quires a volume of about 0.04 ml. By using a Teflon collar to connect the microcell needle to a second length of needle, it was possible to fill the cell from a solution volume of 0.1 ml by capillary action or by syringe in the usual manner. Thus the study of a 1-mg sample of a compound in 1% solution is possible. The flask illustrated in Fig. 1 has a calibration scratch on the constricted neck and a mixing bead which is slightly larger than the neck. The region of the flask above the neck is funnel shaped to allow easy addition of the sample by tapping the side of the flask with the finger. The glass stopper permits transportation and storage without loss due to evaporation. Solvent additions are made by using a No. 22 needle attached to a syringe.

Figure 2 illustrates several sizes of these flasks which have been used. The two at the top without glass stoppers are early models that were used successfully, but with difficulty, since many of the solvents are readily volatile. The lower models were made for us.[3]

[3] Made by Thomas J. Scott, of Metro Industries, Long Island City 1, N. Y. They may be obtained commercially from this company.

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Comments and Communications

Sea Urchins Damage Steel Piling

SEA urchins have been discovered making holes in the steel 8-in. H-beam piles of a pier near Ellwood, California. The pier belongs to the Signal Oil and Gas Company and company engineers brought the problem to the Santa Barbara Museum of Natural History.

These piles, put down in 1929, had to be replaced when their damaged condition was discovered. The culprit was identified as the purple sea urchin, *Strongylocentrotus purpuratus,* a species that often bores in surf-pounded rocks and reefs.

On the steel piles they clung to the lower few feet, where they nestled in the depressions they had made. When removed, the metal under them was clean, bright, and rough.

Their action apparently augments corrosion. So many holes had already been made clear through the $\frac{3}{8}$-in. web of the H-beam that it was all eaten away at the bottom, leaving the lower few feet of the flanges completely separated. About half of the 40 piles pulled at this pier were damaged in this way, and the engineers are anxious to learn how to prevent such expensive damage by sea urchins.

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Thiouracil and Adrenal Glands

IN a paper on "Adrenal Hypertrophy in the White Leghorn Cockerel after Treatment with Thiouracil and Thyroidectomy" by Morris (*1*), the author erroneously ascribes to Baumann and Marine (*2*) the observation that feeding thiouracil to albino rats causes "atrophy and degeneration of the adrenal gland." Dr. Morris has missed the point of our report, and his search for the mechanism involved will be made simpler by a more careful reading of our work. What we stated was that the total weight of the adrenal gland is almost always decreased by feeding thiouracil due to an involution (not atrophy) of the adrenal *cortex.* The medulla (*3*) on the other hand, undergoes a very marked hypertrophy, rarely to such an extent that the weight of the entire gland may be increased, in spite of the great involution of the cortex.

We hope this comment will help Dr. Morris in analyzing his experiments on the chick.

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Comparative Potency of a British and American Standard of Crystalline Vitamin B_{12}[1]

THE growth of several microorganisms has been shown to be influenced by the vitamin B_{12} concentration of the inoculated medium. These observations have led to the development of microbiological methods which are sensitive enough to assay the vitamin B_{12} activity of body fluids. *Lactobacillus leichmannii* (*1*), and the green alga, *Euglena gracilis* (*2, 3*), have been found suitable for the assay of vitamin B_{12} activity in serum. In both methods, the amount of growth of the organism in the test fluid is compared with that in a range of tubes containing varying known amounts of crystalline vitamin B_{12}. These latter tubes thus serve as standards.

[1] This study was made possible by a grant from the National Institutes of Health and in part by a grant from Squibb Institute for Medical Research.

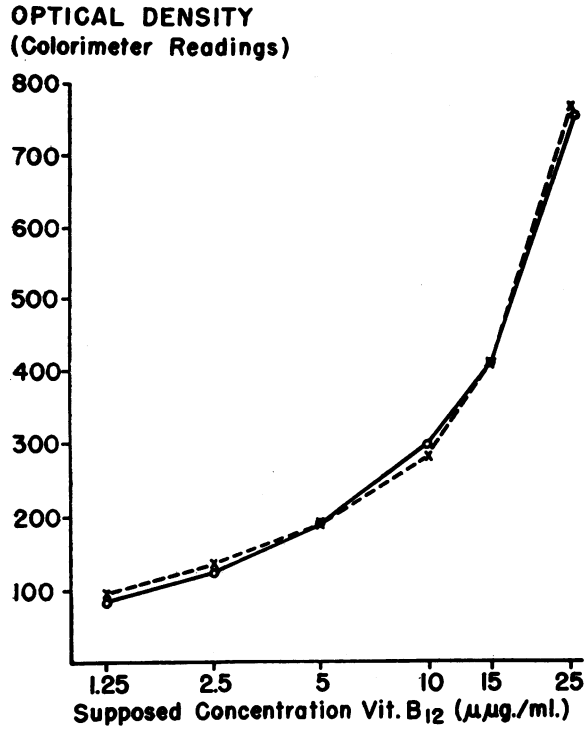

FIG. 1.

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.

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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.

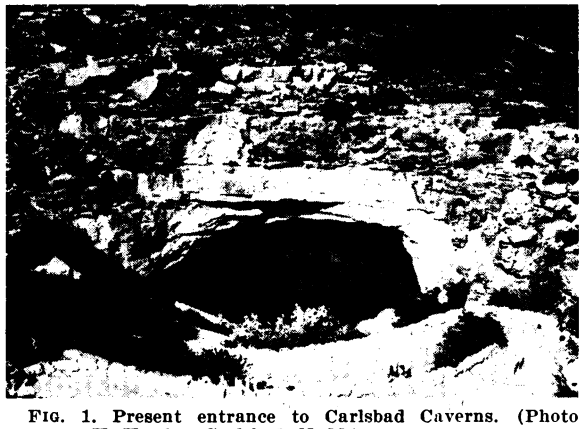

FIG. 1. Present entrance to Carlsbad Caverns. (Photo courtesy H. Hemler, Carlsbad, N. M.)