sales volume: goods sold at under average prices are more abundant than goods sold at above average prices (see also Fig. 1, p. 8). The negative correlation is so small that it need not be regarded as a common phenomenon.

Generally, with a rising price trend, the annual sales volume increased, but with falling prices the situation was the reverse (Fig. 1, p. 8) and thus the sales volume has indeed been dependent on the business cycle development of prices.

There was a clear positive correlation (Fig. 2, p. 10) between the opening sales and the total sales quantity for the year. It consequently seems that the early and slightly later price development of the opening sales has affected sales for shipment during the year. A distinct seasonal character was demonstrable in sawnwood sales: the sales volume was at its maximum in the period between November and January, at its minimum in the period March—September (a temporary increase was observed in the seasonal indices in the period between May and July) (Fig. 3, p. 11).

The time of the sales made to different countries differed little judged by quarterly statistics (Table 1, p. 16). The proportion of opening quantities in sales to Holland, Western Germany and the Union of South Africa was slightly smaller than the average. Clearance sales to South Africa have also been relatively small. On the other hand, opening sales have been fairly numerous to Great Britain and Belgium and the Belgians have bought plenty of goods also from clearance sales.

It seems that the major shippers, independently of the shipper group, have generally concluded opening sales first. North Finnish shippers and the small shippers of South Finland have sold proportionately least during the last quarter. The business cycle fluctuations have affected the small shippers' time of the sales most perceptibly (Table 2, p. 19).

Spruce sawnwood sales in connection with opening sales have generally been relatively smaller than pine sales; the sales of the former, on the other hand, have been greater in the first quarter of the year. There were no differences in the proportions of the clearance sales (Table 3, p. 21).

Concerning the time of the different qualities, the poorer the qualities in question the smaller an average the proportion of opening sales but the greater they share of clearance sales (Table 3, p. 21).

Opening sales included broad sizes (except deals) and boards in relatively large quantities. On the other hand, an under average volume of broad sizes remained for disposal in clearance sales (Table 4, p. 23).
A method for establishing small permanent sample plots for ecological studies

Many research subjects call for sample plots that are small in area. Phenomena of succession, brought about by forest fire, burning-over, grazing, fertilizing, draining of swamps, lowering the surface levels of water courses etc. will serve as examples. But above all this kind of sample plot is needed in experimental ecological research. It must be stressed that this method, consisting of several consecutive inventories, will give an inexpensive and valuable aid to research — time. Although the utility of permanent sample plots is generally appreciated, the number of studies based on them is extremely small, as e.g. Oosting (1956) points out. On top of this the material is often scanty, at least with regard to

Fig. 1. A circular frame placed in position by means of the marker-skewer. An *Anemone nemorosa* association. Photo Ilkka Pukkila.

Fig. 3. Observers counting young pine seedlings in a sample plot.
Photo Paavo Yli-Vakkuri.

The author developed a method on these lines in spring 1956 when making an experimental study of the natural reproduction of forests. In this method, too, the central points of the sample plots were marked with iron skewers. But the marking of the area was accomplished by means of a circular frame. In its centre there was an aperture in which the skewer indicating the central point of the sample plot was fitted (see fig. 1). The area of the frame was relatively small, 0.16 square meters. When using a larger frame it was noticed that the counting of small seedlings, which calls for considerable care, could not be done with sufficient accuracy. The frames employed were made of a suitable material such as plywood, hardboard or metal and each time designed a little differently in an effort to find the best model (see fig. 2). The frame has been used frequently during a period of three years and has given most satisfactory results. With it sample plots can be marked repeatedly, rapidly and very accurately. On determining plant coverages and making other observations it has proved to be more advantageous to know the circumference of the sample plot than to use only the radius (see fig. 3).

Depending on circumstances, 10—20 repetitions have been used in each series of observations. The sample plots representing different experimental series have been arbitrarily placed at intervals from one another. The skewers used as markers, 5/16" in diameter and 60 cm long, have usually been placed at a distance of 2—3 meters from one another. When this distance is used, the observers, who often lie outstretched on the ground, do not damage the adjacent
sample plots. The use of metallic skewers and number plates for marking sample plots seems to guarantee that the observation network will be preserved even if radical changes, such as fellings, grazing, burning-over etc. should occur. It is also worth noting that this method of marking does not effect the environmental conditions. As the required material can be made before going to the site, the sample plot network can be established without delay. In some studies this may be an important factor. Moreover, when the equipment is no longer needed for a certain study, it can be utilized for other studies. The method can, of course, be developed further. The frame can be a folding one. It can be fitted with a compass so that it can be anchored accurately to facilitate repeated mappings etc. The same result can be achieved, of course, by using two skewers to determine the object of observation; one of them is placed at the central point of the frame and the other, for instance, fitted in a notch in the rim of the frame. Thus with two markingskewers or with one skewer and a compass we can already determine the position of a quadrangular frame too. A larger frame can be used, of course, if required.

In plant ecological and plant sociological studies a great many observations continue to be made on the basis of single inventories. One of the aims of the author for reporting the method referred to above, has been to draw research workers' attention to the fact that this kind of observation can be made — by using the right method — so as to make it possible to carry out repeated inventories in the same places. It would make research work considerably more effective. There is an abundance of suitable research subjects which are well worth the trouble. In view of the fact that the forest site types of Cajander (1909) will be 50 years old next year, the importance of permanent objects of observation may be emphasized by a relevant example. Cajander defined forest site types in their normal state, i.e. such as they appear in regularly developed forests when the stands are exploitable and of normal density. But he stressed, too (cf. Cajander 1949), that it is important also to describe the nature of those accidental changes that different factors cause in the normal picture of forest site types. A great deal of valuable research work has been carried out in this respect by Finnish scientists. But so far out forest site types have not been uniformly described even as regards the different stages of normal series in accordance with the age of the stand, not to mention the fact that the accidental changes, which fellings, forest fires or burnings-over, and grazing etc. cause in these series, have not been sufficiently elucidated. When taking into consideration the significance of forest site types in Finnish forestry and forest research, the above mentioned gaps are a serious matter. These can hardly be filled by comparative studies alone. Material based on repeated inventories is also required.