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A Review of the Spider Genus *Anapis* (Araneae, Anapidae), With a Dual Cladistic Analysis

NORMAN I. PLATNICK[1] AND MOHAMMAD U. SHADAB[2]

ABSTRACT

The presence of an anterior labral spur is suggested to be synapomorphic for the Anapidae. *Anapis* is redefined to include those anapids with a procurved posterior eye row, medially excavate chelicerae bearing a distal plate, a ridged palpal conductor, and a recurved retrolateral apophysis on the male palpal patella; at least some species build orb webs. The genera *Epecthina* Simon and *Epecthinula* Simon are newly synonymized with *Anapis*. A key, diagnoses, and supplementary illustrations are provided for the 21 known species, found from southern Mexico and Jamaica south to Peru and Brazil. Because more than half the species are known from only one sex, males and females were subjected to separate cladistic analyses; despite the availability of only an extremely small sample of characters, the resulting cladograms are compatible. A technique developed to combine their information generated eight specific predictions about the morphology of unknown specimens that can serve as tests of the hypothesized relationships. Fifteen new species are described: *A. heredia* and *A. monteverde* from Costa Rica, *A. anchicaya*, *A. saladito*, *A. calima*, *A. digua*, *A. felidia*, *A. atuncela*, *A. guasca*, *A. meta*, and *A. amazonas* from Colombia, *A. choroni* from Venezuela, *A. chiriboga* from Ecuador, and *A. castilla* and *A. caluga* from Peru. *Pseudanapis discoidalis* Balogh and Loksa is transferred to *Anapis*. The male of *A. keyserlingi* Gertsch is described for the first time.

INTRODUCTION

This paper, the third in a series on the spiders placed in the family Symphytognathidae prior to its relimitation by Forster and Platnick (1977), reviews the species previously assigned to the genera *Anapis* Simon, *Epecthina* Simon, and *Epecthinula* Simon. These spiders were first described by Keyserling (1886), who established the genus *Amazula* for a Brazilian species; since that name was preoccupied in the Coleoptera, Simon (1895) provided the replacement name *Anapis*. Simon (1895) also described a second species of the genus from Algeria, indicated that he had additional material from New Caledonia and Venezuela, and illustrated the Venezuelan specimens. The Algerian species was transferred to *Pseudanapis* by Simon (1905), and Gertsch (1941, p. 4) concluded that none of Simon's material was actually attributable to *Anapis*:

The generic diagnosis for *Anapis* as given by

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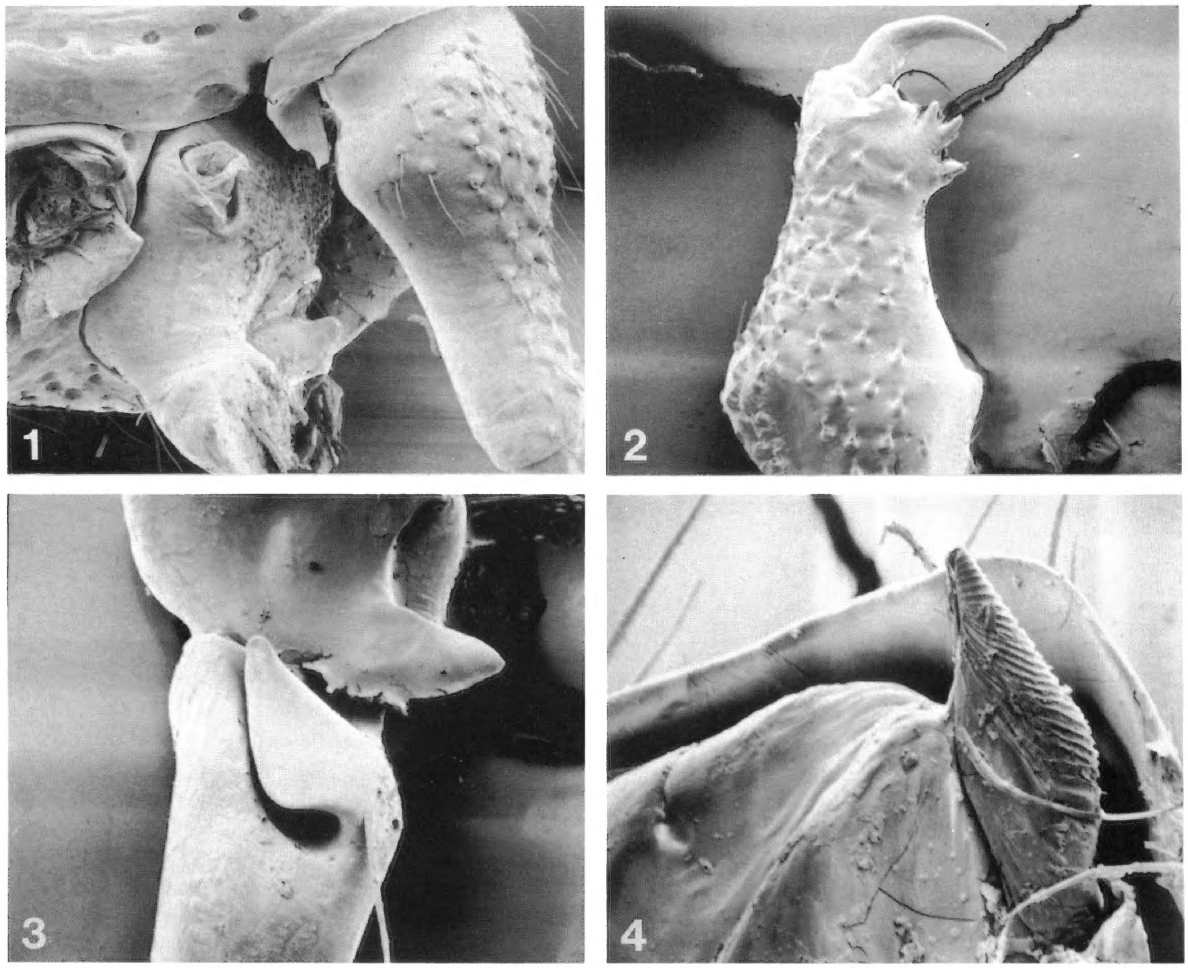
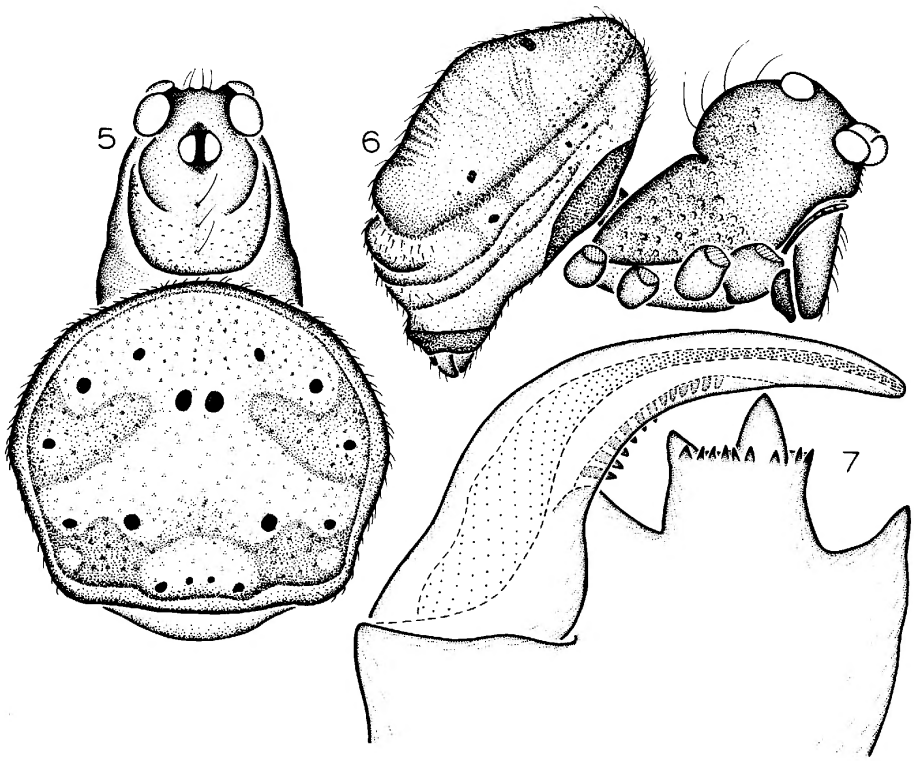


FIGS. 1-4. *Anapis keyserlingi* Gertsch, male, scanning electron micrographs. 1. Mouthparts, showing anterior labral spur, lateral view, 190×. 2. Left chelicera, anterior view, 190×. 3. Palpal patella and tibia, ventral view, 500×. 4. Palpal conductor, ventral view, 950×.

Simon is based on various undescribed species of anapids in which the contiguous lateral eyes of each side are widely separated groups and form with the two contiguous median eyes what is essentially a straight transverse row. Two of Simon's species were from Venezuela and two species are represented in the material before me from Barro Colorado Island. A study of Keyserling's figures and description of *Amazula hetschki* shows clearly that the median and lateral eyes form a triangular figure with the apex directed caudad, thus forming a strongly procurved row. The species described below as *Anapis keyserlingi*, new species, shares the characters given for Keyserling's *Amazula* and represents the second authentic species of the true *Anapis*. For those species in which the posterior row of eyes is essentially straight, erroneously referred to *Anapis* by Simon in his description of the genus, a new generic name, *Anapisona*, is proposed below.

