4. W. A. van Bergeijk, *J. Acoust. Soc. Amer.* **36**, 594 (1964); D. A. Cahlander, J. J. G. McCue, F. A. Webster, *Nature* **201**, 544 (1964); J. J. G. McCue, *J. Acoust. Soc. Amer.* **40**, 545 (1966); G. K. Strother, *ibid.* **33**, 696 (1961).
5. L. Kay, *Nature* **190**, 361 (1961); *Anim. Behav.* **10**, 34 (1962); M. A. Mogus, *AD-650476, Ordnance Research Lab., Penn. State Univ.* (1967); J. Nordmark, *Nature* **188**, 1009 (1960); *ibid.* **190**, 363 (1961); J. D. Pye, *J. Laryngol. Otol.* **74**, 718 (1960); *Endeavour* **20**, 101 (1961); *Nature* **190**, 362 (1961); J. L. Stewart, *AMRL-TR-68-40, U.S.A.F. Systems Command* (1968).
6. D. R. Griffin and R. Galambos, *J. Exp. Zool.* **86**, 481 (1941); D. R. Griffin, J. H. Friend, F. A. Webster, *ibid.* **158**, 155 (1965); D. R. Griffin and A. Novick, *ibid.* **130**, 251 (1955); D. R. Griffin, F. A. Webster, C. R. Michael, *Anim. Behav.* **8**, 141 (1960); A. D. Grinnell and D. R. Griffin, *Biol. Bull.* **114**, 10 (1958); R. A. Grummon and A. Novick, *Physiol. Zool.* **36**, 361 (1963); A. I. Konstantinov, B. V. Sokolov, I. M. Stosman, *Dokl. Akad. Nauk SSSR* **175**, 1418 (1967); A. Novick, *Ergebn. Biol.* **26**, 21 (1963); *Biol. Bull.* **128**, 297 (1965); A. Novick and J. R. Vaisnys, *ibid.* **127**, 478 (1964); H. U. Schnitzler, in *Animal Sonar Systems*, R. G. Busnel, Ed. (Laboratoire de Physiologie Acoustique, Jouy-en-Josas-78, France, 1967), vol. 1, p. 69; R. A. Suthers, *J. Mammal.* **48**, 79 (1967); F. A. Webster and O. G. Brazier, *AMRL-TR-65-172, U.S.A.F. Systems Command* (1965); *AMRL-TR-67-192, U.S.A.F. Systems Command* (1968).
7. B. J. Fellows, *Psychol. Bull.* **67**, 87 (1967); L. W. Gellermann, *J. Genet. Psychol.* **42**, 206 (1933).
8. J. I. Dalland, *J. Aud. Res.* **5**, 95 (1965); *Science* **150**, 1185 (1965); ——, J. A. Vernon, E. A. Peterson, *J. Neurophysiol.* **30**, 697 (1967).
9. A. D. Grinnell, in *Animal Sonar Systems*, R. G. Busnel, Ed. (Laboratoire de Physiologie Acoustique, Jouy-en-Josas-78, France, 1967), vol 1, p. 451.
10. J. A. Simmons and J. A. Vernon, *J. Exp. Zool.*, in press.
11. J. J. G. McCue, *J. Aud. Res.* **9**, 100 (1969).
12. D. A. Cahlander, *Tech. Rep. 271* (M.I.T. Lincoln Laboratory, Lexington, Mass., 1964); in *Animal Sonar Systems*, R. G. Busnel, Ed. (Laboratoire de Physiologie Acoustique, Jouy-en-Josas-78, France, 1967), vol. 2, p. 1052.
13. P. M. Woodward, *Probability and Information Theory, with Applications to Radar* (Pergamon, New York, ed. 2, 1964).
14. The autocorrelation functions of the bat cries were obtained by using a Princeton Applied Research Corp. model 101A correlation function computer. For the use of this instrument I thank Mr. S. Letzter, Mr. W. Atkinson, and the staff of P.A.R.
15. The bat made slight head movements of a centimeter or two during the discrimination trials. These head movements altered the distance to each target by a few millimeters from one trial to another. The movements were recorded, and the envelope of the autocorrelation function was corrected to compensate for such small variations in target range after the time scale of the autocorrelation function was converted into an equivalent distance scale based on the travel time of the echoes.
16. E. Ajrapetjantz, A. I. Konstantinov, D. P. Matjushkin, *Acta Physiol. Acad. Sci. Hung.* **35**, 1 (1969); D. R. Griffin, in *Animal Sonar Systems*, R. G. Busnel, Ed. (Laboratoire de Physiologie Acoustique, Jouy-en-Josas-78, France, 1967), vol. 1, p. 273; N. Suga, *J. Physiol.* **200**, 555 (1969).
17. A. I. Konstantinov, *Dokl. Akad. Nauk SSSR* **161**, 989 (1965); N. Suga, *J. Physiol.* **203**, 707 (1969); *ibid.*, p. 729.
18. Supported by grants from the National Institute of Neurological Diseases and Stroke, by an ONR contract, and by Higgins funds allotted to Princeton University. I thank E. G. Wever (Princeton University) and D. R. Griffin (New York Zoological Society and Rockefeller University) for their advice and assistance. I also thank R. G. Busnel, J. Chase, D. Kelley, A. I. Konstantinov, J. Madey, J. J. G. McCue, J. Palin, N. Suga, R. A. Suthers, J. A. Vernon, and others for their suggestions.

