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minimum flush-out Gerard estimated for rapid mixing. If temporary multiple sluices were provided within both dams at appropriate depths, the Sound could be purged through them rather than by spillover. Because of salinity-density stratification, the water flowing through the submerged sluices would be considerably more saline than surface overflow. For sluice flow to match flow into the reservoir, the water level in the fresher Sound must be sufficiently above that in the sea to more than offset the pressure head of the denser sea water overlying the sluices. Furthermore, the sluices must have sufficient capacity for the effective pressure difference to handle reservoir influx. These requirements, considering the lack of tide in the reservoir, seem practical without land encroachment.

Fresh water influx can pump out saltier water than that which would overflow the dams in the plan suggested by Gerard.

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One possible benefit that Gerard does not mention is the creation of a freshwater harbor by removal of material needed to build the dam. A dam 20 m high, 50 m wide at the top, 90 m wide at the bottom, and 12.8 km long would contain 18×10^6 m^3 of material. This is sufficient to create a hole, which might be used as a harbor, 18 m deep and 1 km square. Such a harbor near the mouth of the Connecticut River could provide sufficient capacity to relieve some of the congestion in New York Harbor.

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Chemotaxis: Divided and Defined

At one time I sided with Disraeli's "I hate definitions." Now it seems as though science proceeds by application of the razor and hone to definitions and I have switched to Emerson: "He shall be as a god to me, who can rightly divide and define." Chemotaxis, as defined by Fraenkel and Gunn (*1*), is a "directed orientation reaction," and implies something about the mechanism of the response. It is not yet clear whether the responses shown by *Escherichia coli* are directed or random in orientation, but Adler ("Chemotaxis in bacteria," 12 August, p. 708) proposes that the mechanism used by *E. coli* is the "avoiding reaction," which Fraenkel and Gunn (*2*) favor as a random *kinesis*. Since Adler's data are not concerned with responses per se, but with the end result of the responses, I suggest that these and other similar results be described as aggregation, or better yet, chemical attraction, a phrase which describes the end result with no commitment to mechanism. A general definition of chemical attraction which may be useful to others in this field is: responses that serve to bring and keep organisms within the vicinity of an attractant (*3*).

Such quibbling over words does not detract from the elegant nature of Adler's experiments. But I feel there is something to be gained by adhering to Fraenkel and Gunn's definitions of chemotaxis and related terms, or improving these definitions.

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References

1. G. S. Fraenkel and D. L. Gunn, *The Orientation of Animals* (Dover, New York, 1961), pp. 10, 53.
2. ———, *ibid.*, p. 57.
3. A. J. MacInnis, *J. Parasitol.* **51**, 733 (1965).

Of Porpoises and Bedbugs

This is a time for rejoicing. Our military researchers (who will spend $7 billion during the next year) have discovered that the porpoise can be used to find enemy submarines by differentiating metals (New York *Times*, 23 April), and the bedbug, by its "yowl" when sensing human flesh, may help to hunt the Vietcong (New York *Times*, 6 June).

An Office of Military Zoology is clearly needed to cultivate this new frontier of science. What valuable spillover for civilian technology may come from these efforts! Perhaps the new Office of Military Zoology could give us the boon of an anti-bedbug (ABB), a zoological equivalent of the anti-ballistic missile (ABM).

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