

AN ABNORMAL CONE OF PINUS LARICIO.

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It has been customary to try to explain the homology of the ovuliferous scale in the Conifers by the study of monstrosities. So the chance discovery on May 12 of a cone of *Pinus laricio* which was both carpellate and staminate led the writer to look up again the numerous theories which have been advanced to explain this structure.

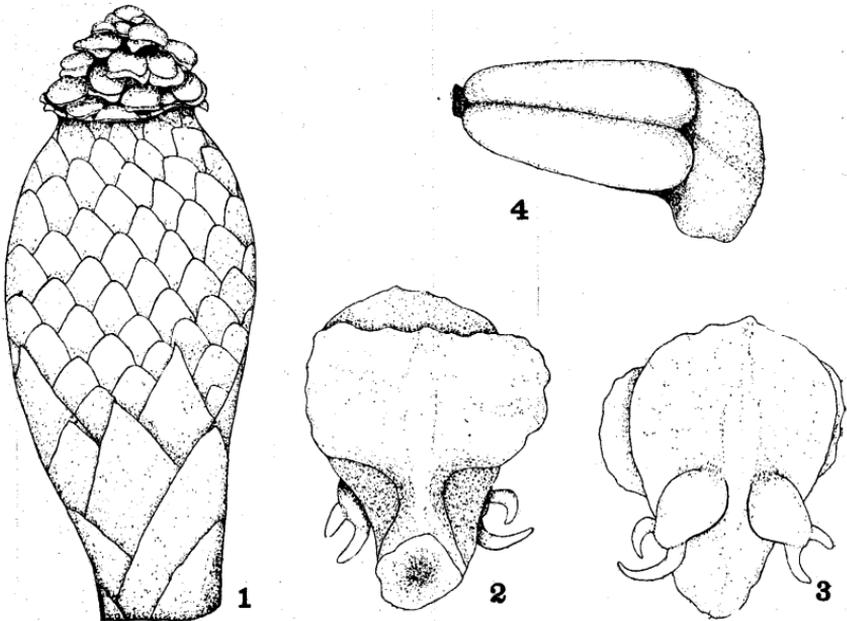


FIG. I.—1. The abnormal cone. 2. Under side of carpel showing carpellate bract and ovuliferous scale. 3. Upper side of same. 4. Under side of stamen.

The cone was one of two growing in the normal position of the staminate cone and consisted of two well marked zones, the lower or staminate part making up about four-fifths and the upper or carpellate part making up about one-fifth of the entire cone. The other cone was staminate only. As a closer examination showed that both kinds of sporophylls were perfectly normal, their description will correspond to that of those on other cones. The carpellate part bore bracts on the upper sides of which were the ovuliferous scales bearing the ovules or megasporangia. The staminate part of the cone bore but one kind of scales, the stamens or microsporophylls bearing the microsporangia on the under side.

Since the homology of the stamen and the bract subtending the seed bearing scale is evident, the contention is still concerning the homology of this extra structure the ovuliferous scale. As an excellent summary of the numerous theories relating to this subject is given in Coulter and Chamberlain's *Morphology of Spermatophytes*, and as their repetition here would be entirely beyond the scope of this article, they may for convenience be condensed into the two following simple propositions:

First. The carpellate cone represents a regular branch; the bract represents a leaf; the ovuliferous scale represents an axillary stem with one or with two leaves all greatly reduced and modified and it may or may not also represent the outer integument.

Second. The carpellate cone represents a dwarf branch like the staminate cone; and the ovuliferous scale is a ligular or chalazal outgrowth of the megasporophyll or carpellate bract which corresponds to the microsporophyll.

The writer is inclined to favor the second view not only from the study of this monstrosity if any great importance is to be attached to it but also for the same reason that Bessey gives in his article in the *Botanical Gazette*, **33**:157, namely, that were we to favor the first view we would have to assume that the megasporangiate cones and sporophylls in the closely related families of *Pinales*, in some of which there is no ovuliferous scale, are not homologous.
