

ume, including the fuselage, to the wing volume. It was intended to indicate the feasibility of proving analytically the aerodynamic desirability of the flying wing. Joseph Foa in 1947 uncovered a calculational error in the appendix, and Sears immediately, 42 years ago, acknowledged the error. The error appeared in only a technical aside and did not bear on the conclusions of the study.

The 1945 Sears-Ashkenas analysis was so simplistic that it would not have been very significant even if the arithmetic had been correct. In 1945 little was known about optimal jet flight paths, and the cruise altitude was assumed to be constant. We now know that an optimal solution depends critically on the appropriate altitude being chosen for each configuration studied. Furthermore, a meaningful airplane design study must include the effects of structural weight and engine size requirements.

The fundamental advantage of a flying wing is that the lift-to-drag ratio of an airplane, a major measure of aerodynamic efficiency, is much improved by omitting the drag of the fuselage and the tail. Obviously the weight empty is also reduced. If the wing area required to carry the weight

efficiently is so large that all the fuel and payload will fit within it, a flying wing is clearly a winner from a performance standpoint. If, on the other hand, the wing area must be greatly increased beyond the aerodynamically desirable area in order to provide the necessary wing volume, then the increases in the wing weight, surface-area drag, and drag due to flying at an inefficient angle-of-attack-altitude combination more than negate the gains due to omitting the fuselage and tail. Even aircraft as heavy as an 800,000-pound Boeing 747 have neither the volume nor the wing thickness to accommodate its passenger load. When aircraft become so large that the flying weight justifies a wing area and associated aerodynamically permissible thickness that allows passengers to stand up in the aisles in the wing, we may see flying wing passenger aircraft. With bombers, which carry concentrated loads requiring small volumes, a flying wing may be the desirable choice, especially when radar reflection is a significant factor.

Studies of flying wings have been conducted dozens of times during the last 40 years. Certainly many different configura-

tions were studied before the design of the B-2 was chosen. A minor appendix in 1945 could not have had anything to do with the B-2 design.

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**Erratum:** In her Research News article "NCI team remodels key AIDS virus enzyme" (11 Aug., p. 598), Jean L. Marx wrote that Tom Blundell and his colleagues at Birkbeck College in London determined the three-dimensional structure of a recombinant AIDS virus protease. She neglected to mention that researchers from Pfizer Central Research in Groton, Connecticut, and Sandwich, England, made the recombinant enzyme and collaborated in the structural analysis.

**Erratum:** On page 1362 of the report "Phylogenetic stains: Ribosomal RNA-based probes for the identification of single cells" (10 Mar., p. 1360) by Edward F. DeLong, Gene S. Wickham, and Norman R. Pace, note 4 contained an error in the sequence given on lines 6 and 7. The sequence should have read, "5'-TTGYAGCC/-CGCGTGGM/IGCCCSGSM/ISA/TTTCGGGGC-3'." (The additional base T—indicated in bold-faced type—was omitted).

**Erratum:** In Joseph Palca's News & Comment article "New round in *Dingell v. NIH*" (28 July, p. 349), the Baylor College of Medicine in Houston, Texas, was incorrectly referred to as "Baylor University." Baylor University is in Waco, Texas.

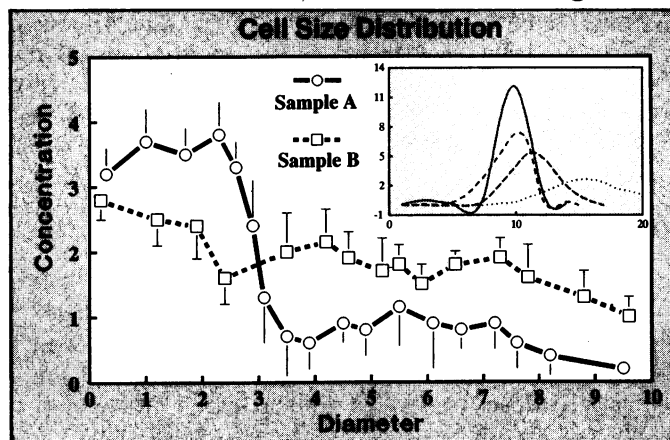
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