(2) We must consider also the possibility that a partial segregation of spawners occurs, but not a total one, that within certain limits a difference exists as to the precise spawning ground frequented. Thus the early part may predominately run early and proceed above the canyon, passing without selection into any stream that becomes available; while the late running part may enter the Harrison, the Pitt, and Cultus Lakes again without discriminate distribution. That this supposition is without validity for the lower river becomes evident from the fact previously emphasized that the fish entering Pitt Lake are so widely different from those entering Cultus Lake, and that even the different spawning beds at the Harrison can usually be shown to possess individual characteristics of unquestioned significance.

With regard to the river above the canyon, the case is not so clear, partly, no doubt, from lack of adequate material. The runs of the upper river have of late years become extremely attenuated. No material at all adequate has been obtained from any upper river tributary except the Chilcotin, and because of its remoteness and depletion we may now find it too late to secure any. A small run which makes it possible for natives to secure a few fish for food from the main channel of the upper river may yet disappear for all practical purposes when it becomes widely distributed among the tributaries. And unless material can be so secured after final segregation has occurred it is useless for our purposes. The differences which distinguish fish spawning in contiguous areas are usually of such small amount and compass that they become wholly masked when two or more races are mingled.

This may be the case even at the mouths of the main tributaries. More than one spawning district, each with its special characteristics, may be found within a given tributary. The Harrison River, for example, has at least four spawning areas. Scales and other data collected solely at the mouth of the Harrison, or in its lower course, would be valueless. The different strains would be mingled and their characteristics obliterated. The nearer the material is obtained to the final spawning grounds, the greater its value for investigations of racial divergence.

(3) Where spawning populations show distinguishing characteristics the inference is clear and unavoidable. A physiological barrier has existed, the racial habit of return at maturity to spawn in the native stream, for so long a period that minor differentiations have developed and a strain or subrace has been formed. But what are we to conclude in cases where the colonies of two distinct spawning areas present no characteristics by which we can distinguish them? Obviously, we must infer either (a) that segregation in their case has not occurred, or (b) that it has occurred but has not been effective in producing divergence between the colonies. If the first of these were true, it would signify that the "homestream" instinct was in most cases rigidly operative, while in one or more instances within the same river-basin it was wholly in abeyance.

The second supposition would seem *a priori* far less improbable. Complete segregation of spawning fish may occur, so that each individual returns to the stream in which it was hatched and reared, and yet, in certain instances, separate colonies may have failed to develop distinct methods of growth or of habit by which they can be distinguished. Failure to discover distinguishing characteristics between populations of separate spawning areas need not indicate then that their progeny will fail to return at maturity each to its native stream.

This process may have been in operation for many thousand years. The two colonies may have been wholly distinct and self perpetuating for a very long period and yet no differences have developed. If we should adopt distinctive marks for the young from each of the two streams on their downward migration to the sea, it might be shown at maturity that each stream contained spawners with a single mark only, the one that had been applied to the young from that stream. Yet the adults from the two tributaries might be otherwise indistinguishable. Negative evidence in this case proves nothing. But if affirmative evidence is found, it is conclusive. If in fact, differences are found to exist, there is no alternative to our acceptance of the home-stream theory.

Different tributaries of the same river may be quite unlike in the sharpness of the characteristics by which their colonies may be recognized. Cultus Lake, a tributary of the Lower Fraser, possesses a strongly marked race of small salmon, pale in colour of flesh, poor in oil, scarce