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**Cover:** Spectacular Valles Marineris, the Martian super-canyon that would span the United States, is the focus of this Viking I Orbiter photomosaic, taken Feb. 22 from 32,450 km up. The channel Kasei Vallis winds through upper center, with the great volcanoes (N to S) Ascraeus, Pavonis and Arsia Mons at left. Sub-spacecraft point is longitude 71.71°, latitude -10.45°. For more Mars via Viking, see p. 89. (Photo: NASA/Jet Propulsion Laboratory)

<b>Publisher</b>	E. G. Sherburne Jr.
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**Editorial and Business Offices**  
 1719 N Street, N.W.  
 Washington, D. C. 20036

**Subscription Department**  
 231 West Center Street  
 Marion, Ohio 43302

Subscription rate: 1 yr., \$19.50; 2 yrs., \$34.00; 3 yrs., \$47.50. (Add \$3 a year for Canada and Mexico, \$4 for all other countries.) Change of address: Four to six weeks' notice is required. Please state exactly how magazine is to be addressed. Include zip code. For new subscriptions only call: (1) 800-247-2160.

Printed in U.S.A. Second class postage paid at Washington, D. C. Title registered as trademark U. S. and Canadian Patent Offices.

Published every Saturday by SCIENCE SERVICE, Inc. 1719 N St., N.W., Washington, D. C. 20036. (202-785-2255) ISSN 0036-8423

# LETTERS

**In testing, nothing like the real thing**

Dr. McCullough is properly cautious in her claims for the applicability of information gathered from experiments with a copper manikin (SN: 6/21/80, p. 396). The values for thermal insulation determined by such a technique are correct in a physical sense and they are used frequently in estimating the thermal adequacy in clothing ensembles. But these values are physical and inanimate in nature and the human body in its adjustments to thermal stress responds actively through its physiology.

Physical data alone are inadequate to predict the physiological response(s) of the human being. They are based on the very special conditions of the steady state of an inanimate object, conditions that do not apply to the living human being.

Human variability renders these physical data of limited application to the individual consumer and may in fact be misleading. Age, weight, height, sex, level of activity, all contribute to an individual's thermal responses. The conflict between thermal perception (comfort) and thermal balance (body heat content) is well known. Anyone who has shovelled snow is aware of the paradox of sweating with painfully cold hands and feet. A secretary clad in slacks and a sweater, typing with bare fingers on a machine at 65°F will experience a lesser but similar effect. In the cold, two conflicting examples are shivering with warm hands and feet, and painfully cold extremities with a higher than normal core temperature. Cold tolerance limits for the human being are usually determined by the temperature of the extremities.

The pursuit of a standard for determining and stating the comfort range of clothing is a worthy (and difficult) one. Experiments with human subjects, of different sex, varying body builds at different levels of activity, are time consuming but truly informative for determining clothing insulation values and thermal comfort limits. They provide information that is impossible to obtain in experiments with inanimate apparatus. The copper manikin is at best an apparatus for comparing the physical quality of thermal insulation of one garment or ensemble with that of another. Not only is Sam brainless as you point out, he has no physiology whatsoever. Very simply, copper men do not get cold toes.

William C. Kaufman, Ph.D.  
 Green Bay, Wis.

**Twixt core and crust**

I, too, feel as though each day is slightly shorter than the preceding day (SN: 7/26/80, p. 55). However, I sincerely hope that one contribution to the day's demise is *not* arising from the inference that *the earth's core is rubbing against the planet's crust!* If such were the case,

our days would not only be shortened, but extremely numbered, as well!

Hopefully, the "geologists" measuring total fluctuation contributions will review their beginning geology notes and realize that the core of earth is separated from earth's crust by approximately 2,900 kilometers of mantle material.

However, I can envision such frictional influence via core-mantle interactions.

As this is my first editorial contribution to SCIENCE NEWS, I would also like to applaud your reporting efforts. SCIENCE NEWS serves an increasingly vital role of stimulating interdisciplinary interest among all the sciences and I consider each issue a pleasant interlude in my weekly regimen. Keep up the excellent work!

William L. Mansker  
 Albuquerque, N.M.

**Endorphins and mania**

As a drug-controlled manic-depressive, I was especially interested in your articles "Endorphins: Up with acupuncture..." and "down with migraine headaches" (SN: 6/21/80, p. 390). I have a suggestion that might need mentioning.

"Combatting pain and enhancing pleasure"—endorphins seem apt candidates for vectors in mania. Depression is like unlocalized migraine, inhibiting, even paralyzing. Against this low point, mania renders every experience pleasurable beyond reason. When I was manic, I forced my experience toward extreme stimulation, and my panic, fear, grief, and happiness were so exaggerated that they all seemed pleasurable in the same intense, dramatic, way. This sameness suggests mania's chemical rather than cultural etiology and an endorphinlike pleasure effect. This whole parallel leads me to suspect a link between endorphins and mania.

If this suspicion works out directly, endorphins in spinal fluid should be low in the depressed, medium in controls, and high in the actively manic, perhaps extremely high. One eventual purpose for this testing is to find a remedy that does not limit one's functions (make one seem less alive) as thiorazine and its relatives do. (I cannot speak for lithium since it did not work for me.)

(A tech writing instructor with background in English — another not-so-typical SN reader.)

Richard Gardner  
 Menomonie, Wis.

**Kindred spirits**

How nice to see the letter from Vickie Speaks (SN: 5/31/80, p. 339)! I, too, am a forty-year-old housewife, mother of two, although not (so far as I know) about to become a grandmother. I, too, read my SCIENCE NEWS within fifteen minutes of getting it — before my older daughter snatches it. In our family, *she* is the "astrophysicist" while I specialize in biomedicine.

I, too, hold onto every copy of SN — when I can scap it back from my kids — and talk about the articles. And my subscription was also a most wanted present: for Christmas.

Want to run that survey again?

Laurie Sparer,  
 Minneapolis, Minn.

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