

OF THE WEEK

Another new particle?	68
Sun's acoustical reverberations	68
Redating habitation of Americas	69
'Extinct' peccary still lives	69
Autoimmunity in primates	70
Nitrogen-fixing bacteria in corn	70
New extreme ultraviolet source	71
Math abilities on the decline	71

RESEARCH NOTES

Biomedicine	72
Behavior	73
Public Health	73

ARTICLES

Science and the red tide	74
Viking's search for life on Mars	76

DEPARTMENTS

Letters	67
Books	80
Off the Beat: Apollo-Soyuz coverage	72

COVER: Beautiful, but deadly—a Canadian red tide organism (*Gonyaulax acatenella*) which causes shellfish and human poisoning, magnified 3,900 times under the scanning electron microscope. Red tide organisms off New England, Florida and California also contain toxins that are hazardous to fish and people, and Americans are starting to unite in their efforts to overcome these hazards. See p. 74. (Photo: Laurel A. Loeblich and Alfred Loeblich III, Harvard University)

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LETTERS

Science as quest

Your "unsolicited and somewhat tangential comment" appearing in the letters column of the July 12 issue was not at all tangential in terms of its perceptiveness. You have hit a nail on the head, and produced an eminently quotable quote: "Science deserves careful, critical scrutiny, like all institutions and activities. But much of the anti-science rhetoric tossed about so easily these days seems to be based on a total misunderstanding of what science is and isn't. It is the antithesis of dogma." Perhaps one of these days it would be useful to emblazon those words on the cover of SCIENCE NEWS.

Allow me to further add these words of Karl Popper's, in his *The Logic of Scientific Discovery*: "The wrong view of science betrays itself in the craving to be right; for it is not his *possession* of knowledge, of irrefutable truth, that makes the man of science, but his persistent and recklessly critical *quest* for truth. . . . Science never pursues the illusory aim of making its answers final, or even probable. Its advance is, rather, towards the infinite yet attainable aim of ever discovering new, deeper, and more general problems, and of subjecting its ever tentative answers to ever renewed and ever more rigorous tests."

The greatest problem posed by the devotees of "scientism" or fake science, whose hordes include not a few professional bureaucrats who are supposed to be scientists but aren't, is the lack of a self-critical intellectual spirit. We need more realization of this, and more "tangential comments" such as yours.

Paul J. Willis
Arlington, Va.

Power of placebos

In an otherwise excellent article on placebos (SN: 7/12/75, p. 20) you seem to give weight to a concern of some "health consumers" (whatever that means) about "the ethics of giving patients placebos rather than drugs with pharmacologically documented effects." This is obvious semantic nonsense.

Where the goal is the relief of symptoms—headache, pain, cough, depression, etc.—the patient's report of such relief is the only pharmacological documentation necessary, as valid for $C_{12}H_{22}O_{11}$ as for

aspirin, codeine, Elavil or any other chemicals.

H. B. Livingston
W. Los Angeles, Calif.

Congratulations for calling attention to the Benson and Epstein report concerning the "Power of the Placebo."

It is positively inhumane to deny a patient efficacious treatment simply because the treatment does not have an acknowledged mode of activity.

The placebo effect may or may not have a scientifically substantiated basis at this point in time. I believe that such an explanation will be found in the generation of alpha waves during the prescribed interval of twice or four times daily as the patient takes the medication. Research and treatment conducted at various pain clinics such as the one in La Crosse, Wis., might be a valuable depository for information leading toward the ascertainment of the mode of the placebo effect.

In essence, the placebo is a tangible reminder to focus on the idea of dissolving the symptom. It is an act of faith in a positive future event. Any acceptable ritual could sustain the same effect. Substitute for the sugar pill the following: meditation, positive mental attitude, or prayer. Deep breathing, a teaspoonful of honey or whiskey can work also.

In some instances, the medication—whether placebo or chemically active—may represent permission to cease to suffer, or encouragement to pay attention to a previously ignored need. It may represent forgiveness, or it may bolster a sagging ego. In some way it acts to remove an inhibitory factor leading toward destruction of the organism, rather than repair. It restores physical equilibrium.

If compassion can be put into a pill which alleviates some human suffering, if the natural powers of the body can be harnessed toward establishing health, then this Rx should be available, and acceptable.

Nancy L. George
Mokena, Ill.

Correction

The article "Collision" (SN: 7/19/75) mentioned work by "Irvin York." The correct reference is James W. York Jr. of the University of North Carolina physics department.—Ed.

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