

PHIMSY

Practical surface science

My monthly mission is a simple one: to frustrate the efforts of the editors who try to take back the little corner from which I talk to my friends. But William E. Danforth, one of you anointed who works at the Bartol Research Foundation, has found a more exalted purpose. "Our mission," he writes, "is to seek Truth, Beauty and the Real." Even so he can look down from his high and lonely tower to think of practical matters. Aside from its contributions to Truth and Beauty, he says, surface physics might deal with some everyday problems if anybody asked it to. For example:

Put some oil in a frying pan. Heat it vigorously, and you will see little circular patches where the surface looks oily but the liquid oil runs away. Explanation: Oil molecules have bonded to the metal; their bonds have become saturated, and the molecules are oriented so that they no longer attract the molecules in the liquid. Between the bonded oil and the liquid oil the relation is like the usual one between water droplets on an oily surface. If we carried on some experiments, says Danforth, we might make some discoveries. Does the patch still show its outline when we cool the pan and add oil until the liquid runs over the patch? What happens when other molecules—from paraffins to those of fatty-acids—are substituted for oil?

Practical challenge number two: While the wife is taking a shower, the mirror fogs so that the husband shaves with one hand and wipes the mirror with the other. A cure is to rub on soap and polish with a soft cloth. Now the molecules that used to stand in droplets because of weak attraction to the glass attach to the soap and spread out with it in a transparent film. The phenomenon persists until someone is silly enough to wash the mirror and take off the soap.

And one more question: Why do metals "smell hot"? The odor is the same whether you are turning on a normally idle steam radiator, an infrequently used office heater or the car heating system that has been resting through a few days. Presumably the odor is made up of some combination

of the oxygen, nitrogen, carbon-dioxide and water molecules that the metal has been adsorbing from the atmosphere. But since all of those substances are odorless, what kind of a combination would smell hot? With one or two good grants, says Danforth surface physics could solve a problem like that one.

I've always liked an everyday practical man, even one who looks down at me from his alabaster tower.



SEEN CARBON 14 LATELY? From state highway 36 in central Texas you just turn right and drive a few miles. Virgil E. Bottom of McMurry College sent me the picture of the sign.

We take to the air . . .

Are you getting your copies of **PHYSICS TODAY** earlier lately? If you live in Europe, North Africa or the Middle East, the explanation is our new air-freight service that is delivering all journals of the American Institute of Physics (and its illustrious magazine **PHYSICS TODAY**).

Under an agreement with KLM airlines, copies go by air from the printer to Amsterdam. Address labels go from the computer at AIP to Amsterdam. Envelopes are manufactured in Europe and sent to Amsterdam. Envelope, label and issue meet at the Amsterdam airport, where KLM puts them together and sends them along by surface mail. Less than a week later the most distant subscriber in the airfreight area is supposed to receive his copy.

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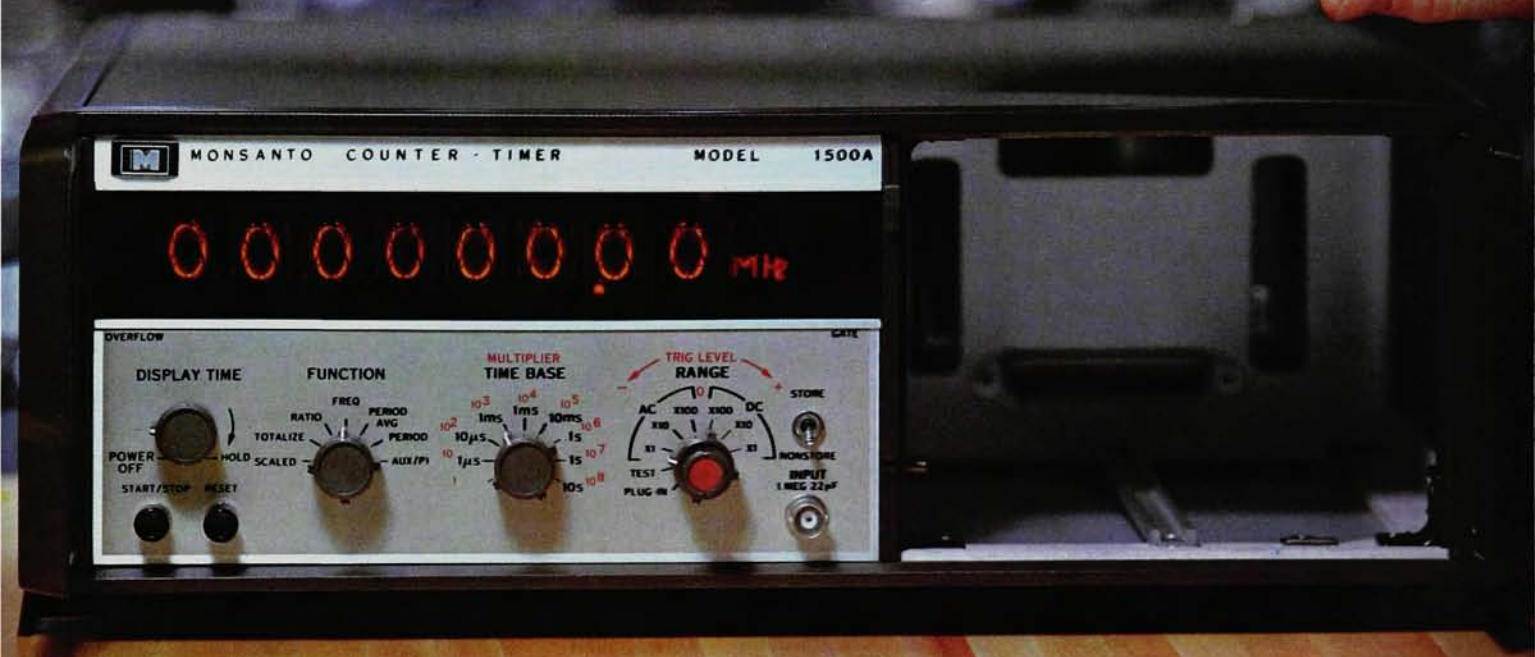
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... and stall on the ground

On the other hand, if copies are late, blame flu, snow and strike. When I compare the list on page 5 with other magazine staffs, I wonder how six writers, three artists and two secretaries (and I) ever catch up after a sick day. Adding to flu days came the Northeast snowstorm that kept most of the staff home for one day and caused further trouble afterward.

To top my friends', the editors', worries, their printer went on strike. The February issue was produced partly by him, partly by PHYSICS TODAY people, partly by another printer. March was set in New York, printed in the Midwest. April? We don't know. Forgive my friends their errors and be surprised that this issue of PHYSICS TODAY got to you at all.

The earth is still flat

The flat-earth people have demonstrated to me how the lunar astronauts got the strange illusion that the earth is a globe. Now I understand that they are happy and you scientists are happy too.

After all, the two sets of ideas are not in conflict. Flat earthers and disbelievers in special relativity want to be right about the facts they assert. Meanwhile science is concerned only with the question, "What result will occur if I perform an operation like this?" The scientific challenge is to find that set of assumptions about physical laws with which one can make predictions most simply and accurately.

So now we know. The earth is flat, but the scientific calculations work out more easily if we pretend that it is a globe.

Perchance to wake

"Poets have dreams," said a poet recently, "—to explore the continents and the heavens, to fly through air and space, to talk and see at great distances. Science make these dreams come true, and then the poets are mad at Science for doing so." □

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