seed during the same season, resulting in prolific germination. Subsequent observations on the degree of survival under the altered conditions should provide evidence of considerable value.

Establishment of regeneration.—As a result of the seed-year of 1936, prolific red beech germination occurred throughout the range of that species, practically regardless of soil or light conditions. During the early summer, regeneration was as dense on mineral soil exposed to direct sunlight as on deep (and as yet moist) humus beneath the dense shade of the overmature seed-bearers. An excellent opportunity has thus been provided within a silvicultural unit for initial observations on the "survivability" of red beech regeneration under a wide range of conditions : indeed, the successful treatment of this type of forest will depend primarily upon the solution of the following problems :—(a) To what extent does beech regeneration require cover during the period of establishment ? and (b) To what extent is the value of cover dependent upon the nature of the seed bed ?

It is fairly safe to assume that a heavy mortality will eventually occur in the seedling crop situated on deep humus, for reasons suggested in an earlier paragraph ; similarly, dry summer conditions are likely to cause the death of a large proportion of seedlings growing on mineral soil in exposed sites. At this comparatively high elevation, the effects of frost is also an unknown factor. Probably ideal conditions for beech regeneration are briefly, a seed-bed composed of a thin covering of moisture conserving plants such as *Lagenophora*, *Nertera* and mosses, in close contact with the mineral soil, shelter being provided by a lower storey of shrub species (*Coprosma*, *Myrtus*, etc.) of medium density. Such conditions are obtainable in this overmature red beech forest, provided a solution can be found to the problem of excess humus,—a problem which appears to be by no means insurmountable.

1936 SEED YEAR.

An exceptionally heavy crop of seed was produced by most native trees and shrubs, and from a number of exotics, during the past season. With the exception of kauri, all the native conifers had exceptional crops : kahikatea was most conspicuous on account of its large fruit ; rimu also bore a large amount, and its arils were unusually well developed, at least in the vicinity of Wellington. All species of beech were conspicuous among the hardwoods. Among the exotic forest trees many which mature their seed in one year bore heavily.

In seeking the cause of this abundance of nature, climatic factors suggest themselves. Forestry and botanical literature contain references to the effect of drought in stimulating the formation of flower buds. These buds originate in the summer before that in which the flowers appear. As the ratio of carbohydrate to nitrogen increases, there is an increase in fruiting and a decrease in vegetative growth. Drought conditions not only stimulate carbohydrate formation but reduce the nitrogen supply by checking the intake of materials from the soil.

The summer of 1934-35 was exceptionally dry in most parts of New Zealand. Not only was the rainfall subnormal, but it was the hottest summer ever recorded. It is interesting to note that North Auckland did not experience this drought ; indeed rainfall was above the average. Seed production in this district was not good in 1936, probably less than usual according to local observations.

In the case of kauri and *Pinus* spp., in which cones take two seasons to mature, one must look for the effect of drought on seeding in the second year after its occurrence.

Abundant flowering will not necessarily result in abundant seeding owing to the possible intervention of such unfavourable factors as rain and frost at critical periods, and insect attack. Unfortunately records of seed production in this country are too meagre and unreliable to enable further correlation between seeding and climatic factors to be attempted. It is hoped that this note will stimulate observers to record such facts in this journal so that data may be accumulated.

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FORESTRY DOWN THE AGES.*

By C. M. SMITH.

I. Introductory.—Popular attempts at forest history will seldom bear the critical scrutiny of a scientific examination. They all fall into one of two classes, according to the axe their perpetrator desires to grind : the subjective viewpoint keeps man and his wants in the foreground and lauds the forest as man's free purveyor. The subjective historian sings the forest's praises in terms of cubic feet of timber, of human amenities, or of more aesthetics unalloyed, and usually ends on a Hearts-of-Oak note of braggadocio. The objective chronicler is much worse, for he cannot rid himself of the picture of the vanishing forests : and of others that have vanished from where forests never stood within historic times. In maudlin self-reproach he abjures his manhood and his writer's craft and bewails his inability

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