thirteen fir seedlings four years old, while on an adjacent plot under the same conditions, with salal waist high, no fir seedlings could be found, but there were six cedar seedlings. Numerous plots of this kind were made with like results. Cedar, hemlock and fir seedlings, however, were found in the dense larger salal stands where a fallen tree had crushed down the brush. The most luxuriant stands of salal on logged areas were on those not burned and often they were so dense as to make walking through them difficult. There was no adequate reproduction of commercial species on such areas.

Bracken Fern—The bracken fern, although very commonly distributed in nearly all conditions of shade and soil, forms the most extensive thickets on the burned areas, but it reaches its most luxuriant growth in pockets and depressions and upon moist flats, where there may be as many as 30 stalks on a square yard. These cast too much shade for the reproduction of fir, but not for that of cedar and hemlock. As generally distributed on old burns, it is not sufficiently dense to prevent the establishment of fir beneath it. In fact, with its divided leaves making about half-shade conditions, the plant makes favourable conditions for young fir. Where there were as many as 20 stalks to the square yard, fir seedlings four years old were found at the rate of 25,000 on an acre.

RECOMMENDATIONS

From a consideration of the statements on the preceding pages, it is evident that light burning of the slash and the dense undergrowth gives the best reproduction of Douglas fir. The two extremes, namely, too severe burning and no burning at all, should be avoided. This condition of affairs leads to two recommendations, namely, the regulated burning of the slash and of the dense under-vegetation, and a more rigid fire protection on the areas already covered with young growth.

Against the necessity of regulated burning of slash, it may be argued that in spite of the unregulated burning of the past, sufficient reproduction of fir to meet the requirements of the future has resulted. It appears so to the casual observer, especially if he observes only along the routes of travel, but to the investigator who studies conditions throughout the larger burned areas comes the conviction that the greater portion of such areas do not support adequate reproduction. The good reproduction is not uniform, being very patchy in its distribution. Not more than one-half of the cut-over and burned-over areas studied by the writer supports reproduction of the densities indicated in the tables on pages 9 and 11, the amount necessary to establish the commercial forest.