valuation of the dollar, instead of devaluing themselves in partial or even complete reprisal. If they take the latter action, we will at best be left about where we started—and with international confidence in our currency badly shaken. If confidence is shaken, continued movements out of the dollar will again ensue—initiated both by foreigners and by Americans—and again our balance-of-payments pressures will be intensified, not reduced.

JAMES W. ANGELL
Department of Economics,
Columbia University, New York 27

Trap Water as well as Tap Solar Energy

The report "Weather control: use of asphalt coatings to tap solar energy" [*Science* **139**, 226 (18 Jan. 1963)] was of great interest. Assuming that the theory advanced has real potential, I should like to suggest that the black coating applied to earth surfaces be upgraded so that it provides a reasonably tough watertight covering. This being done, the black surface—in addition to tapping solar energy—could then be used to trap water.

If all the water that falls on an area were intercepted and conveyed to a storage structure, large quantities of high-quality water could be collected, even in arid regions. For example, in an area where the annual rainfall is 8 inches there are 217,800 gallons per acre; for 12 inches there are 326,700 gallons and for 18 inches, 490,050 gallons.

It has been demonstrated that by covering the ground with watertight materials (asphalt-coated fabrics, butyl rubber sheeting, and so forth) essentially all the precipitation in an area can be intercepted and collected (*1*). If the water collected is to be useful, it must be stored. Through the use of membrane-lined reservoirs and bags this can be accomplished at a lower cost than by the conventional methods of the past.

Should a study be undertaken to test the projected theory for tapping solar energy, water development should be considered as well. Research underway at the U.S. Water Conservation Laboratory, Tempe, Arizona, has shown that cationic asphalt emulsions are potentially useful for stabilizing and waterproofing soil for water development or harvest (*2*, *3*). The ground cover

method of developing water where unproductive land areas are available can be more economical than desalinization of ocean water, particularly for small isolated water needs. The unit cost of water thus developed is not predicated on multimillion dollar facilities or low-cost energy sources, as with desalinization methods, and is relatively the same for large or small developments.

C. W. LAURITZEN

Soil and Water Conservation Research Division, U.S. Agricultural Research Service, Logan, Utah

References

1. C. W. Lauritzen, *Crops and Soils* **13**, 7 (1961).
2. L. E. Myers, "Water Harvest." Proceedings of the 16th Annual Nevada Water Conference.
3. "Study and Investigations of Use of Materials and New Designs and Methods in Public Works," Committee Print No. 6, 87th Congress (Government Printing Office, Washington, D.C.), pp. 11–18.

Bench vs. Desk:
Dilemma for the Creative Scientist

There is a growing dilemma facing the scientific investigator who creates with his own head and produces with his own hands. The measure of a research scientist should be, as for any creative individual, based on creative output. But science is becoming big business and, in the process, is acquiring some business standards. One of these is an inclination to base the measure of a man's success more on leadership or executive ability than on creativity.

The recent Flemming awards are a good example of equating success with administrative responsibility and distorting the definition of a scientist. These awards are given to federal government employees under 40 years of age for outstanding achievements. The sponsors stipulate that five awards will go to administrators and the other five to scientists. This year, all the scientists receiving the award were directors or administrators and even included a contracting officer whose award was based on the scientific achievements of one of his contractees.

Has the time come when it is more rewarding to direct research than to do it? Can a scientist achieve recognition only as he acquires status in an administrative hierarchy and handles large sums of money? Does success depend on leaving the laboratory before the age of 40? The Flemming award is no isolated symptom. The administra-