Gertsch's assessment is correct, although Simon (1897) did describe his Venezuelan species (occurring also on St. Vincent) as *Anapis hamigera*. This species was transferred to *Anapisona* by Forster (1958, p. 1), although it was erroneously retained in *Anapis* by Forster (1959, p. 272) in a paper written earlier but delayed in publication (R. R. Forster, *in litt.*).



FIGS. 5-7. 5, 6. *Anapis hetschki* (Keyserling), female. 5. Dorsal view. 6. Lateral view. 7. *Anapis* sp., cheliceral teeth and plate, anterior view.

Since Simon thought his specimens of *Anapisona* and *Pseudanapis* belonged to *Anapis*, it is not surprising that he established another genus, *Epecthina*, for a Venezuelan species that corresponds to *Anapis hetschki* in eye relations (although its abdomen differs in being elongated and triangular rather than globose). Subsequently, Simon (1903) described an additional genus, *Epecthinula*, for a female from Jamaica corresponding to *Anapis* and *Epecthina* in eye relations but differing in having a rounded abdomen with a hard dorsal scutum; unfortunately, the type of the Jamaican species is lost and no similar West Indian specimens are known. The present paper considers all those anapids with a strongly procurved posterior eye row.

Simon (1895, 1903, 1905) placed his "*Anapis*," *Epecthina*, *Epecthinula*, and *Pseudanapis* along with *Chasmocephalon* O. P.-Cambridge, *Tecmessa* O. P.-Cambridge, and *Anapogonia* Simon in the "Anapeae," which he at one time (1894, p. 594) considered as a subfamily (Amazulinae) of the Argiopidae (equivalent to, for example, his Linyphiinae, Tetragnathinae, Theridiosomatinae, and Argiopinae) but later (1895) regarded as a tribal level group within the Argiopinae. Kratochvíl (1935) elevated the group to familial status, and Fage (1937), noting that these genera (except for *Tecmessa*) share with the Symphytognathidae both the reduction in size or absence of palpi in females and the replacement of the lungbooks with tracheae, synonymized the two families. This decision was followed by most subsequent workers and amplified by Forster (1959), who added the mysmenids, textricellids, and micropholcommatids to the enlarged Symphytognathidae. The monophyly of this large assortment of genera was questioned by Brignoli (1970) and Lehtinen (1975), and the Symphytognathidae was restricted by Forster and

Platnick (1977) to those lungless araneoid genera with fused chelicerae. The latter authors tentatively suggested that the genera *Anapis*, *Anapisona*, *Anapogonia*, *Chasmocephalon*, *Conoculus*, *Crozetulus*, *Epecthina*, *Epecthinula*, *Pseudanapis*, and *Risdonius* form a monophyletic group. Although none of the classical characters of the "Anapeae" (anterior tracheae; anterior median eyes reduced in size or absent; labium fused to sternum; female palp without claw, reduced in size or absent; legs without spines; metatarsi shortened; abdomen with two or three scuta and scattered small sclerotizations) are unique to the group, there is at least one character that may support the monophyly of the Anapidae as thus restricted: the labrum bears an anterior spur that projects forward between the chelicerae (fig. 1; Wunderlich, 1976, figs. 37, 38). To our knowledge, the labral spur is unique among spiders; we have been able to confirm its presence in the type species of *Anapis*, *Anapisona*, *Chasmocephalon*, *Conoculus*, *Epecthina*, *Pseudanapis*, and *Risdonius*, and its absence in the genera *Textricella* (Textricellidae) and *Micropholcomma* (Micropholcommatidae).

The species previously assigned to *Anapis*, *Epecthina*, and (judging only from its original description) *Epecthinula* share a number of seemingly synapomorphic features. The posterior eye row is strongly procurved (fig. 5); the chelicerae are medially excavated (fig. 2; Forster, 1958, fig. 4) and bear three large teeth, the two most distal of which are connected by a transverse plate bearing numerous denticles (fig. 7; Forster, 1958, fig. 6); the male palpal patella bears a retrolateral apophysis that is recurved and prolonged distally (fig. 3); and the male palpal conductor is conspicuously ridged (figs. 4, 14-23). These characters are not found in other anapids (some *Pseudanapis* species have a cheliceral plate but lack the medial excavation of the chelicerae typical of *Anapis*) or the other genera previously assigned to the Symphytognathidae. The differences among the three genera concern only the shape and degree of sclerotization of the abdomen in females. *Epecthina circinata* (and two new species described below) have elongated, triangular, distally pointed abdomens (Simon, 1895, fig. 1000), but several other new species have abdomens that are triangular and pointed but less

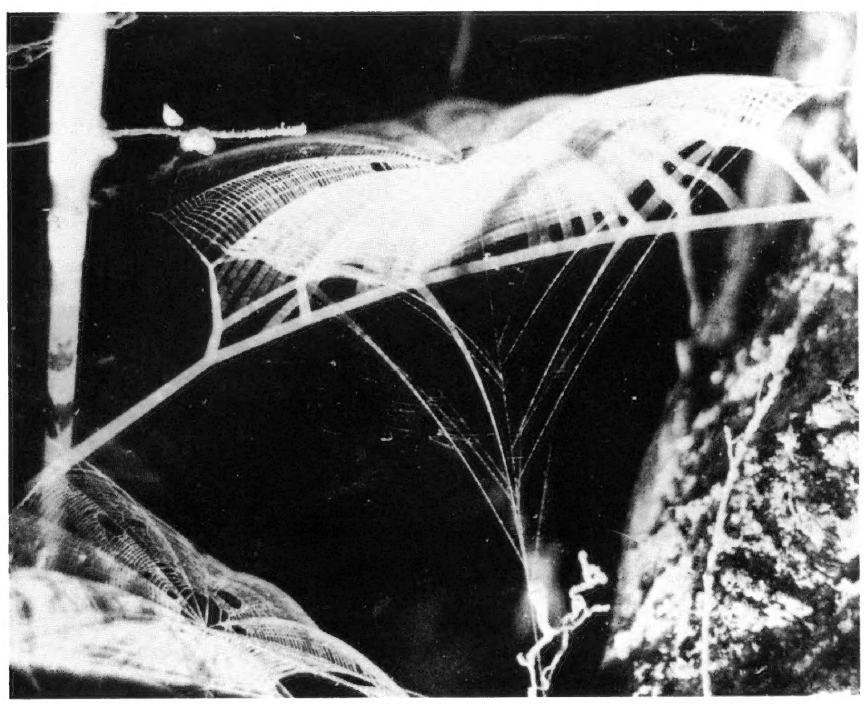
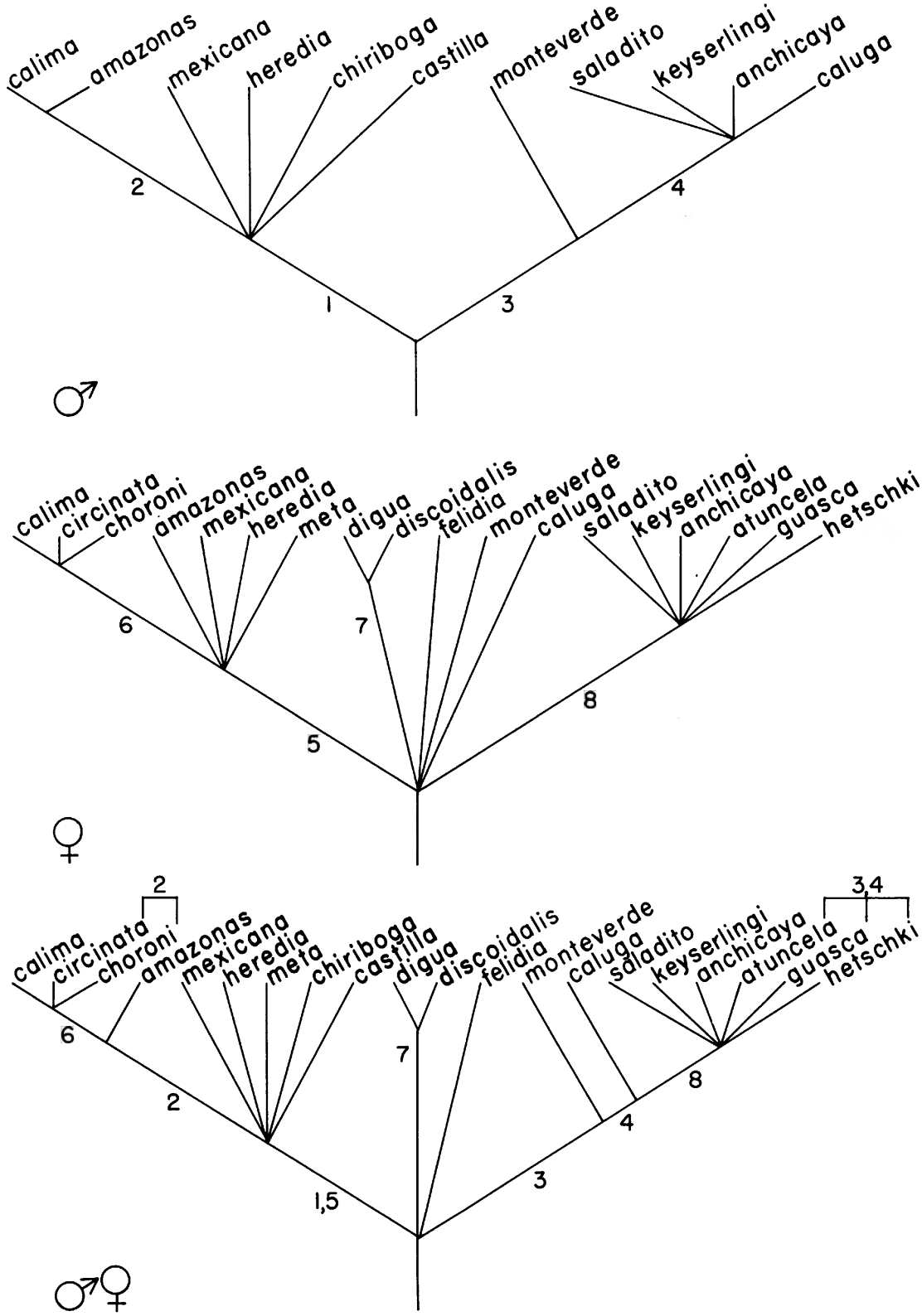


FIG. 8. Webs of *Anapis felidia* in Colombia. Photograph by W. G. Eberhard.



