Comments and Communications

How Much?

WITH the appearance of more and more foreign books in this country, there will always be the question, "How much does it cost?" Since a price is established for the book, that cost should be printed and given in dollars. Book reviewers should not be put in the position of reporting price in d., s., lire, fr., etc., only, nor should they be expected to check on foreign exchange. In one case I gave the foreign price and the approximate dollar value. That was a mistake, for other costs would naturally bring the price up. It is the responsibility of the distributor to give the dollar price when a book is listed in SCIENCE, *Chemical and Engineering News,* or any other publication.

One cannot help but be reminded of the old saw of that dear old lady who asked, "What is the charge on this battery?" When told "6 volts," she rejoined, "How much is that in American money?"

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Can Wind Move Rocks on Racetrack Playa?

MCALLISTER and Agnew (*1*) touched off a series of articles, some popular and some merely amplifying the original observations, concerning the origin of the unusual skid marks on Racetrack Playa, Calif. Here, at an elevation of about 3700 ft in the northern Panamint Range west of Death Valley, is a playa 2.5 mi long and 1.5 mi wide, with a flat, mud-cracked surface on which are found numerous trails, many of them ending at isolated rock fragments hundreds of yards from the "shore." The tracks contrast with the general playa surface in being depressed a fraction of an inch and lacking most of the almost paper-thin curled flakes of dried mud that are usually found atop each mud-crack polygon. The fact that the widths of these tracks are nicely proportioned to the sizes of the rocks at their ends, under the leading edges of which the missing mud flakes are sometimes packed, leaves little doubt that the rocks made the tracks and that, where no rock is now present at the end of a given trail, it has either been removed by souvenir hunters, or its role was taken by some less durable object (*1; 2,* Fig. 5). The trails are oriented in different directions, and many are composed of straight or slightly curved segments compounded into jagged patterns (*2*). A few have kinks or loops. The maximum measured length of a single trail is known to exceed 700 ft (*2*).

In April and May, 1952, three visits were made to Racetrack Playa in light aircraft for the special purpose of discovering whether any stones could be moved with the artificial wind velocities produced by the propeller wash of the planes. Equipment included 25 gal water, laboratory-cut cubes of limestone in graduated sizes 0.5–3 in. on an edge, spring balances, and an anemometer.

It was found that even 3–4 hr soaking is not enough to produce a smooth slippery film of mud on the playa surface; probably days (or weeks) are required to close the mud cracks. Accordingly, water confined to an area of about 4 sq ft was worked into the surface with a trowel until a slippery paste was formed. Whether its consistency or depth approached natural conditions is not known. However, at air velocities not exceeding 42.2 mph, a natural triangular prism of limestone picked up from a nearby track and weighing 19 oz was made to slide part way across the wetted area. None of the prepared cubes slid (though the smaller ones showed some tendency to roll over), probably because of the greater pressure per unit area of their bottom surfaces and, perhaps, frictional retardation of the "wind" close to the playa surface.

Slightly better results were achieved at a shallow, man-made waterhole near the south end of the playa. By draining some of the water to one side, a larger area of thoroughly saturated playa material (not entirely a present-day surface layer, however) was exposed, and on this two natural stones, including the 19-oz limestone mentioned above, moved several times over distances up to about 2 ft under measured wind velocities of 40–45.5 mph. This was recorded on moving picture film. Movement was slow and sometimes halting, and the mud surface was actively rippled by the air blast.

The wetted surfaces used may not have simulated natural conditions, and under the conditions of the experiments any tracks left might have been blurred or destroyed by further action of the wind. The mud used was probably less slippery than would be that composed of the fines from the uppermost $\frac{1}{8}$ in. of the playa surface, and the wind velocities attained were low compared to the gusts that undoubtedly occur under natural conditions. It should be pointed out that the windward (west) side of the playa is paralleled by a steep narrow ridge rising over 1500 ft above its surface (see USGS Topographic Map of the Ballarat Quadrangle) the abrupt ends of which, especially at the south, nearly coincide with the north and south ends of the playa. West of this ridge is the 10×20 mi expanse of Saline Valley, with a northwest-trending floor 1500 ft lower than Racetrack Playa. This topographic situation favors crowding of flowlines over the southeast rim of Saline Valley, and turbulence around the ends of the barrier ridge may account both for peak gusts of high velocity and the variable direction of the tracks.

