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## Dither

When working, early in World War II, on antiaircraft computing and gun-laying devices, I learned from British colleagues a new use of an old word. When building such devices, they often included a small eccentric or vibrating member which kept the whole mechanism in a constant state of minor but rapid vibration. This they called the "dither."

The purpose, once one thinks a moment, is perfectly clear. Kinetic friction is less than static friction. If the parts are constantly in slight motion, then the whole device is alert, is on the jump, is ready to respond promptly to the earliest beginnings of forces seeking to move the gun, the little dither gimmick preventing any sluggish delay caused by static friction. The same phenomenon arises in other connections. For example, the types of flight instruments which are dependably responsive in an aircraft with reciprocating engines and a good deal of resulting general vibration might tend to stick or respond tardily in jet aircraft with their almost vibrationless flight.

We need a certain amount of dither in our mental mechanisms. We need to have our ideas jostled about a bit so that we do not become intellectually sluggish. The British are good at this, too, and use Hyde Park corner, His Majesty's Loyal Opposition, and a variety of other techniques to make sure that mental static friction does not dominate.

It is a wonderful thing to have in science fresh, unorthodox, nimble, and vibrating minds. The recent phenomenon of Edwin Land's essentially 17th-century type of discovery in the field of color vision is an excellent case in point. This really shakes every scientist, and in so doing it benefits him.

The same consideration, I think, furnishes an extremely powerful argument for carrying out as much basic research as possible under circumstances which involve eager young persons. My scientific godfather, Dean Charles Sumner Slichter of the University of Wisconsin, used to say that every laboratory ought to have "one damn fool who doesn't know yet what you can't do." When a professor who does research also has the marvellous opportunity of teaching elementary courses he finds that the contacts with the youngsters constantly jostles his own mind. It may at times put him in a dither, but that is good for him.—WARREN WEAVER, *Alfred P. Sloan Foundation, New York.*