FIGS. 9-11. Cladograms of *Anapis* (except *A. minutissima*). 9 (top). Cladogram of males. 10 (middle). Cladogram of females. 11 (bottom). General cladogram. Numbers refer to characters discussed in text; numbers above general cladogram refer to predicted characters.

elongated. *Epecthinula minutissima* is described as having a rounded abdomen with a hard dorsal scutum in females, but this character is also found in several of the species described below (the female dorsal scutum, when present, varies from a lightly sclerotized plate occupying only about two-thirds of the dorsum to a heavy globose shield covering the entire dorsum). We consider these varied forms of the female abdomen to reflect specific differences only, and synonymize *Epecthina* and *Epecthinula* with *Anapis* below.

Little is known about the habits of *Anapis*. Probably all the species build orb webs, and, as in *Anapis felidia* (fig. 8) and *Anapis monteverde* (C. L. Craig, personal commun.), several webs may be found in relatively close proximity to each other. Egg sacs taken with specimens are evidently suspended on threads about three times as long as the sac itself, which is white, roughly triangular in shape, irregularly tufted, and contains around five to 10 eggs.

The species of *Anapis* vary more in somatic characters than in genitalic ones. The male palpi, especially, are very uniform. The patella always bears a distal retrolateral apophysis that is twisted ventrally and prolonged apically, reaching beyond a prong-like apophysis situated proximally on the tibia (fig. 3). The cymbium is unmodified, and the surface of the palpal bulb is smooth, with the sclerites fused and the embolus situated below the surface of (inside) the tegulum. In all species except *A. monteverde*, the embolus originates basally on the retrolateral side, coils around to the prolateral side along the ventral surface of the tegulum, continues back to the retrolateral side along the dorsal surface of the bulb (opposite the alveolus), and then makes almost a complete circle under the distal end of the ventral surface of the tegulum before emerging at the tip, where it is supported and surrounded by a complex, ridged conductor (fig. 4). Specific differences are detectable only in the structure of this ridged conductor, and only by compound or scanning electron microscopy. The key provided below relies heavily, therefore, on somatic characters for convenience in use, but the structure of the conductor should be checked for positive identification. The female genitalia consist of a pair of spermathecae (situated between a pair of oval cuticular sclerotized patches opposite the posterior coxae) connected to ventral openings by more or less coiled ducts (fig. 31).

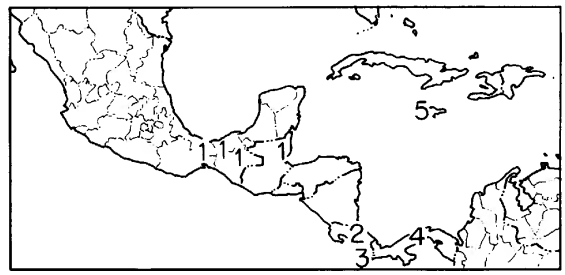


FIG. 12. Map of Middle America, showing distributions of *Anapis mexicana* (1), *A. heredia* (2), *A. monteverde* (3), *A. keyserlingi* (4), and *A. minutissima* (5).

The limited genitalic variation makes testing hypotheses of relationship within *Anapis* difficult. Because more than half the species are known from only one sex, separate cladistic analyses were attempted for each sex. Males fall into two groups (fig. 9), the first of which is defined by the anterior lateral eyes being separated by less than their diameter (character 1; in other anapids they are separated by more, and usually much more, than their diameter). Within this group, *Anapis calima* and *Anapis amazonas* can be united by the presence of a second, dorsal apophysis on the palpal patella, a feature (character 2) unique to them. The second group of species is defined by the presence of cusps on metatarsus and tarsus II (character 3; although other anapids have cusps on leg I their presence on leg II is unique to this species group); within this group, all the species except *A. monteverde* are united by the presence of a swollen metatarsus II (character 4, figs. 27, 28, 30; to our knowledge, this feature is not found in other spiders). The resulting cladogram (fig. 9) has two multifurcations; although some systematists (such as Marshall, 1977) evidently believe that cladograms must be dichotomous, this is not the case. Although it is true that dichotomous hypotheses are always to be preferred (because

they contain more information, not because they supposedly reflect the path of evolution) whenever characters are available by which to test them, presentations (such as Marshall's) of dichotomies unsupported by characters claim corroboration that does not exist.

A similar cladogram for females is shown in figure 10. Two of the characters (numbers 5 and 8) are the same as characters 1 and 3, respectively, of males (although inspection of the two cladograms will show that they do not necessarily cluster the same species). Within the group having narrowly separated anterior lateral eyes (character 5), a smaller group of three species can be united by the presence of an elongated triangular abdomen (character 6; in most other anapids the abdomen is rounded, and in those where it is triangular, such as *Risdonius*, it is not also elongated). Among the remaining species, *Anapis digua* and *Anapis discoidalis* may be united by the reduction of the female palp to a short stub or its absence (character 7; the female palp is lost in some other anapid genera but is present in *Anapisona*, the genus that seems, on the basis of eye relations, carapace shape, and tracheal modifications, to include the closest relatives of *Anapis*).

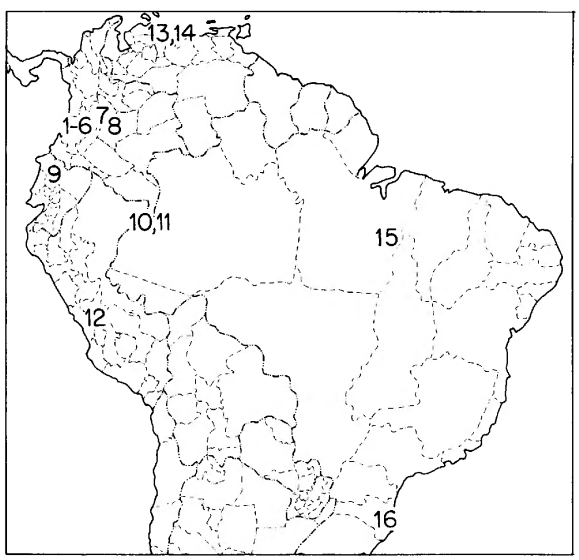


FIG. 13. Map of South America, showing distributions of *Anapis anchicaya*, *A. saladito*, *A. calima*, *A. digua*, *A. felidia*, and *A. atuncela* (1-6), *A. guasca* (7), *A. meta* (8), *A. chiriboga* (9), *A. amazonas* and *A. castilla* (10, 11), *A. caluga* (12), *A. circinata* and *A. choroni* (13, 14), *A. discoidalis* (15), and *A. hetschki* (16).

An initial inspection seems to indicate that the two resulting cladograms (figs. 9, 10) contain conflicting information. One of them (fig. 9), for example, groups *Anapis caluga* and *A. monteverde* with *A. saladito*, *A. keyserlingi*, and *A. anchicaya*, whereas the other (fig. 10) does not. However, when the information contributed by each character is specified in terms of both its inclusive and exclusive components, all the characters are seen to be compatible. Consider first the branches defined by characters 2 and 6; four species (*A. calima*, *A. amazonas*, *A. circinata*, and *A. choroni*) are involved. With regard to this problem group, each character contributes some inclusive information; character 2 indicates that there is a group including *A. calima* and *A. amazonas*, and character 6 indicates that there is a group including *A. calima*, *A. circinata*, and *A. choroni*. Character 6 also indicates, however, that a group including those three species also excludes *A. amazonas* (character 2 contributes no corresponding exclusive information about the problem group). When all three pieces of information (two inclusive and one exclusive) are combined, only one arrangement of the problem group is possible (fig. 11). Combining the information generates the predictions that the unknown males of *A. circinata* and *A. choroni*, when discovered, will have dorsal apophyses on the palpal patella (character 2); if they do not, the hypothesis of relationship proposed here will be falsified.

Similar considerations for the branches defined by characters 3 (fig. 9) and 8 (fig. 10) show that there is a problem group of eight species, and that character 8 indicates that there is a group including six of them but excluding *A. caluga* and *A. monteverde*. Character 4 excludes none of the six species but includes *A. caluga*, which must therefore be the sister group of those six species (fig. 11). Character 3 excludes none of the seven species but includes *A. monteverde*, which must therefore be the sister group of those seven species (fig. 11). The combined cladogram generates six predic-

tions; the unknown males of *A. atuncela*, *A. guasca*, and *A. hetschki* are each predicted to have characters 3 and 4.

It may also be useful to indicate some predictions that cannot be made from the combined cladogram. Of the four species in the first problem group, the male of *A. calima* has an elongated triangular abdomen like that of the females of *A. calima*, *A. circinata*, and *A. choroni* (character 6). But we cannot safely predict that the unknown males of the latter two species, when found, will also have such abdomens; the corresponding character of the male abdomen (call it character 9) could be a synapomorphy at the same level as character 6, but it could also be a synapomorphy of only two of the three species included there, or an autapomorphy of *A. calima*. Similarly, we cannot predict that each of the three unknown males and two unknown females of species belonging to the branch defined by characters 1 and 5 (fig. 11), narrowly separated anterior lateral eyes, will have that feature; it is possible that the character in males may prove to be a synapomorphy at a less inclusive level (excluding, for example, *A. meta*) than it is in females.

