third. On seaward slopes cedar seedlings and saplings frequently occurred as an under-story beneath well advanced second growth fir in such abundance that, if all the individuals were counted, the cedar would surpass the fir in number. The best cedar reproduction was found beneath alder and it will be discussed later under the section on the effect of various agencies upon reproduction. In other situations, such as on logged and burned areas, no young growth cedar over 10 years old was found, except in small patches, although seedlings from one to five years old occurred in large quantities everywhere and small plots containing a few square yards sometimes ran as high as at the rate of over 3,000,000 plants to the acre. They were found mostly about stumps, on decayed logs and under the protection of fallen trees. Why they do not fulfil their prophecy of a future forest is not known. It may be that they can not endure the dry summers.

EFFECT OF VARIOUS AGENCIES UPON FOREST REPRODUCTION

Logging Without Burning

Logged-over areas which have not been burned with at least a ground fire within four years after the logging operations were rather hard to find in the region explored. So far as the number of seed trees left after logging is concerned, the opportunities for the reproduction of the forest are good. No trees less than 18 inches in diameter are cut for saw-logs as a rule, and there is usually a goodly number of these in every stand. Sample strips to determine the number of trees six inches or more in diameter, left after logging, these being considered capable of bearing seed, total only five acres. On these, the seed trees averaged 44 hemlock. 22 fir, and 13 cedar per acre, 79 in all. The death rate of these in after years, if not burned, would probably not be sufficiently large to eliminate the possibility of good seeding of the ground. Of course, there are many areas, such as skidding yards and clearings about camps and mills, where no seed trees are left, but these, as a rule, are not too large to prevent seeding from the sides

The reproduction of the forest after logging without burning is rather difficult of attainment. The removal of the over-shading trees greatly stimulates the growth of the under-vegetation, such as salal, bracken fern, huckleberry, Oregon grape, and salmon berry. These grow abundantly and luxuriantly, and, together with the slash, make such a dense shade that the little fir seedlings which may spring up soon die. Cedar especially germinates abundantly under these conditions, but as stated before, does not last long. The shade is apparently too dense in such cases, even for the hemlock. One finds abundant seedlings up to four or five years old, but not such extensive dense stands as the number of seedlings would seem to suggest. It is