

Abnormal Branch of *Prunus Avium*.

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With Plate LII.

Witches' Brooms are of fairly common occurrence in our woodlands, parks, and policies. Their twiggy, compact crow's nest-like appearance readily attracts attention. They cannot by any means be called ornamental, and in the majority of cases their presence disfigures the natural beauty of the tree.

These abnormal growths are caused by various agencies. Often they are due to the attack of a fungus or an insect. The irritation set up by the invading organism at the point of attack stimulates the tissues in the immediate vicinity to very rapid and abnormal development, which results in formation of the hypertrophies called Witches' Broom. In many cases the exact nature and cause of the malady has been definitely ascertained, but there still remain a good many "Brooms" about which practically nothing is known. In fact, the list of woody plants which bear Witches' Broom appears as yet to be anything but complete. This list has, however, been considerably added to within recent years as the result of an article by Professor Tubeuf,¹ in which he pointed out that nothing was known as to the nature or cause of Witches' Broom which he had observed on the following species—beech, spruce, Scots pine, Weymouth pine, larch, elm, silver fir (a different one from that caused by *Æcidium elatinum*), Robinia, *Prunus spinosa*, poplar, and others.

¹ Tubeuf in *Naturwissenschaftliche Zeitschrift für Land und Forstwirtschaft*, July 1904, p. 295.

(Notes, R.B.G., Edin., No. XX, March 1909.)

He appealed to forest officers to send him twigs from any of these brooms which might come under their observation, in order that further investigations might be made.

Professor Solereder¹ soon after gave an account of a Witches' Broom on *Quercus rubra* L., although he was unable to determine the cause, and in addition to this he took the great trouble of going through the literature on Witches' Brooms, and gives us at the end of his article a list of all "Brooms" known to occur on woody plants and at the same time references to the more important literature concerning them, and so far as known the cause of each. This list was a most welcome and very important addition to the literature on the subject. Since then several additions have been made to this list, and no doubt more will follow.

Following upon the request by Tubeuf for information, Franz Muth² took up the investigation of broomed pear trees growing in the forest above Oppenheim on the right bank of the Rhine. He found very evident fungus mycelium in the wood of the attacked branches, but as no fructifications could be got it was not possible to determine the species. With his article Muth gives photographs of a peculiar and abnormal branch development on a pear tree near Durlach in Baden. The tree bears a thickly branched upright bush supported on a branch almost as thick as the main stem of the tree. The cause of this abnormal branch development is attributed by Muth to a rind disease caused apparently by a fungus. Although he does not call this a Witches' Broom, still it evidently belongs to the same category of diseases.

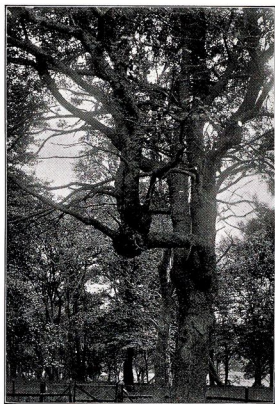
Muth's observations are interesting in relation to what appears to be a similar phenomenon which is shown in the abnormal branch growth of the specimen illustrated in Plate lii. This tree is, however, *Prunus avium*, and is growing in the policies of an estate in Midlothian. A side branch seems to have been attacked and has developed to extraordinary dimensions, forming as it were a secondary bole on the tree. On the shoot-system belonging to this secondary bole several smaller, but

¹ Solereder in *Naturwissenschaftliche Zeitschrift für Land und Forstwirtschaft*, January 1905, p. 17.

² Muth in *Naturwissenschaftliche Zeitschrift für Land und Forstwirtschaft*. Über den Birnenhexenbesen, February 1905, p. 64.

what seem to be independent Witches' Brooms, are present. These smaller brooms also occur on other parts of the tree.

The main trunk is 5 feet 1 inch in girth at 5 feet from its base. The abnormal branch bearing the brooms comes off at 8 feet 6 inches above the ground. Beyond the spherical swelling at its base is visible the attenuated apical portion of the present branch.



Borthwick—Abnormal Branch of *Prunus Avium*.