The geographic distribution of the species is summarized in figures 12 and 13; the limits of the genus are similar to those of *Anapisona* and of *Mysmenopsis* (Mysmenidae). The presence of *Anapis* in the West Indies should be confirmed by specimens before the information is used for any biogeographic purposes.

In addition to specimens in the collection of the American Museum of Natural History (AMNH), we have used material kindly supplied from the British Museum (Natural History) by F. R. Wanless and P. D. Hillyard (BMNH), the Field Museum of Natural History by H. S. Dybas and J. B. Kethley (FMNH), the Museum of Comparative Zoology, Harvard University, by H. W. Levi and C. L. Craig (MCZ), and the Muséum National d'Histoire Naturelle by M. Hubert (MNHN). We are also indebted to H. D. Cameron of the University of Michigan for translating Simon's Latin description of *Epecthinula*, and to R. J. Koestler of the American Museum of Natural History for his assistance with the scanning electron microscope.

All measurements given below are in millimeters. The new specific names proposed below are all nouns in apposition taken from the respective type localities.

ANAPIS SIMON

Amazula Keyserling, 1886, p. 254 (type species by monotypy *Amazula hetschki* Keyserling). Preoccupied in the Coleoptera by *Amazula* Kraatz, 1882.

Anapis Simon, 1895, p. 927 (*nomen novum* for *Amazula* Keyserling, 1886).

Epecthina Simon, 1895, p. 928 (type species by original designation *Epecthina circinata* Simon). NEW SYNONYMY.

Epecthinula Simon, 1903, p. 27 (type species by monotypy *Epecthinula minutissima* Simon). NEW SYNONYMY.

DIAGNOSIS: Specimens of *Anapis* can be distinguished from othe anapids by the procurved posterior eye row (fig. 5), the medially excavated chelicerae bearing a distal denticulate plate (fig. 7), the recurved retrolateral apophysis on the male palpal patella (fig. 3), and the ridged conductor on the male palpal bulb (fig. 4).

DESCRIPTION: Forster (1958, pp. 3-7) has provided a detailed description of *Anapis mexicana* that can (except for genitalic details) also serve as a generic description; the anterior labral spur and genitalia are described in the Introduction. Only differences from Forster's description of *A. mexicana* are noted in the species descriptions below (the tracheal system and trichobothriotaxy have not been checked for each species).

SYNONYMY: The synonymy of *Epecthina* and *Epecthinula* is justified in the Introduction.

KEY TO SPECIES OF *ANAPIS*

1. Males 2
   Females (except *A. minutissima*, unseen) ... 12
2. Anterior lateral eyes separated by less than their diameter; metatarsus and tarsus II without cusps 3
   Anterior lateral eyes separated by their diameter or more; metatarsus and tarsus II each with at least one cusp 8
3. Palpal patella with dorsal and retrolateral apophyses 4
   Palpal patella with retrolateral apophysis only 5

4. Abdomen triangular in lateral view .... *calima*
   Abdomen oval in lateral view ..... *amazonas*
5. Tarsus I with a cusp; embolus and conductor more than twice as long as palpal bulb ... . *chiriboga*
   Tarsus I without a cusp; embolus and conductor shorter than palpal bulb 6
6. Anterior lateral eyes contiguous..... *castilla*
   Anterior lateral eyes separated by at least one-third their diameter 7
7. Soft portions of abdomen with numerous small sclerotizations ..... *mexicana*
   Soft portions of abdomen without small sclerotizations ..... *heredia*
8. Metatarsus II swollen, much wider than tarsus II (figs. 27, 28, 30) 9
   Metatarsus II not swollen (fig. 26) . *monteverde*
9. Leg I greatly elongated, femur almost twice as long as carapace..... *caluga*
   Leg I not greatly elongated, femur at most only slightly longer than carapace 10
10. Metatarsus I and basal third of tarsus I swollen (fig. 29)..... *saladito*
    Metatarsus I and basal third of tarsus I not swollen 11
11. Tarsus I with one cusp ..... *keyserlingi*
    Tarsus I with two cusps ..... *anchicaya*
12. Anterior lateral eyes separated by less than their diameter 13
    Anterior lateral eyes separated by their diameter or more 19
13. Epigynum with wing-like anterior ledge (figs. 51, 55) 14
    Epigynum without anterior ledge 15
14. Ducts coiled anteriorly (fig. 52) ..... *calima*
    Ducts coiled posteriorly (fig. 56) ..... *choroni*
15. Sclerotized cuticular patches beside spermathecae relatively narrow (fig. 57) .... *amazonas*
    Sclerotized cuticular patches relatively wide (as in fig. 55)..... 16
16. Ducts relatively wide (figs. 54, 64)..... 17
    Ducts relatively narrow (figs. 60, 62)..... 18
17. Ducts relatively long (fig. 54)..... *circinata*
    Ducts relatively short (fig. 64) ..... *meta*
18. Ducts relatively long, coiled (fig. 60) . *mexicana*
    Ducts relatively short, straight (fig. 62) .... *heredia*
19. Metatarsus and tarsus II each with one or more cusps 20
    Metatarsus and tarsus II without cusps..... 25
20. Metatarsus II with one cusp..... 21
    Metatarsus II with two cusps..... 23
21. Metatarsus I with one cusp 22
    Metatarsus I with two cusps..... *guasca*
22. Tarsi I and II each with one cusp ... *atuncela*
    Tarsi I and II each with five cusps ... *saladito*
23. Abdomen with distinct scutum; metatarsus I with one cusp ..... *anchicaya*
    Abdomen without distinct scutum; metatarsus I with two cusps 24
24. Spermathecae relatively large (fig. 36) .... *keyserlingi*
    Spermathecae relatively small (fig. 32) . . .. *hetschki*
25. Abdomen with distinct scutum 26
    Abdomen without distinct scutum 27
26. Palp absent ..... *discoidalis*
    Palp greatly reduced in size but present . *digua*
27. Spermathecae relatively large (fig. 46) .... *monteverde*
    Spermathecae relatively small (figs. 44, 48) . 28
28. Ducts extending farther to sides than spermathecae (fig. 44) ..... *caluga*
    Spermathecae extending farther to sides than ducts (fig. 48) ..... *felidia*

Anapis hetschki (Keyserling)
Figures 5, 6, 31, 32

Amazula hetschkii Keyserling, 1886, p. 255, figs. 304, 304a-d (female holotype from Blumenau, Santa Catarina, Brazil, in BMNH, examined).
Anapis hetschki: Simon, 1895, p. 927.

DIAGNOSIS: Females of *A. hetschki* may be recognized by the following combination of characters: metatarsi I and II with two cusps, tarsi I and II with five cusps. The shape of the epigynal margin (fig. 31) is also diagnostic.

MALE: Unknown.

FEMALE: Total length 1.57. Carapace 0.83 long, 0.54 wide, 0.60 high. Abdomen 0.86 long, 1.08 wide. Clypeal height twice the anterior lateral eye diameter. Anterior lateral eyes separated by slightly more than their diameter. Metatarsi I and II with ventral pair of cusps at distal end; tarsi I and II with five prolateroventral cusps. Palp segments beyond femur slightly shortened.

	I	II	III	IV
Femur	0.77	0.61	0.40	0.47
Patella	0.25	0.22	0.14	0.18
Tibia	0.58	0.49	0.23	0.40
Metatarsus	0.27	0.20	0.16	0.22
Tarsus	0.65	0.50	0.39	0.45
Total	2.52	2.02	1.32	1.72

Epigynum with curved anterolateral margins (fig. 31); ducts transverse, continuing posterior of spermathecae (fig. 32).

MATERIAL EXAMINED: Only the holotype.

Anapis saladito, new species
Figures 14, 29, 30, 33, 34

TYPES: Male holotype from an elevation of 1800 m. at Arriba de Saladito, Valle del Cauca, Colombia (no date; W. G. Eberhard), and female paratype from the same locality (October, 1975; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Males of *A. saladito* may be recognized by the proximally swollen tarsus I (fig. 29), females by the combination of the following characters: metatarsi I and II with one cusp, tarsi I and II with five cusps.

MALE: Total length 0.83. Carapace 0.47 long, 0.38 wide, 0.31 high. Abdomen 0.50 long, 0.50 wide. Abdominal scuta yellow. Anterior lateral eyes separated by their diameter. Metatarsus I and basal third of tarsus I swollen, with scattered long setae (fig. 29); venter of tarsus I with setae forming two longitudinal rows. Metatarsus II slightly swollen, with single ventral cusp (fig. 30); tarsus II with single ventral cusp. Soft portions of abdomen with few sclerotizations.

	I	II	III	IV
Femur	0.42	0.36	0.25	0.29
Patella	0.14	0.12	0.10	0.11
Tibia	0.29	0.25	0.15	0.18
Metatarsus	0.11	0.11	0.11	0.11
Tarsus	0.32	0.29	0.22	0.22
Total	1.28	1.13	0.83	0.91

Embolus and conductor elongate (fig. 14), protruding beyond tip of cymbium.

FEMALE: Total length 1.58. Carapace 0.86 long, 0.58 wide, 0.47 high. Abdomen 1.08 long, 0.97 wide. Abdomen dark gray with six dorsal white spots (one long rectangular spot anteriorly, pair of circular lateral spots at half of length, and three circular spots posteriorly). Anterior lateral eyes as in male. Metatarsi I and II with one prolateral cusp; tarsi I and II with two prolateral and three tiny ventral cusps.

