proof the criteria set up by Professor Huntsman it must be admitted that complete evidence is lacking. He states, in effect, that it is necessary to prove "for the individual fish" not only that it has returned to its home stream, but that it has been far from the "zone of river influence" of that stream. I should like to add that it would also be necessary for completely rigid proof that the evidence be quantitatively adequate to satisfy the requirements of statistical significance. So far as I can see such rigid observational proof could only be provided by marking young fish in their "natal river," recapturing them in the sea at a point sufficiently distant to satisfy every one that the fish was beyond the "zone of river influence," tagging or marking them at that point and again releasing and, finally, to recapture them a second time in their "natal river." Needless to say, it will be some time before much such proof will be accumulated.

I think, however, that the logic of the situation is such that we need not demand such practically impossible evidence before we can say with considerable assurance that salmon do return predominantly to their native streams from whatever distance they may go in the sea. There is ample evidence, both observational and statistical, of intraspecific racial segregation in the Pacific salmon.[2] The development and maintenance of such races could not take place if there were much intermingling of the population groups on the spawning grounds. That there is some such intermingling no one would deny; but it can not be extensive in most cases and is probably confined chiefly to races inhabiting streams not widely separated. If there is not extensive intermingling of races on the spawning grounds can we say, then, that the individuals belonging to these races do not range at sea beyond the limits of "river influence"?

I do not think so. We know that very large numbers of fish do enter streams hundreds of miles from the point of tagging[3] and under conditions that warrant the assumption that the fish are well beyond the range of "river influence"—so far, at least, as has yet been determined by hydrographic studies. But there is no evidence of such wholesale admixture of races as would result if these large numbers of salmon were indeed "lost" so that they would enter any stream within the influence of which they happened to wander. If they were so lost it would seem impossible that the fish spawning in different streams could be so racially distinct as they often are even in nearby tributaries of a single river system. The simplest theory that will adequately explain all these facts is that the salmon do return predominantly to their home streams.

Perhaps one of the difficulties is due to the use of the word "instinct" with reference to "homing" and "migration." "Instinct" need not imply, although it usually does, a reaction involving factors that are not susceptible to scientific study and analysis; it need only mean that the factors have, as yet, not been determined. It can not be doubted that some kind or kinds of gradients serve to guide the salmon, as with all other migrating animals, on their journeys. These gradients may be those more obvious ones associated with "river influence" or some as yet unrecognized gradients in the ocean.

Important practical problems in the conservation of the Pacific salmon are involved because laws and regulations have been based upon the theory that the salmon do return to their home streams for spawning and the corollary that the populations in the different streams are independent and self-perpetuating. It is to be hoped that the doubt cast by Professor Huntsman upon the validity of this theory on account of the lack of complete observational proof will not affect the present general acceptance of the theory and of the obvious requirements of conservation that it demands.

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[2] Numerous publications during the years 1912 to 1933 by C. H. Gilbert, W. A. Clemens, J. O. Snyder, W. H. Rich and others in *Bull. U. S. Bur. Fish.*, *Reports Commr. Fish. for Brit. Columbia* and *Calif. Fish and Game and Fish Bulls.*

[3] C. H. Gilbert and W. H. Rich, *Bull. U. S. Bur. Fish.*, 42: 27–75, 1925; W. A. Clemens, *Prog. Repts. Pac. Biol. Sta., Biol. Bd. Can.*, 4: 11–13, 1929; A. L. Pritchard, *ibid.*, 8: 15–20, 1931.

GLASS GLOBES ON THE PACIFIC

THE glass globes mentioned in SCIENCE for February 12, 1937, p. 179, evidently float northeastward, as well as across the Pacific. We of last summer's Hrdlička expedition to the Aleutians found eight or nine of them on the northwestern shore of Kiska Island, latitude fifty-two degrees; between 177 and 178 longitude, east.

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LINES OF INHERITANCE IN FAMILIES OF "BLEEDERS" AS NARRATED IN 1834

IN view of the date of publication an article from which I quote below may be of interest to students of Mendelism. It is entitled "Extraordinary Bleeders." It was published in 1834 in a "History of Ipswich, Essex and Hamilton, Mass.," by Joseph B. Felt.

There are four families in this town (Hamilton) called bleeders. Three of these are immediately and the other mediately, related. The number of individuals so denominated is five. They are thus named from an unusual propensity in their arteries. . . . Some of their predecessors have come to their end by wounds which are not