19 August 1970; revised 14 December 1970

Infectious Goiter

The usual hypothesis given for the etiology of goiter in man is that the enlargement of the thyroid gland is a consequence of dietary iodine deficiency. Studies of iodine intake of goitrous and nongoitrous persons living in the same environment have not shown significant differences (*1*). The hypothesis that goiter is caused by, or is associated with, infection has not been rejected nor has it been adequately tested. Endemic goiter occurs, in general, among populations living in rural areas and belonging to lower socioeconomic groups. Several studies have shown that the drinking water of such populations is polluted with bacteria. Since shallow wells are more likely to be polluted than either deep wells or public water supplies we made the hypothesis that goiter is associated with drinking water obtained from shallow wells. In 1965 and 1966 we tested this hypothesis among people living in Richmond County in the tidewater area of Virginia. We found that there was an increased prevalance of goiter among persons from households supplied with water from shallow wells compared with people who received their water from the public supply (*2*).

Now Werner *et al.* report that IgM levels are elevated in persons with goiter as compared with appropriate nongoitrous controls (*3*). It seems to us that, although other interpretations are also possible, these data provide additional support for the infectious hypothesis. Other tests of this hypothesis (which does not exclude the iodine hypothesis) are warranted.

W. THOMAS LONDON
Institute for Cancer Research, Fox Chase, Philadelphia, Pennsylvania 19111
ROBERT L. VOUGHT
National Institute of Arthritis and Metabolic Diseases, Bethesda, Maryland

References

1. W. T. London, D. A. Koutras, A. Pressman, R. L. Vought, *J. Clin. Endocrinol.* **25**, 1091 (1965); B. Malamos, D. A. Koutras, S. G. Marketos, G. A. Rigolpoulos, X. A. Yataganas, D. Binopoulos, J. Sfontouris, A. D. Pharmakiotis, R. L. Vought, W. T. London, *ibid.* **27**, 1372 (1967).
2. R. L. Vought, W. T. London, G. A. Stebbing, *ibid.*, p. 1381.
3. S. C. Werner, S. Bora, D. A. Koutras, P. Wahlberg, *Science* **170**, 1201 (1970).

6 January 1971

Phenylthioacetate as a Stain for Cholinesterase

Booth and Metcalf (*1*) suggest the substitution of phenylthioacetate (PT) for acetylthiocholine (ATCh) as a histochemical stain for detection of cholinesterase. In the adult summer form but not the winter form of the female spider mite (*Tetranychus urticae*), PT was specific for the walls of the midgut and insensitive to $1 \times 10^{-7}M$ paraoxon; ATCh was specific for the synaptic area of the brain and the surface of nerves in formalin-fixed tissue (*2*). The cholinesterase sensitivity to paraoxon was found to vary in different strains of spider mites (*3*). Differences in histochemical staining of PT and ATCh can be expected among arthropods.

W. D. MCENROE
Waltham Field Station, Waltham, Massachusetts 02154

References

1. G. M. Booth and R. L. Metcalf, *Science* **170**, 455 (1970).
2. W. D. McEnroe, in *Advances in Acarology*, J. A. Naegele, Ed. (Comstock Publishing Associates, Ithaca, N.Y., 1963), vol. 1, p. 214.
3. W. D. McEnroe and J. A. Naegele, *Ann Entomol. Soc. Amer.* **61**, 1055 (1968).

17 November 1970

Pesticide Concentration in Seawater

The assumption of Blanchard and Syzdek (*1*) that DDT might be concentrated in natural surface films of seawater should not be left to speculation for the readers of *Science*. Apparently these and other authors (*2*) are unaware that we have reported concentration factors of up to 10^5 for chlorinated pesticides in sea slicks (*3*). Their expectation that slicks would be areas of high biologic activity was similarly confirmed (*3*). It has been our express concern that this phenomenon may lead to much more rapid concentration of these toxicants in marine food chains than would be anticipated if dilution were homogeneous.

DOUGLAS B. SEBA
E. F. CORCORAN
Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, Florida 33149

References

1. D. C. Blanchard and L. Syzdek, *Science* **170**, 628 (1970).
2. B. Parker and G. Barsom, *BioScience* **20**, 91 (1970).
3. D. B. Seba and E. F. Corcoran, *Pestic. Monit J.* **3**, 190 (1969).
4. Contribution No. 1315.

14 January 1971