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COVER: Recent research has revealed that creativity is an ability we all share. It is largely independent of IQ and certainly not the exclusive property of a few "geniuses." Also, it can apparently be learned. A two-part series summarizes research results and reviews attempts to teach creativity. See p. 268. (Montage: Dale Appelman)

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APRIL 23, 1977

LETTERS

Uranus's earlier satellites

One hopes that the history of the remarkable new discovery of Uranus's ring-belt of satellites will never become so confused as that of the major interior satellites, Ariel and Umbriel. SN's otherwise excellent story (SN: 3/19/77, p. 180) repeats the old standard account that both were discovered by William Lassell in 1851, which is nothing but the year in which the two bodies' orbits were first determined.

William Herschel discovered Umbriel on April 17, 1801, his last solar system find. Lassell discovered Ariel on Sept. 27, 1845—the first new body added to the solar system since Vesta in 1807. In 1847, Otto Struve took accurate micrometric observations of both satellites at Pulkova Observatory.

All three men's data were published at least three years before 1851. For my detailed discussion of these early sightings, with comparison to places calculated from the American Ephemeris orbital elements see *ASTRONOMY & SPACE* 3:26.

Dennis Rawlins
Baltimore, Md.

(There seem to be reasonable grounds for dispute here. In a letter dated Nov. 3, 1851, published in the MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY (made available to us by Brian Marsden), Lassell stated: "I am now quite able to announce to you my discovery of two new satellites of the planet Uranus. I first saw them on Oct. 24 . . . and, obtained further observations of them on the 28th and 30th of October and also last night." In a letter dated Nov. 13, 1851, Lassell referred to "Otto Struve's, and indeed my own former observations of an interior satellite or satellites" published on Jan. 14, 1848, and March 10, 1848. But he went on to say: "I confess I never thought my own observations sufficiently connected and definite to be worthy of the very ingenious and elaborate discussion given by my friend Mr. Dawes as the basis (in conjunction with M. Struve's observations) of an assumption of periods for three interior satellites."—Ed.)

Synthesis of two cultures?

To add a bit to the "Two Cultures" comments that appeared in recent issues: Most of the contributors deplore the dichotomy and seek for some "synthesis," and most express some degree of disillusionment

with the culture of science chiefly because of relativity, quantum and uncertainty.

These arguments neglect the consideration of what could such a synthesis be like? How can there be a harmony established between the principle that human knowledge about the universe can be based only on verification, and the belief that knowledge can be obtained by revelation, intuition, introspection and the like? One may as well expect a synthesis of Christian Science and modern medicine. If we have a "synthesis" just what are we to do? Inject a bit of Faith in microbiology or quantum physics?

If the act of observing modifies our results—again so what? All we are entitled to conclude is that our knowledge of the universe is not absolute. But since when have empiricists been concerned with absolute knowledge, "ultimate truth" or "reality behind reality?" If we can not know both the velocity and position of a particle, so we can't. That does not imply that some intuition is going to reveal it. If the culture of science has limitations it does not imply that any other culture (all well tried in our past) can remove them.

One of your contributors looks for philosophy to provide a synthesis. He fails to understand that throughout our history philosophy rested on the shoulders of science—Plato on Euclid; Kant on Newton; and at present modern philosophy is still in the process of digesting and accommodating itself to Einstein, Planck and Heisenberg.

Albert Kaplan, M.D.
Mt. Pleasant, Iowa.

Nutritional education

In regard to Gerald McHugh's letter, Feb. 12, titled, "Nutritionally uneducated," it is obvious that the participants in our educational system are being educated. What Mr. McHugh is really objecting to is the education that they are receiving.

Mr. McHugh fails to distinguish between cause and effect outside the test tube.

I would like to suggest that the food companies are not the cause of the problem, but are simply exploiting a given economic situation. Now, perhaps, all you scientists will sit down and try to figure out why someone other than the food companies finds it desirable to have our children incorrectly educated as they pass through the system. I'll personally donate \$5 for the least incorrect answer.

Thomas D. Moder
Oakland, N.J.

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