fish-ladder had been provided to enable them to ascend an impassable dam at that point. Fairly large catches of salmon have been made in recent years, notwithstanding the view common a few years ago that sawdust pollution had driven them all away. This pollution is excessive, and, 'except for the small amount consumed by the steam mills, the river is made the common dumping ground for all the waste of this character," said the Commissioners 'as the most convenient way of disposing of it, no regard being had to the public interests which are thus impaired.' Robust species like the salmon, sea-trout, brook trout, striped bass might not suffer harm, provided, as they are, with capacious mouth and branchial cavities: but it might be different with members of the herring tribe (Clupeidae), the shad, gaspereau, etc., with their small mouth-aperture studded with rows of erect teeth on both jaws, on the palatine bones, the vomer and the tongue, and provided with small rod-like gill-rakers, all combining to form a cage or sifting apparatus for retaining small shrimps and crustacea upon which they so largely subsist, for these fishes might apparently be readily choked by particles of sawdust clogging up their delicate oral structures. I have not been able to find, however, that any shad, gaspereaux or other migratory members of the herring family have been found dead in quantities on account of sawdust suffocation. In other words, so far as our present knowledge goes sawdust pollution if it does not affect the upper waters, the shallow spawning and hatching grounds, appears to do little harm to the adult fish in their passage up from the sea.

This opinion I find on reference to the Report of the United States Fish Commission Part VI, 1878, was expressed by Dr. H. Rasch when treating of the sawdust question in Norway. Professor Rasch is very explicit in the statement of his views, and does not shrink from claiming that 'while it is asserted that the sawdust introduced into the river from the saw-mills causes the salmon coming from the sea either to forsake its foster stream because of meeting the sawdust, to seek another river not polluted, or else, when the fish attempts to pass through the areas quite filled with sawdust, then this, by fixing itself in the gill-openings or between the gills, causes its death, yet later experience seems to entitle us to the assumption that sawdust neither causes the salmon to forsake its native stream nor produces any great mortality among the ascending fishes. The hurtfulness of the sawdust to the reproduction of the salmon is not so direct, but is exceedingly great in this, that it partly limits and partly destroys the spawning-grounds of the river.'

He goes on to give certain details of an experiment upon the effect of sawdust on young salmon transplanted from one river to another which was much polluted with this waste product. He says:—

'That young salmon bred from a race of salmon which has its own river, when they are set free in a strange river and one which is in an unusual degree polluted by sawdust, will not be prevented by this circumstance from returning to this last-named stream after their wandering in the sea, one had a convincing illustration in the great experiment instituted last year by Director A. Hanson. In olden times the salmon-shoal which had its spawning-place in Soli River could ascend to it through the then passable Soli cataract, but when they, for the sake of the increased mill-business, erected above the cataract a dam so high that the salmon could not ascend to their spawning-grounds, this salmon shoal gradually died out entirely.'

The conclusion to be drawn from such statements and experiments is this, that the gravest cause of the decline in most salmon rivers is due less to sawdust pollution which except in the breeding grounds, has principally a merely mechanical or physical effect, than to the mill-dams and other obstructions which prevent the parent fish from ascending and successfully depositing their eggs. If access is free to upper portions of salmon rivers usually less affected by sawdust and mill waste, the parent fish are not readily deterred by the pollution of the lower reaches of such rivers. The ruthless destruction of spawning fish by poachers and reckless netting is largely responsible for the decline of salmon in most cases. The question of decayed sawdust, and the effluvia resulting therefrom, is another matter. Aquatic vegetation and the minute forms of life dependant thereon are seriously injured and indeed killed off. That admits of no doubt, but this is not of great moment in regard to salmon and similar fishes, which cease to take food after entering fresh water. How far sawdust affects the smaller species of fishes is an interesting