Letters

"Thinking Claws"

In an article which appeared in *Science* [**127**, 521 (1958)], "Blocking by picrotoxin of peripheral inhibition in crayfish," by Van der Kloot, Robbins, and Cooke, the opening paragraph states: "In vertebrates, inhibition takes place within the central nervous system. But a crayfish 'thinks in its claws' "; this is followed by reference (*1*), which reads: "C. A. G. Wiersma, in *Recent Advances in Invertebrate Physiology* (Univ. of Oregon Press, 1957); P. Hoffman, *Z. Biol.* **63**, 411 (1914); **64**, 247 (1914)."

Any reader not familiar with the facts must be under the impression that either Hoffman or I is the author of this sentence. Since there is hardly any statement with which I disagree more strongly than the one quoted, I want to take this opportunity to point out that it does not occur in any of the papers referred to. It seems to have originated in Prosser's *Comparative Animal Physiology* (Saunders, Philadelphia, 1950), where, on page 597, the statement "A crab 'thinks in its claws' " appears as far as I know for the first time in literature, notwithstanding the quotes. As this is a type of slogan which apparently leaves a lasting impression in many minds, but is completely false in content, I hope this note will contribute to its everlasting suppression.

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We are sorry that Wiersma dislikes the phrase, because his studies on crustacean muscle are so important. Our reference was misleading; the disputed phrase in fact was quoted from C. A. G. Wiersma, *Symposia on Quantitative Biology* **17**, 157 (1952). As it does not appear in quotation marks, we mistakenly assumed that Wiersma was its author. I agree that—if taken literally—the "slogan" is untrue and is the stuff of poetry rather than of science. On the other hand, the phrase is more than fiction; it is a creative account of the integration of nerve impulses which goes on at a crustacean muscle. And the literature of science would be poorer if robbed of the factitious. Who would want to bury the obvious untruth, "Life has an itch to live" [C. S. Sherrington, *Man on his Nature* (Cambridge, 1951), p. 170], or never speak again of "the wisdom of the body" (W. B. Cannon), when these phrases, like the one in question, express fundamental biological ideas in an exhilarating fashion?

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Cholinesterase Inhibitors

The 7 Nov. 1958 issue of *Science* [**128**, 1136 (1958)] carried a challenging article by W. H. Orgell *et al.*, entitled "Inhibition of human plasma cholinesterase in vitro by extracts of solanaceous plants."

The authors of this article have unquestionably demonstrated the existence of a cholinesterase inhibitor in extracts of solanaceous plants. Nevertheless, in my opinion, the quite plausible possibility that steroidal amine glucosides were present was rather lightly dismissed. The possibly unintentional neglect to acknowledge this distinct possibility might lead to a rather fallacious impression on the part of the casual reader, and therefore I wish to contribute a few thoughts of general interest.

The rather simple and crude preparation of plant extracts described in the article does by no means remove solanine (or solanidine in its numerous forms) from the substrate, nor from suspicion. Furthermore, the inhibition pattern for various parts of the potato plant or tuber coincides remarkably with that of solanine distribution. I do not propose to claim that solanine, in spite of its pronounced physiological and hemolytic action, is associated or directly responsible for cholinesterase inhibition. This is more probably due to the presence of free alkaloid solanidine, the product of enzymatic or acid solanine hydrolysis. Solanine alone has been resolved into alpha, beta, and gamma fractions, the latter presumably an artifact of the extraction procedure (*1*). Apparently the alkaloid solanidine has a wider occurrence than was assumed heretofore, since it is also the building block of three forms of chaconine in potato leaves. The possible presence of these steroidal amines in potato-plant extracts must not be overlooked, particularly in view of our

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