Dates on which the Immature or Mature Sexual Phases of Ants have been Observed (Hymen.: Formicoidea).

M. R. SMITH, State College, Mississippi.

(Continued from page 251.)

June 16-30: Ponera trigona var. *opacior* (Q.) Oxford, (M.) Louisville; *Eciton* (*A.*) *pilosus* (M.) Wiggins; *Leptothorax curvispinosus* (M., Q.) State College, (Q.) Ripley; *L. wheeleri* (M. P., M. Q.) Sturgis; *L.* (*D.*) *pergandei* subsp. *flavus* (M.) Walnut; *Solenopsis xyloni* (Q.) State College, (M.) Lexington, (Q. P.) State College, (M.) Clarksdale, (M.) State College; *Strumigenys louisianae* subsp. *laticephala* (M.) West Point *Aphaenogaster treatae* (Q.) Walnut; *Monomorium minimum* (M.) Oktoc, Starkville, Itta Bena, Lexington; *Pheidole dentata* (M., Q.) West Point, (Q.) Ripley, Walnut; *Ph. vinelandica* (M.) West Point, (Q.) Ripley; *Ph. metallescens* subsp. *splendidula* (M., Q.) Sibley; *Ph. dentigula* (M. P., M.) Louisville; *Dolichoderus mariae* (Q.) Louisville; *Camponotus herculeanus* subsp. *pennsylvanicus* (Q.) Ripley; *Formica pallidefulva* subsp. *schaufussi* (M.) Dossville.

July 1-15: Solenopsis pergandei (Q.) Quitman; *Strumigenys louisianae* (Q.) Sibley; *Aphaenogaster lamellidens* var. *nigripes* (M., Q.) Cruger; *A. treatae* (M., Q.) Williamsville; *Crematogaster laeviuscula* (M., Q.) West Point; *Myrmecina graminicola* subsp. *americana* (M.) State College; *Iridomyrmex pruinosus* var. *analis* (Q.) Williamsville; *Dorymyrmex pyramicus* (M.) Williamsville; *D. pyramicus* var. *flavus* (M., Q.) Wiggins; *Pogonomyrmex badius* (M., Q.) Quitman.

July 16-31: Sysphincta pergandei (M.) Ripley; *Solenopsis xyloni* (M., Q.) Lexington; *S. molesta* (Q.) Ackerman, Longview, Starkville; *Strumigenys louisianae* subsp. *laticephala* (M.) West Point; *S. membranifera* subsp. *simillima* (Q.) Columbus; *Crematogaster ashmeadi* (M.) Longview; *C. lineolata* (Q.) Ripley; *Pheidole dentata* (Q.) Sessums, (M.) Cedar Bluff, (M. Q.) Longview; *Ph. vinelandica* (Q.) Duck Hill; *Ph. metallescens* subsp. *splendidula* (Q.) Ackerman; *Tetramorium* (*T.*) *striatidens* (Q.) West Point; *Pogonomyrmex badius* (Q.) Columbus; *Myrmecina graminicola* subsp. *americana* (M.) State College; *Brachymyrmex* sp. (Q.) Ripley.

August 1-15: Ponera trigona var. *opacior* (Q.) West Point; *Ph. pilifera* (M.) Muldon; *Ph. dentata* (M., Q.) Pickens, (M.) Belzoni; *Pseudomyrma flavidula* (Q.) Fayette; *Brachymyrmex* sp. (M., Q.) Fayette.

August 16-31: Euponera gilva (M.) Aberdeen; *Proceratium croceum* (M., Q.) Aberdeen; *Sysphincta pergandei* (M.) Artesia; *Monomorium pharaonis* (M.) West Point; *Camponotus caryae* var. *decipiens* (M.) Columbus; *Lasius niger* var. *americana* (M., Q.) West Point.

September 1-15: Solenopsis xyloni (Q.). Osborn, (M. P., M., Q.) Louisville; *Tetramorium guineense* (Q.) Pascagoula; *Pogonomyrmex badius* (Q.) Wiggins; *Stenamma* sp. (Q.) Weir; *Dolichoderus plagiatus pustulatus* var. *beutenmuelleri* (Q. P., Q.) Biloxi.

