A MAXIMUM BASAL AREA FOR THE NORTHERN JARRAH FOREST
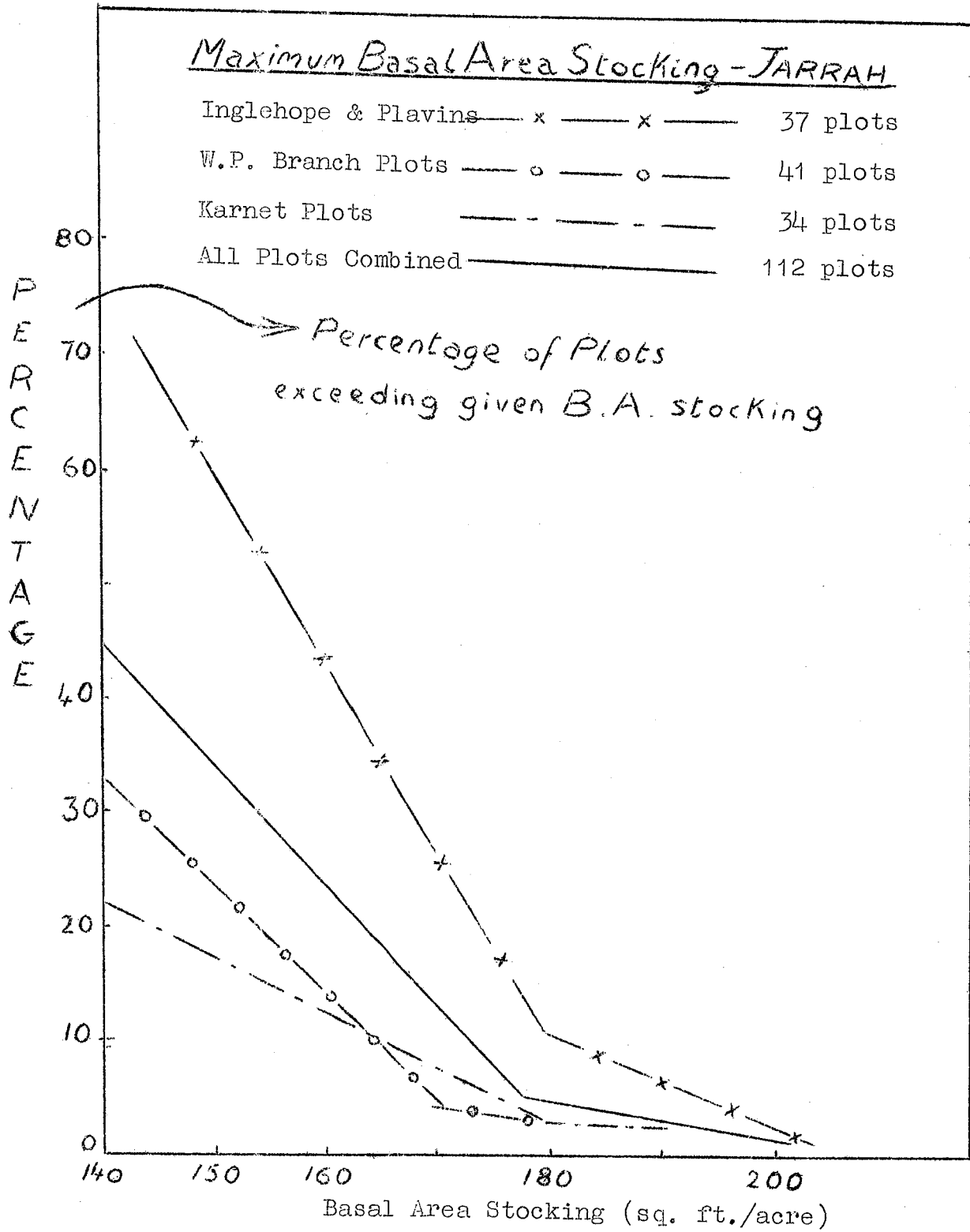
By P. C. Kimber

Possibly one of the most difficult tasks associated with thinning a forest crop is that of measurement and expression of the thinning intensity to describe the degree and type of thinning achieved or desired. A review of methods evolved has been made by Vezina (1963) and among those he describes that based on Assmann's relative basal area appears attractive for application to our Jarrah forests. In this method the intensity of thinning is described by the basal area remaining after thinning expressed as a percentage of the maximum basal area which can be achieved by the stand in the particular locality. It has been applied, with slight modification, to experimental conifer thinning both in the U.K. (Wood 1962) and to some extent in the Eastern States.

With a view to applying the method to research thinnings in Dwellingup Division, an attempt has been made to determine a general maximum basal area for the region. The determination was made from stocking, in terms of basal area, recorded on a total of 112 plots of between 0.4 and 1.0 acres in extent and originating as follows -

(a) Working Plans Branch sample plots covering the northern Jarrah forest area.   41 plots

(b) Plots enumerated in connection with the preparation of a working plan for Karnet, Dwellingup Division.   34 plots

(c) Thinning research plots, Inglehope and Plavins blocks, Dwellingup Division.   37 plots

Plot data were graphed as shown below. The points for each series of plots formed a curve of fairly steep descent and rapid flattening at the higher basal area values. To emphasise the points of maximum basal areas chosen, the plotted curves are presented as two straight lines, their junction point coinciding with that of abrupt change in the original curve. It will be noted that all these points fall within the range of stocking of 170 and 180 square feet basal area per acre, with the Dwellingup Division data nearer the latter figure which has been chosen as the maximum basal area for research purposes. It is interesting that the combined plot figures, covering the whole of the northern Jarrah forest, fall very close to the Dwellingup maxima.

It must be pointed out that this "maximum" basal area figure should not be taken to infer that areas of Jarrah forest will not be found exceeding this stocking; in the plots used in the calculation stocking up to 211 square feet/acre was found. The figure does infer, however, that in a given area this density of stocking will only be exceeded by very small portions of forest.

Maximum Basal Area Stocking – JARRAH

Inglehope & Plavins ——— x ——— x ——— 37 plots
W.P. Branch Plots ——— o ——— o ——— 41 plots
Karnet Plots ——— – ——— – —— 34 plots
All Plots Combined ——————————— 112 plots

Percentage of Plots exceeding given B.A. stocking

Basal Area Stocking (sq. ft./acre)

The problem of the "maximum" figure concept is mainly one of nomenclature and was overcome by Assmann by calling it the "average maximum basal area". A more subtle title for a similar maximum measurement was used by Stoate and Bednall (1940) in dealing with height studies in Jarrah. Their average maximum height was described as "final height" and this type of expression could well be applied to the measurement of basal area, calling it "final basal area".

References: Stoate, T.N. & Bednall, B.H. - Australian Forestry V. 1, 1940.

Vezina, P.E. - Forestry Chronicle XXXIX, 3, 1963.

Wood, G.B. - Australian Forestry XXVI, 2, 1962.

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