	I	II	III	IV
Femur	0.82	0.67	0.43	0.54
Patella	0.29	0.25	0.14	0.16
Tibia	0.58	0.50	0.27	0.38
Metatarsus	0.25	0.22	0.14	0.18
Tarsus	0.61	0.50	0.47	0.47
Total	2.55	2.14	1.45	1.73

Spermathecae long, globose (figs. 33, 34).

MATERIAL EXAMINED: **Colombia**: *Valle del Cauca*: Arriba de Saladito, elevation 1800 m., Oct. 1975 (W. G. Eberhard, MCZ), 3♀; no date (W. G. Eberhard, MCZ), 1♂ (holotype); above Felidia, elevation 2000 m., Dec. 2, 1969 (W. G. Eberhard, MCZ), 1♂.

Anapis keyserlingi Gertsch
Figures 1-4, 15, 28, 35, 36

Anapis keyserlingi Gertsch, 1941, p. 4, figs. 5-8, 13 (female holotype from Barro Colorado Island, Canal Zone, Panama, in AMNH, examined).

DIAGNOSIS: Males of *A. keyserlingi* may be recognized by the following combination of characters: metatarsus II swollen, metatarsus and tarsus I with one cusp; females by: metatarsi I and II with two cusps, tarsi I and II with three cusps.

MALE: Total length 1.37. Carapace 0.74 long, 0.58 wide, 0.61 high. Abdomen 0.86 long, 0.83 wide. Anterior lateral eyes separated by 1.5 times their diameter. Metatarsus I with one prolateroventral distal cusp; tarsus I with one prolateroventral cusp at one-fourth its length. Metatarsus II greatly swollen, with one ventral and one prolateral cusp; tarsus II with one ventral and two prolateroventral cusps (fig. 28). Soft portions of abdomen with few sclerotizations.

	I	II	III	IV
Femur	0.88	0.74	0.37	0.44
Patella	0.28	0.31	0.14	0.14
Tibia	0.80	0.57	0.23	0.29
Metatarsus	0.29	0.36	0.16	0.18
Tarsus	0.71	0.59	0.36	0.34
Total	2.96	2.57	1.26	1.39

Conductor globose (figs. 4, 15).

FEMALE: Described by Gertsch (1941).

MATERIAL EXAMINED: **Panama**: *Canal Zone*: Barro Colorado Island, July 13, 1938 (E. G. Williams, Jr.; AMNH), 1♀ (holotype); Berlese sample, July 1943-Mar. 1944 (J. Zetek, MCZ), 1♀; 1946 (J. Zetek, MCZ), 1♀; June 1950 (A. M. Chickering, MCZ), 1♂, 1♀. Forest Preserve, July 23, 1950 (A. M. Chickering, MCZ), 1♂.

Anapis anchicaya, new species
Figures 16, 27, 37, 38

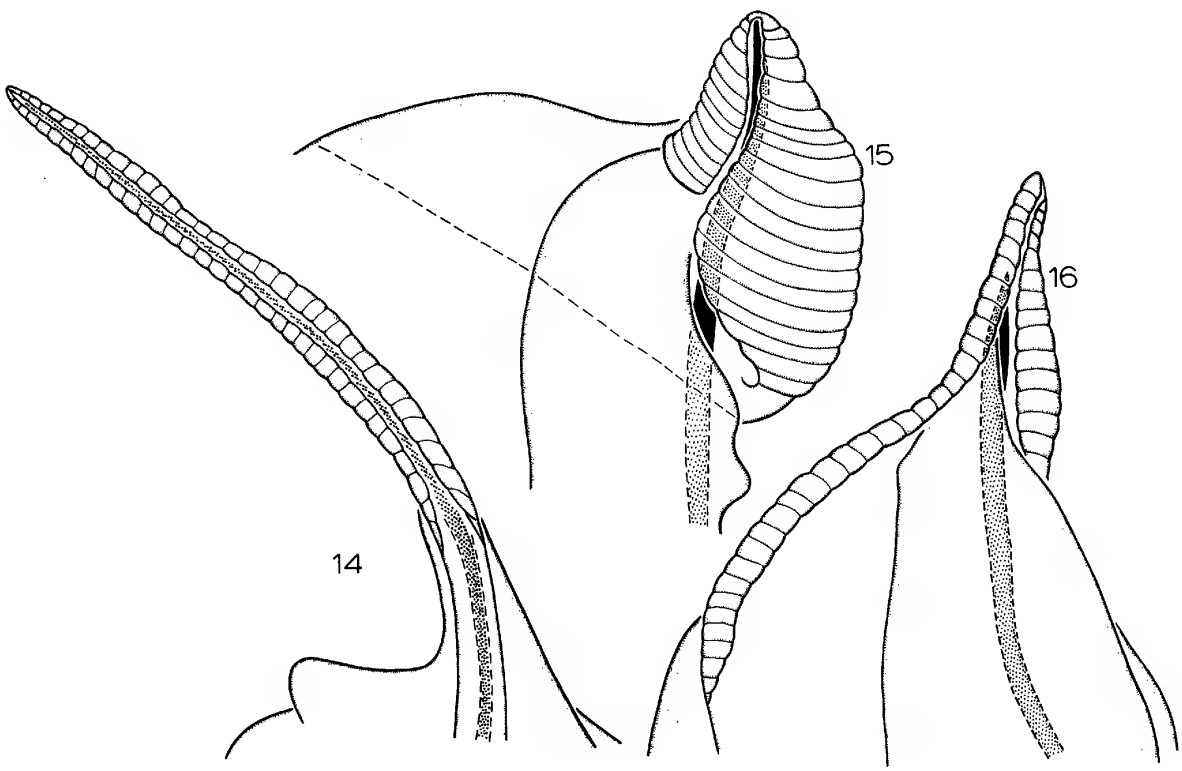
TYPES: Male holotype and female paratype from an elevation of 400 m. at Anchicayá, Valle del Cauca, Colombia (male, October 26, 1969; female, September, 1976; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Males of *A. anchicaya* may be recognized by the following combination of characters: metatarsus II swollen, metatarsus I with one cusp, tarsus I with two cusps; females by: metatarsus II with two cusps, abdomen with distinct dorsal scutum.

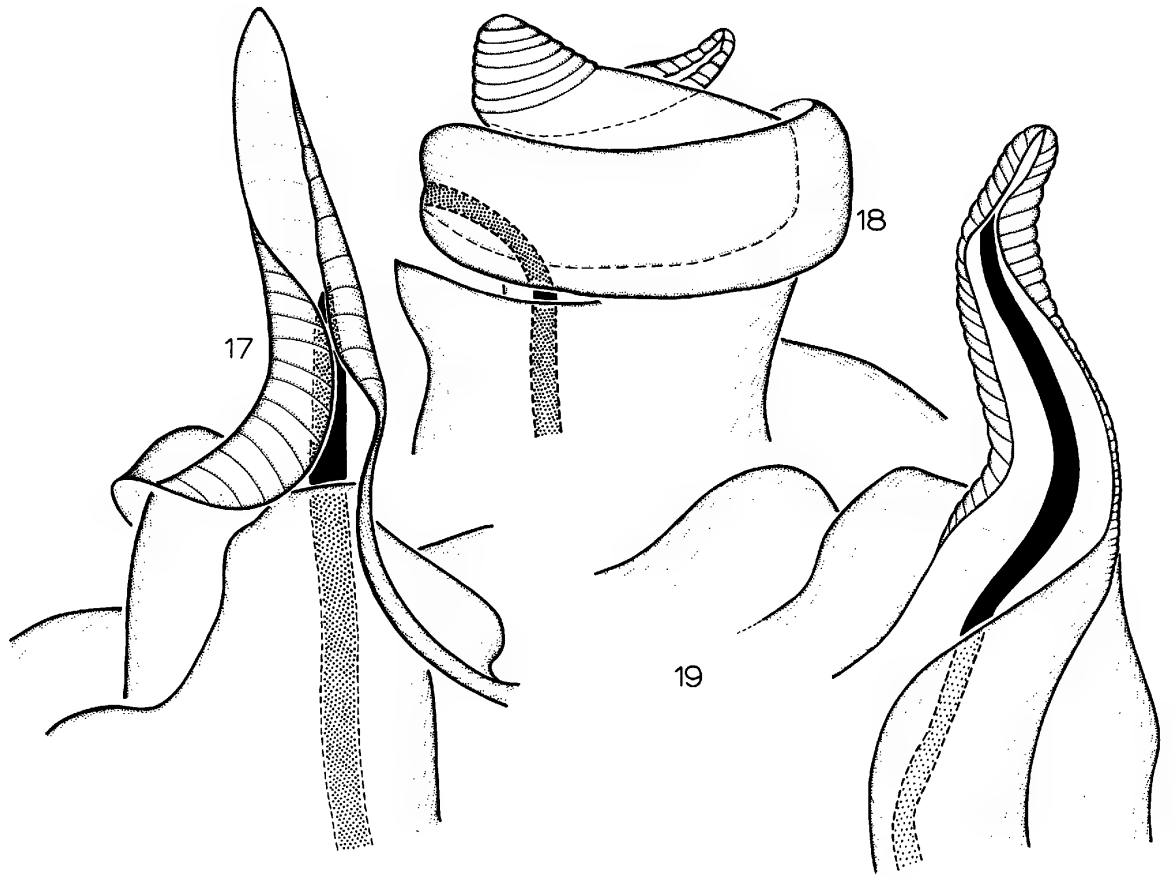
MALE: Total length 1.15. Carapace 0.58 long, 0.51 wide, 0.47 high. Abdomen 0.86 long, 0.83 wide. Abdominal scuta pale orange. Anterior lateral eyes separated by their diameter. Metatarsus I with one, tarsus I with two prolateral cusps. Metatarsus II swollen, with one prolateral and one ventral cusp; tarsus II with two prolateral and three tiny ventral cusps (fig. 27). Soft portions of abdomen with few sclerotizations.

