

PRELIMINARY LIST OF GALL-PRODUCING INSECTS COMMON TO INDIANA.

MEL T. COOK.

For the past two years the writer has been very much interested in gall-producing insects and in the structures produced by them. Among other very interesting phases of this problem is the question of distribution. We know very little of the distribution throughout the country and nothing of the distribution in Indiana.

My collection of galls includes over 200 species, collected in the states of Illinois, Indiana and Ohio. Those collected in Indiana are all from Putnam County and about seventy species are included. Of this number, I have accurately determined forty species. These forty species represent five orders (including Acarina) and eighteen genera. The host plants represent ten orders, twelve families and fourteen genera.

The order and families of the host plants are the following:

<i>Orders.</i>	<i>Families.</i>
Salicales,	Salicaceae.
Juglandales,	Juglandaceae.
Fagales,	Fagaceae.
Urticales,	Ulmaceae.
Rosales,	{ Hamamelidaceae.
	{ Rosaceae.
	{ Caesalpinaceae.
Sapindales,	Aceraceae.
Rhamnales,	Vitaceae.
Malvales,	Tiliaceae.
Gentianales,	Oleaceae.
Campanulales,	Compositae.

The following is a list of the insects and host plants known positively to occur in Indiana:

HEMIPTERA.

1. Hormaphis hamamelis, Fitch—Hamamelis Virginiana L.
2. Colopha ulmicola, Fitch—Ulmus Americana L.
3. Pemphigus ulmi-fusus, Walsh—Ulmus Americana L.
4. Schizoneura Americana, Riley—Ulmus Americana L.

5. *Phylloxera caryae-avenae*, Fitch—*Hicoria alba* (L) Britton.
6. *Phylloxera caryae-globuli*, Walsh—*Hicoria alba* (L) Britton.
7. *Phylloxera caryae-fallax*, Riley—*Hicoria alba* (L) Britton.
8. *Phylloxera caryae-caulis*, Fitch—*Hicoria alba* (L) Britton.
9. *Phylloxera caryae-depressa*, Shimer—*Hicoria alba* (L) Britton.
10. *Phylloxera vastatrix*, Planchon— $\left\{ \begin{array}{l} \text{(Vitis vulpina L.} \\ \text{(Vitis bicolor LeConte.} \end{array} \right.$
11. *Pachypsylla celtidis-mammae*, Riley—*Celtis occidentalis* L.

LEPIDOPTERA.

12. *Trypeta solidaginis*, Fitch—*Solidago Canadensis* L.
13. *Gelechia gallae-solidaginis*—*Solidago Canadensis* L.

DIPTERA.

14. *Cecidomyia verrucicola*, O. S.—*Tilia Americana* L.
15. *Cecidomyia pilulae*, Walsh—*Quercus* sp. (many species).
16. *Cecidomyia salicis-strobiloides*, Walsh—*Salix* sp—.
17. *Cecidomyia salicis-semen*, Walsh—*Salix* sp—.
18. *Cecidomyia salicis-siliqua*, Walsh—*Salix* sp—.
19. *Cecidomyia salicis-aenigma*, Walsh—*Salix* sp—.
20. *Cecidomyia gleditschae*, O. S.—*Gleditsia triacanthos* L.
21. *Cecidomyia solidaginis*, Loew—*Solidago Canadensis* L.
22. *Cecidomyia pellex*, O. S.—*Fraxinus Americana* L.

HYMENOPTERA.

23. *Andricus seminator*, Harris—*Quercus alba* L.
24. *Andricus petiolicola*, Bassett—*Quercus* sp—.
25. *Andricus palustris*, O. S.—*Quercus palustris* Du Roi.
26. *Andricus clavula*, O. S.—*Quercus alba* L.
27. *Andricus papillatus*, O. S.—*Quercus* sp—.
28. *Amphibolips inanis*, O. S.—*Quercus rubra* L.
29. *Amphibolips confluentus*, Harris—*Quercus* sp—.
30. *Callirhytis tumifica*, O. S.—*Quercus alba* L.
31. *Holcaspis centricola*, O. S.—*Quercus palustris* Du Roi.
32. *Holcaspis globulus*, Fitch—*Quercus alba* L.
33. *Biorhiza forticornis*, Walsh—*Quercus alba* L.
34. *Acraspis erinacea*, Walsh—*Quercus alba* L.
35. *Rhodites bicolor*, Harris—*Rosa* sp—.

ACARINA.

36. *Phytoptus abnormis*, Garman—*Tilia Americana* L.
37. *Phytoptus acericola*, Garman—*Acer saccharinum* L.
38. *Phytoptus quadripes*, Shimer—*Acer saccharinum* L.
39. *Phytoptus ulmi*, Garman—*Ulmus Americana* L.
40. *Erineum anomalum*—*Juglans nigra* L.

From the above lists it will be seen that we have representatives from every order of insects which produce galls, except Coleoptera.

Doubtless the number of gall-producing insects in Indiana will far exceed 300 species. I should be very glad if members of the Academy will send specimens to me. Specimens may be sent either fresh or dry or in formalin. Always send enough of the host plant to enable determination.

NOTES ON DEFORMED EMBRYOS.

MEL T. COOK.

It is well known that extremes of temperature will produce malformed embryos, but it is also probable that malformations may result from other causes.

Last spring the students in my class in embryology found a very large number of deformed chick embryos. The most common malformation was two or more blastoderms, but in many cases the embryos did not



develop beyond the formation of the primitive streak. The farthest developed and most remarkable deformity was in the case of two embryos so placed that anterior ends were joined and the posterior ends extending in opposite directions. Judging from the mesoblastic somites, the em-