The presence of mud flakes in front of some rocks suggests that movement took place (at least in these cases) while the flakes were still discrete, owing either to lower permeability or to their being held together by algal filaments. In other cases the optimum conditions might be (as suggested to me by Robert P. Sharp) those existing when the playa has been well soaked, frozen, and has just begun to thaw, thus yielding a thin surface layer of thoroughly saturated mud supported by frozen ground below.

Last, it should be reported that a tissue paper-like film was peeled off some of the tracks, especially at spots where it looked as though the rock had stopped for awhile (and in many instances had also changed direction). In the laboratory J. D. Laudermilk was able to revive this "pond paper," and he reports it is the blue-green alga *Microcoleus* sp. Similar fibers permeate the curled mud flakes occurring outside the tracks. *Microcoleus* filaments are described as having a "... homogeneous sheath of an extremely gelatinous nature" (*3*). Perhaps this material is an important lubricant.

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S-Acetyl Pantetheine (Acetyl LBF)[1]

THE importance of acetyl coenzyme A (*1–3*) (acetyl CoA) as a biological acetylating agent, together with the description of other S-acetyl compounds (*4, 5*) possessing acetylating power for such acceptors as hydroxamic acid, has prompted us to attempt the synthesis of acetyl pantetheine (acetyl LBF), which may be viewed as a model compound of acetyl CoA. S-acetylthiophenol ($C_6H_5SCOCH_3$), which was employed by Wieland and Bakelmann for the preparation of acetyl glutathione (*5*), was found satisfactory for the synthesis of acetyl LBF.

Pantetheine was prepared through condensation of β-aletheine (N-β-alanyl-2-aminoethanethiol) with (—)-pantoyl lactone (*6*). A mixture of 12.9 g acetylthiophenol in 30 ml methanol and 5 ml water was adjusted to pH 3.0 with hydrochloric acid. The solution was added to 2.4 g of freshly prepared pantetheine (kept in the reduced state under nitrogen) in a methanol solution. The homogeneous mixture was allowed to stand at room temperature for 5 hr under nitrogen. The solvent was then distilled off *in vacuo*. Excess thiophenol was removed by three successive ether extractions. The residue after extraction was dried overnight in a vacuum desiccator at 0.01 mm pressure. Yield, 2.0 g of pale yellow oil. The active acetyl content corresponded to the bound pantothenic acid, as shown in Table 1. These data revealed that the product was about 95% pure. It readily acetylated hydroxamic acid. Acetyl LBF was at least as active as LBF in supporting the growth of *Lactobacillus bulgaricus*. This was presumably due to hydrolysis to LBF. Acetyl LBF gave a positive nitroprusside test (in NaCN and concentrated NH_4OH) slowly upon standing, in contrast to the immediate reaction produced by LBF.

TABLE 1

THE ACETYL AND PANTOTHENIC ACID CONTENT OF ACETYL LBF*

	Acetyl (*7*) (μ mols)	Bound pantothenic acid (*8*) (μ mols)	Molar ratio of pantothenic acid to acetyl
Found	178	180	1.01
Theoretical	189	189	1.00

* 60.4 mg of the product was dissolved in water for analyses.

By the same method acetyl CoA in purity of about 60% was obtained from a sample of CoA, 75% pure. The further study of the preparation, as well as the biological behavior of acetyl LBF and acetyl CoA, is in progress.[2]

[1] Paper No. 12 of a series on pantothenic acid studies. This work has been supported by the Nutrition Foundation., Inc., the Eli Lilly Laboratories, Inc., the Abbott Laboratories, Inc., and the Office of Naval Research, Contract NR 123-058. Published with the approval of the Monographs Publications Committee, Oregon State College, Research Paper No. 213, School of Science, Department of Chemistry.

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[2] J. Baddiley and E. M. Thain have prepared acetyl LBF through reaction of the sodium salt of pantetheine with acetyl chloride. (See communication following.)

IT has been shown that certain thiolacetates acetylate amines under very mild conditions (*1*). As this was of interest in connection with the mode of action of coenzyme A, the compounds examined were acetyl derivatives of 2-mercapto-ethylamine and its β-alanyl amide. This series has now been extended to include S-acetylpantetheine, the synthesis of which is described here.

When a solution of pentetheine in methanol was treated with 1 *M* sodium methoxide followed by exhaustive removal of solvent *in vacuo*, an S-sodio derivative was obtained. To a suspension of this in anhydrous dioxan was added 1 *M* acetyl chloride with vigorous shaking at room temperature. After stand-