	I	II	III	IV
Femur	0.73	0.65	0.29	0.40
Patella	0.25	0.25	0.11	0.13
Tibia	0.58	0.38	0.22	0.35
Metatarsus	0.25	0.24	0.14	0.16
Tarsus	0.59	0.54	0.32	0.31
Total	2.40	2.06	1.08	1.35

Conductor widened basally (fig. 16).



FIGS. 14-16. Left palpal conductor, prolateral view. 14. *Anapis saladito*, new species. 15. *A. keyserlingi* Gertsch. 16. *A. anchicaya*, new species.



FIGS. 17-19. Left palpal conductor, prolateral view. 17. *Anapis caluga*, new species. 18. *A. calima*, new species. 19. *A. monteverde*, new species.

FEMALE: Total length 1.51. Carapace 0.68 long, 0.54 wide, 0.47 high. Abdomen 1.15 long, 1.06 wide. Abdomen with distinct dorsal scutum and sclerotizations as in male. Anterior lateral eyes as in male. Anterior legs as in male except metatarsus II not swollen and tarsus II has only one cusp.

	I	II	III	IV
Femur	0.72	0.61	0.32	0.47
Patella	0.25	0.22	0.14	0.16
Tibia	0.52	0.43	0.29	0.52
Metatarsus	0.25	0.24	0.14	0.18
Tarsus	0.47	0.47	0.36	0.40
Total	2.21	1.97	1.25	1.73

Spermathecae large, ducts twisted basally (figs. 37, 38).

MATERIAL EXAMINED. **Colombia**: *Valle del Cauca*: Anchicayá, elevation 400 m., Oct. 26, 1969, on or above orbs (W. G. Eberhard, MCZ), 2♂; Sept. 1976 (W. G. Eberhard, MCZ), 1♀; no date (W. G. Eberhard, MCZ), 3♀.

Anapis atuncela, new species
Figures 39, 40

TYPE: Female holotype from a cloud forest at an elevation of 1800 m. at Atuncela, Valle del Cauca, Colombia (December 15, 1969; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Females of *A. atuncela* may be recognized by the following combination of characters: metatarsus II with one cusp, abdomen with distinct dorsal scutum.

MALE: Unknown.

FEMALE: Total length 1.19. Carapace 0.65 long, 0.47 wide, 0.32 high. Abdomen 0.83 long, 0.81 wide. Abdomen with short but distinct dorsal scutum, light orange anteriorly, dark gray posteriorly. Anterior lateral eyes separated by their diameter. Metatarsi and tarsi I and II each with one prolateroventral cusp.

	I	II	III	IV
Femur	0.61	0.49	0.29	0.43
Patella	0.22	0.22	0.11	0.11
Tibia	0.47	0.34	0.21	0.32
Metatarsus	0.18	0.18	0.14	0.14
Tarsus	0.50	0.36	0.31	0.32
Total	1.98	1.59	1.06	1.32

Spermathecae widely separated (figs. 39, 40).

MATERIAL EXAMINED. Only the holotype.

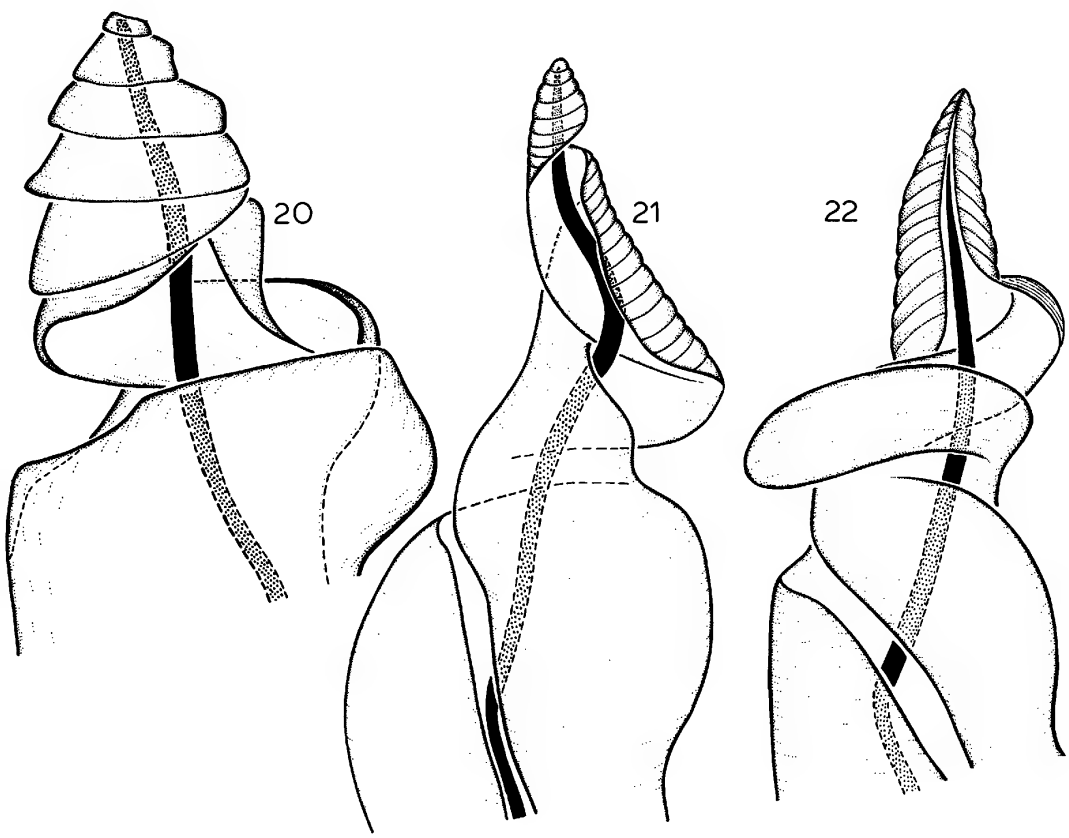
Anapis guasca, new species
Figures 41, 42

TYPE: Female holotype from an elevation of 3000 m. on the eastern slope, Páramo de Guasca, Cundinamarca, Colombia (July 20, 1967; P. and B. Wygodzinsky), deposited in AMNH.

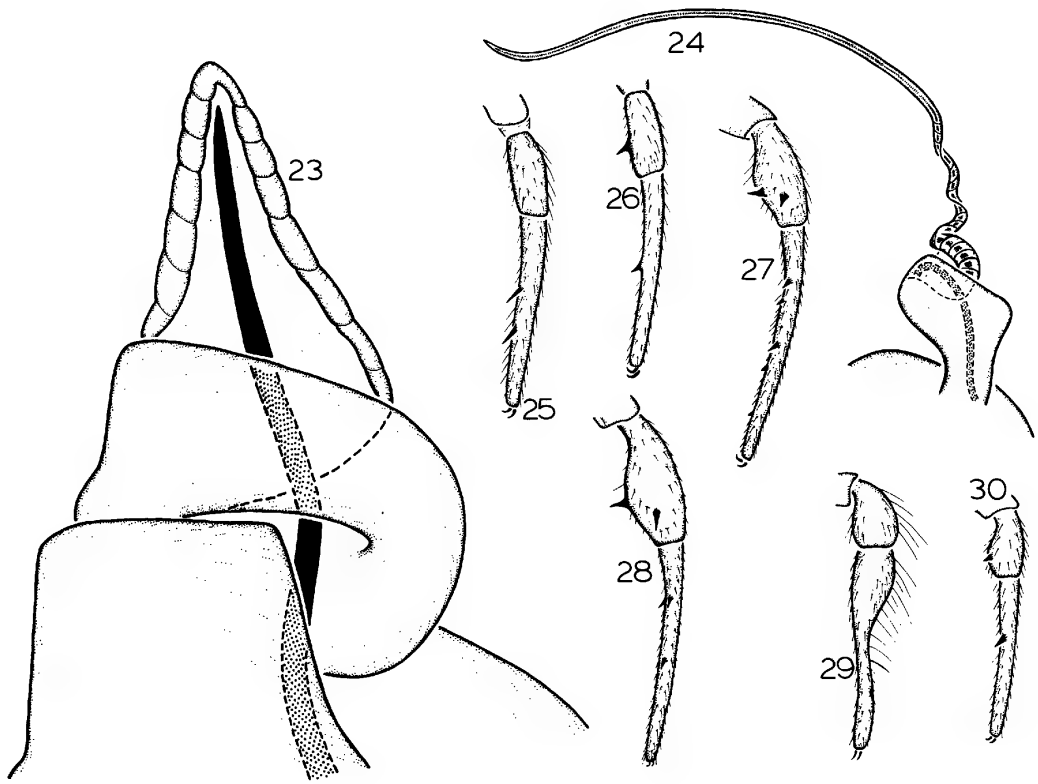
DIAGNOSIS: Females of *A. guasca* may be recognized by the following combination of characters: metatarsus I with two cusps, metatarsus II with one cusp. The arch-shaped epigynal margins (fig. 41) are also diagnostic.

MALE: Unknown.

