XI. CYTO-TAXONOMIC RELATIONSHIPS

McClung (1908), in an address 'Cytology and Taxonomy,' outlined his ideas of the close correlation that could be expected to exist between the chromosomes and the structural organization of the organism. Speaking of the grasshoppers (Acridoidea), he remarked that "There are thus within the germ-cells of these animals certain structures that show specific, generic, and family characters in just as pronounced a manner as do the completed organisms wherein they are found."

To exemplify, McClung (1917) divided the species, Mesmiria bivittata into two groups on the basis of the differences in the form of one chromosome. Rehn (1919) confirmed this division and described these two groups as taxonomically distinct subspecies. McClung further claimed, "were our knowledge of cell structure in grasshopper complete enough we might erect a system of classification based upon cytological characters, just as reasonably as we have designated one using external anatomical features." He was very sure about the importance of chromosomes in taxonomic determinations and further remarked, "The essential forms of chromosomes are very definite and may serve for taxonomic determination." (McClung, 1924). After a lapse of fifty years Helwig (1958), a student of McClung, writing under the same heading on the same topic stated, "each species has its own chromosomal integration which is as characteristic and
Making use of the caryological studies, relationships of several organisms have been clarified in the past. The European species, *Gomphocerus rufus* possesses a diploid number of seventeen chromosomes. An American species, originally known as *G. clavatus*, has twenty-three chromosomes in the males. When this difference was pointed out to Morgan Hebard, he found that the external morphological characters of the American form are more similar to those of the European genus *Aeropus* than to *Gomphocerus*. *Aeropus* is also characterized by seventeen chromosomes. So it was not at all surprising to find that the American species was not congeneric with it. Subsequently, Hebard (1935) placed it in a new genus *Aeropedellus*.

Structure of the chromosomes and their behaviour and hybridization experiments have been well utilized to clarify certain puzzling relationships in Coleoptera. The eastern north American ladybird beetle *Chilocorus stigma* has been shown to comprise an assemblage of sub-units that display what Smith (1959) described "sequential chromosome polymorphism" through incorporation of centric fusions (Smith, 1956b, 1957 and 1959). Smith (1965a and 1966b) clarified a similar situation in *Exochomus*, another Coccinellid genus, from India and Pakistan and established at least five species in an assemblage which was classified into two species on the
basis of external morphology. Again, it was only on the basis of chromosome studies that the puzzling status of Curculionid genera _Hylobius_ and _Pissodes_ was finally settled (Smith, 1956a, 1959, and 1962b). Drouin, Sullivan and Smith (1963) identified a weevil of the genus _Pissodes_ as _P. terminalis_ only on cytogenetic basis. They remark, "Although specimens from Saskatchewan were grossly different in elytral pattern from California, it was identified as _terminalis_ on cytogenetic basis."

Prevett (1966) divided the eleven species of _Caryedon_ known to occur in Northern Nigeria into two groups on the basis of their biology and the division was supported by certain adult and larval characters (Prevett, 1965 and 1966). The members of one group to which _Caryedon gonagra_ belongs, feed on peanuts and the other seven species feed on Combertum fruits. Sanderson (1967) studied the cytology of _C. gonagra_ and described the 8AA + Xyp caryotype for males. Yadava (1969) added cytological account of a few more species of this genus and three more species have been investigated under the present study so that now we have a cytological account of seven species. Of these, six species are uniform in possessing 8AA + Xyp male caryotype but an unidentified species from Port Blair (Andaman Islands) is peculiar in possessing 9AA + Xyp male caryotype which is typically Polyphagan. This clearly supports Prevett's earlier contention of two groups
of Caryedon. A more detailed study of some more species of the genus may further clarify the situation and may be useful in resolving certain problems in the taxonomy of Bruchidae.