September 16-31: Ponera coarctata subsp. *pennsylvanica* (Q.) Corinth.

October 1-15: Solenopsis xyloni (Q.) West Point; *Iridomyrmex pruinosus* var. *analis* (M.) Mendenhall; *Camponotus caryae* (Q.) Jackson; *Lasius niger* var. *americana* (Q.) West Point.

October 16-31: Leptothorax fortinodis (M.) State College; *Solenopsis xyloni* (M., Q.) Mendenhall; *Iridomyrmex humilis* (M. P., M.) Aberdeen, (M.) Eupora; *Tapinoma sessile* (M.) Sturgis; *Camponotus caryae* var. *decipiens* (M., Q.) Starkville.

November 1-15: Ponera opaciceps (M., Q.) Quitman; *Formica pallide-fulva* subsp. *schaufussi* (M., Q.) Pascagoula.

November 16-30: Ponera opaciceps (Q.) Lucedale, (M.) Quitman; *Eciton* (*A.*) *schmitti* (M.) Baton Rouge, Louisiana; *Solenopsis xyloni* (M. P.) New Albany; *Iridomyrmex humilis* (M.) Quitman.

December 1-15: Ponera opaciceps (M., Q.) Ocean Springs.

December 16-31: Camponotus caryae rasilis var. *pavidus* (Q. P.) Lucedale.

General Conclusions.

One should be very slow in drawing too definite conclusions from the data presented above. In some instances there are too few records; in others there is so much variation in the dates that nothing very conclusive is offered; again, the species have been taken from such widely remote localities and from such different types of nests that the matter is made even more difficult.

In order, however, to bring out the most outstanding points in connection with the records, it would be best to discuss the subject under the following heads: (a) those ants which produce their sexual forms early in the season, (b) those ants which produce their sexual forms late in the season, and finally (c) those ants in which some of the males and females overwinter in the nest.

Some of the species which produce one or both of their sexual forms early in season are as follows: *Monomorium minimum* Buckley, *Crematogaster laeviuscula* var. *clara* Emery, *C. victima* subsp. *missouriensis* Emery, *Pheidole dentata* Mayr, *P. vinelandica* Mayr, *Pseudomyrma pallida* F. Smith, *Iridomyrmex humilis* Mayr, *I. pruinosus* var. *analis* Andre, *Tapinoma sessile* Say, *Dorymyrmex pyramicus* Roger, *Camponotus* (*Colobopsis*) *mississippiensis* M. R. Smith, *C.* (*C*) *pylartes* var. *fraxinicola* M. R. Smith and others.

Among the species which usually do not produce their sexual phases until late in the season may be mentioned: *Sysphincta pergandei* Emery, *Proceratium croceum* Emery, *Euponera gilva* Roger, and *Lasius niger* var. *neoniger* Emery. This habit seems to be more common in the subfamily *Ponerinae* than in any other subfamily of ants. That in some instances at least the sexual forms of certain species of *Ponerinae* are produced

early is shown by the records of *Ponera trigona* var. *opacior* Forel, which produced queen pupae as early as the latter part of May.

It seems to be a very constant custom among many species of *Formicine* ants for the sexual phases to overwinter in the nest. I have observed this consistently among *Camponotus herculeanus* subsp. *pennsylvanicus* DeGeer, *C. castaneus* subsp. *americanus* Mayr, *C. Caryae* Fitch, *C. caryae* subsp. *rasilis* Wheeler, *C. caryae rasilis* var. *decipiens* Emery, *C. caryae rasilis* var. *cnemidatus* Emery. *Prenolepis imparis* Say and its various varieties also have this habit as well as *Paratrechina* (*Nylanderia*) species. I was greatly surprised, however, to learn that some of the *Dolichoderinae* also frequently overwinter as adult males and queens as for example *Dorymyrmex pyramicus* Roger. In rare instances we have found sexed forms of Myrmicine ants over-wintering in the nest, as *Crematogaster ashmeadi* Mayr and *C. opaca depilis* var. *punctulata* Emery. In the southern part of Mississippi winged queens and males of *Ponera opaciceps* Mayr have been taken from the nest during January and February, which are our most severe winter months.

In winter the immature stages are usually represented by larvae.