FEMALE: Total length 1.66. Carapace 0.86 long, 0.61 wide, 0.43 high. Abdomen 1.08 long, 0.86 wide. Abdomen with distinctly pointed posterior tip; lateral sclerotizations greatly reduced; dorsum with pattern of white



FIGS. 20-22. Left palpal conductor, prolateral view. 20. *Anapis castilla*, new species. 21. *A. mexicana* Forster. 22. *A. heredia*, new species.



FIGS. 23-30. 23, 24. Left palpal conductor, prolateral view. 23. *Anapis amazonas*, new species. 24. *A. chiriboga*, new species. 25. *A. digua*, new species, female, metatarsus and tarsus I, lateral view. 26-28. Male metatarsi and tarsi I, lateral view. 26. *A. monteverde*, new species. 27. *A. anchicaya*, new species. 28. *A. keyserlingi* Gertsch. 29, 30. *A. saladito*, new species, male. 29. Metatarsus and tarsus I, prolateral view. 30. Metatarsus and tarsus II, prolateral view.

spots as in *A. saladito* females. Posterior median eyes separated by 1.5 times their diameter from posterior laterals; anterior laterals separated by their diameter. Metatarsus I with pair of distal ventral cusps; tarsus I with three prolateroventral and four retrolateroventral cusps. Metatarsus II with one prolateroventral distal cusp; tarsus II with two prolateroventral cusps.

	I	II	III	IV
Femur	0.83	0.65	0.45	0.58
Patella	0.25	0.20	0.16	0.22
Tibia	0.57	0.50	0.27	0.41
Metatarsus	0.25	0.18	0.14	0.18
Tarsus	0.58	0.61	0.40	0.43
Total	2.48	2.14	1.42	1.82

Epigynal margins arch-shaped (fig. 41); ducts doubly coiled (fig. 42).

MATERIAL EXAMINED: Only the holotype.

Anapis caluga, new species
Figures 17, 43, 44

TYPES: Male holotype and female paratype from a cloud forest at an elevation of 2000 m. at Pichita Caluga, near San Ramón, Junín, Peru (July 21, 1965; P. and B. Wygodzinsky), deposited in AMNH.

DIAGNOSIS: Males of *A. caluga* may be recognized by the femur I and tibia I being almost twice the length of the carapace; females by the posterior epigynal ledge (fig. 43) and laterally extending epigynal ducts (fig. 44).

MALE: Total length 1.44. Carapace 0.70 long, 0.53 wide, 0.50 high. Abdomen 0.86 long, 0.83 wide. Anterior lateral eyes separated by 1.5 times their diameter. Chelicerae each with median tooth on posterior side at about one-fourth their length. Anterior pair of legs greatly elongated. Metatarsus II swollen, with

ventral and prolateral cusps; tarsus II with two prolateral and two ventral cusps.

	I	II	III	IV
Femur	1.37	0.84	0.47	0.58
Patella	0.29	0.25	0.14	0.18
Tibia	1.30	0.72	0.29	0.50
Metatarsus	0.56	0.25	0.16	0.22
Tarsus	1.01	0.83	0.47	0.49
Total	4.53	2.89	1.53	1.97

Conductor open distally (fig. 17).

FEMALE: Total length 1.32. Carapace 0.72 long, 0.50 wide, 0.45 high. Abdomen 0.90 long, 0.83 wide. Clypeal height twice the anterior lateral eye diameter. Anterior lateral eyes as in male. Posterior lateral sclerotizations of abdomen smaller than anteriors.

	I	II	III	IV
Femur	0.61	0.50	0.32	0.43
Patella	0.20	0.18	0.11	0.14
Tibia	0.54	0.45	0.23	0.29
Metatarsus	0.22	0.22	0.14	0.18
Tarsus	0.52	0.43	0.25	0.29
Total	2.09	1.78	1.05	1.33

Epigynum with posterior ledge (fig. 43); ducts extending farther to sides than spermathecae (fig. 44).

MATERIAL EXAMINED: One male taken with the types (AMNH).

Anapis monteverde, new species
Figures 19, 26, 45, 46

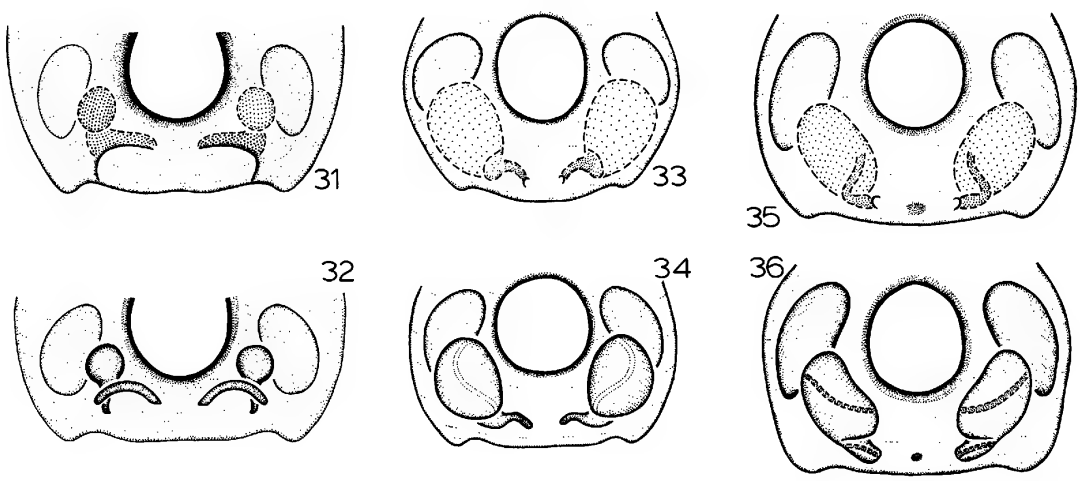
TYPES: Male holotype and female paratype from an elevation of 1600 m. at the Monteverde Reserve, Bosque Pantonoso, Puntarenas, Costa Rica (August 24, 1977; C. L. Craig), deposited in MCZ.

DIAGNOSIS: Males of *A. monteverde* may be recognized by the following combination of characters: metatarsus II with one cusp, not swollen; females by the moderately large spermathecae being wider than long (figs. 45, 46).

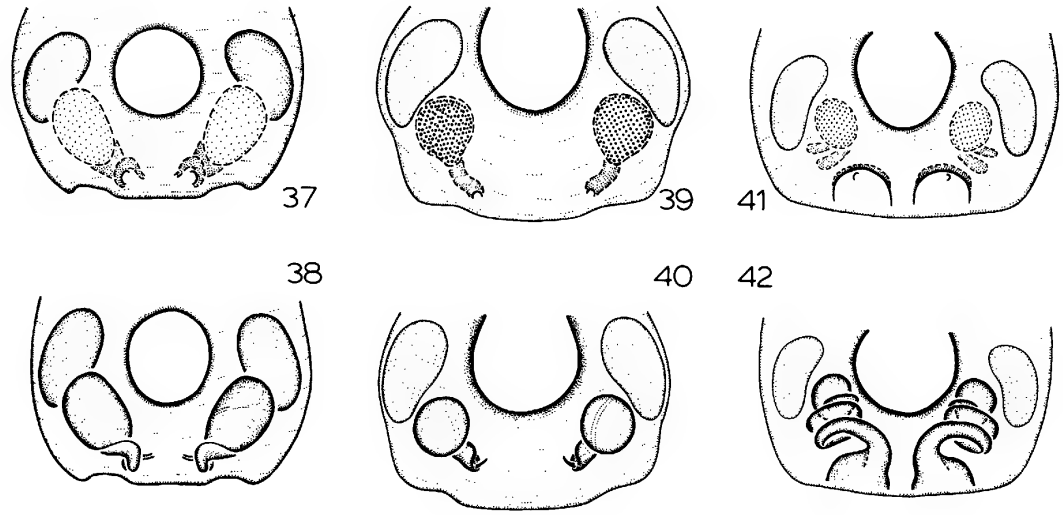
MALE: Total length 0.92. Carapace 0.50 long, 0.45 wide, 0.29 high. Abdomen 0.65 long, 0.59 wide. Abdominal scuta orange. Posterior eye row only moderately procurved. Anterior lateral eyes separated by twice their diameter. Chelicerae not distended proximally. Metatarsus and tarsus II each with one prolateroventral cusp at half its length (fig. 26).

	I	II	III	IV
Femur	0.47	0.43	0.22	0.29
Patella	0.14	0.14	0.11	0.13
Tibia	0.36	0.32	0.14	0.18
Metatarsus	0.16	0.12	0.11	0.14
Tarsus	0.34	0.34	0.25	0.22
Total	1.47	1.35	0.83	0.96

Cymbium with clump of about nine stiff, short setae at base on retrolateral side. Embolus originating at base of retrolateral side of tegulum,



FIGS. 31-36. Epigyna, ventral views (top) and dorsal views (bottom). 31, 32. *Anapis hetschki* (Keyserling). 33, 34. *A. saladito*, new species. 35, 36. *A. keyserlingi* Gertsch.



FIGS. 37-42. Epigyna, ventral views (top) and dorsal views (bottom). 37, 38. *Anapis anchicaya*, new species. 39, 40. *A. atuncela*, new species. 41, 42. *A. guasca*, new species.

ascending directly to conductor, which is open basally (fig. 19).

FEMALE: Total length 1.16. Carapace 0.52 long, 0.43 wide, 0.43 high. Abdomen 0.83 long, 0.83 wide. Abdomen pointed distally. Anterior lateral eyes separated by 1.5 times their diameter. Lateral row of abdominal sclerotizations much reduced in size.

