text{-}1)$ columns wide, since all but the last column would be duplicated. The horizontal frame of the window would count off in smaller units, i.e., ounces, and the vertical frame the larger units, i.e., pounds.

One other type of computation for which the two-dimensional slide rule may be applied is that of a problem that can be reduced to the formula $(R\text{-}B)C$, where R is the reading, B a blank and C a constant. The chart would be set up to include values for RC