	I	II	III	IV
Femur	0.47	0.34	0.25	0.34
Patella	0.16	0.14	0.09	0.11
Tibia	0.29	0.24	0.13	0.24
Metatarsus	0.13	0.13	0.11	0.13
Tarsus	0.34	0.25	0.18	0.22
Total	1.39	1.10	0.76	1.04

Spermathecae moderately large, wider than long (figs. 45, 46).

MATERIAL EXAMINED: **Costa Rica**: *Puntarenas*: Monteverde Reserve, Bosque Pantonoso, elevation 1600 m., May 23, 1977 (C. L. Craig, MCZ), 1♀; Aug. 12, 1977 (C. L. Craig, MCZ), 1♀; Aug. 24, 1977 (C. L. Craig, MCZ), 2♂, 3♀.

Anapis felidia, new species
Figures 47, 48

TYPE: Female holotype from an elevation of 2000 m., above Felidia, Valle del Cauca, Colombia (December 2, 1969; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Females of *A. felidia* may be recognized by the following combination of characters: legs without cusps, anterior lateral eyes separated by more than their diameter, abdomen without distinct dorsal scutum, spermathecae small, extending farther to side than ducts (figs. 47, 48).

MALE: Unknown.

FEMALE: Total length 0.94. Carapace 0.50 long, 0.39 wide, 0.27 high. Abdomen 0.79 long, 0.72 wide. Anterior lateral eyes separated by 1.5 times their diameter.

	I	II	III	IV
Femur	0.43	0.40	0.23	0.29
Patella	0.14	0.13	0.09	0.11
Tibia	0.32	0.32	0.14	0.25
Metatarsus	0.14	0.12	0.09	0.11
Tarsus	0.35	0.29	0.25	0.29
Total	1.38	1.26	0.80	1.05

Spermathecae small, ducts recurved (figs. 47, 48).

MATERIAL EXAMINED: **Colombia**: *Valle del Cauca*: above Felidia, elevation 2000 m., Dec. 2, 1969 (W. G. Eberhard, MCZ), 2♀; near Queremal, elevation 2000 m., June 1977 (W. G. Eberhard, MCZ), 1♀.

Anapis digua, new species
Figures 25, 49, 50

TYPE: Female holotype from Río Digua, near Queremal, Valle del Cauca, Colombia (June 19, 1970; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Females of *A. digua* may be recognized by the following combination of characters: metatarsus II without cusps, tarsus I with two cusps.

MALE: Unknown.

FEMALE: Total length 0.64. Carapace 0.43 long, 0.29 wide, 0.22 high. Abdomen 0.50 long, 0.50 wide. Clypeal height twice the anterior lateral eye diameter. Posterior median eyes separated by twice their diameter from posterior laterals; anterior laterals separated by twice their diameter. Tarus I with two strong prolateroventral spiniform cusps (fig. 25). Abdomen with distinct scutum covering entire dorsum; soft portions with few sclerotizations. Palp segments beyond femur greatly reduced in size, palp not reaching front of chelicerae.

	I	II	III	IV
Femur	0.25	0.22	0.18	0.22
Patella	0.10	0.11	0.08	0.08
Tibia	0.20	0.14	0.10	0.14
Metatarsus	0.13	0.11	0.08	0.10
Tarsus	0.22	0.14	0.14	0.13
Total	0.90	0.72	0.58	0.67

Epigynal margins sinuous (fig. 49); ducts doubly coiled (fig. 50).

MATERIAL EXAMINED: One female taken with the holotype (MCZ).

Anapis discoidalis (Balogh and Loksa), new combination

Pseudanapis discoidalis Balogh and Loksa, 1968, p. 292, figs. 11-17 (female holotype from Fazenda Água Azul, Pará, Brazil, may be in the Hungarian Natural History Museum, Budapest, unavailable).

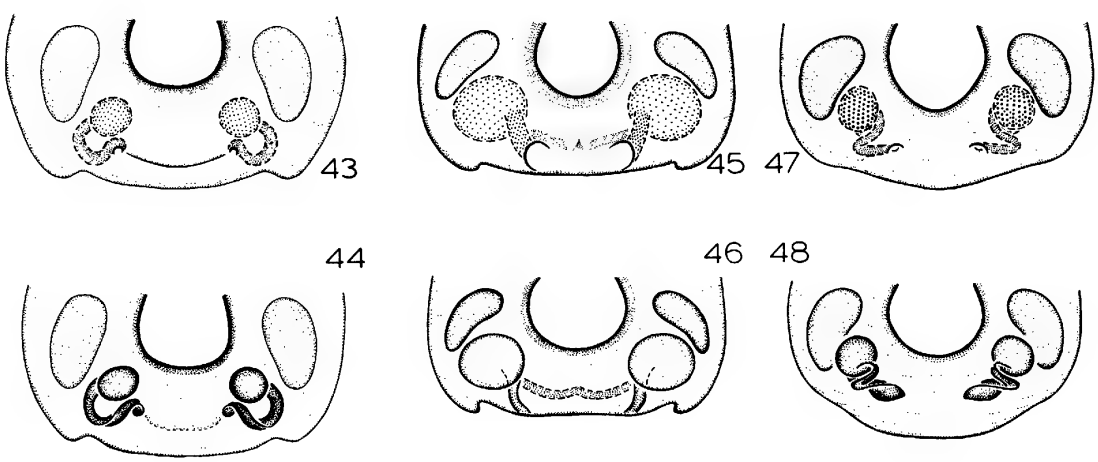
DIAGNOSIS: Females of *A. discoidalis* may be recognized by the absence of pedipalp segments beyond the endites.

MALE: Unknown.

FEMALE: Described by Balogh and Loksa (1968).

MATERIAL EXAMINED: None.

PLACEMENT: Balogh and Loksa (1968) gave no reasons for assigning this species to *Pseudanapis*, a genus not otherwise reported from the New World. Their decision to do so was probably based on the presence of a dorsal scutum and the absence of a palp in females, characters not previously reported in female *Anapis*. Their illustration and description of the chelicerae, however, leave little doubt that the species belongs to *Anapis*, and their illustrations (except of the epigynum) could easily



FIGS. 43-48. Epigyna, ventral views (top) and dorsal views (bottom). 43, 44. *Anapis caluga*, new species. 45, 46. *A. monteverde*, new species. 47, 48. *A. felidia*, new species.

have been drawn from female *A. digua*, apparently the closest relative of *A. discoidalis*.

Anapis calima, new species
Figures 18, 51, 52

TYPES: Male holotype and female paratype from an elevation of 1300 m. at Río Calima, Valle del Cauca, Colombia (April, 1976; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Males of *A. calima* may be recognized by the short, wide palpal conductor (fig. 18), females by the short, wing-shaped anterior epigynal margin (fig. 51).

MALE: Total length 0.90. Carapace 0.47 long, 0.43 wide, 0.36 high. Abdomen 0.61 long, 0.50 wide. Abdominal scuta pale orange. Anterior lateral eyes separated by two-thirds their diameter. Abdomen triangular in lateral view, with distinct dorsal tail; soft portions with few sclerotizations.

	I	II	III	IV
Femur	0.32	0.27	0.24	0.25
Patella	0.14	0.11	0.10	0.11
Tibia	0.31	0.25	0.14	0.18
Metatarsus	0.13	0.11	0.11	0.11
Tarsus	0.30	0.22	0.22	0.25
Total	1.20	0.96	0.81	0.90

Palpal patella with ledgelike dorsal apophysis as well as retrolateral apophysis; conductor short (fig. 18).

FEMALE: Total length 1.22. Carapace 0.58 long, 0.47 wide, 0.34 high. Abdomen 0.74 long, 0.60 wide. Clypeal height twice the anterior lateral eye diameter. Posterior median eyes separated by almost twice their diameter from posterior laterals; anterior laterals as in male. Abdomen without lateral row of round sclerotizations, shaped as in male.

	I	II	III	IV
Femur	0.43	0.37	0.25	0.36
Patella	0.14	0.14	0.11	0.13
Tibia	0.38	0.29	0.14	0.27
Metatarsus	0.14	0.13	0.11	0.13
Tarsus	0.32	0.32	0.29	0.31
Total	1.41	1.25	0.90	1.20

Epigynum with wing-shaped anterior margin (figs. 51, 52).

MATERIAL EXAMINED: **Colombia**: *Valle del Cauca*: Río Calima, elevation 1300 m., Apr. 1976 (W. G. Eberhard, MCZ), 2♂, 3♀; Yotoco, elevation 1600 m., Dec. 1976 (W. G. Eberhard, MCZ), 1♀.

Anapis circinata (Simon), new combination
Figures 53, 54

Epecthina circinata Simon, 1895, p. 928, figs. 994, 999, 1000 (female holotype from San Esteban, Carabobo, Venezuela, in MNHN, examined). Levi and Levi, 1962, p. 64, figs. 321-323.

DIAGNOSIS: Females of *A. circinata* may be recognized by the following combination of characters: abdomen with distinct dorsal tail (Simon, 1895, fig. 1000; Levi and Levi, 1962, fig. 322), epigynum without wing-shaped anterior margin (fig. 53).

MALE: Unknown.

FEMALE: Total length 1.80. Carapace 0.67 long, 0.47 wide, 0.32 high. Abdomen 1.22 long, 1.01 wide. Clypeal height 1.5 times the anterior lateral eye diameter. Abdomen triangular in lateral view, with distinct dorsal tail; sclerotizations small, in three oblique rows on sides.

	I	II	III	IV
Femur	0.50	0.47	0.25	0.42
Patella	0.20	0.18	0.11	0.11
Tibia	0.36	0.35	0.18	0.25
Metatarsus	0.18	0.14	0.11	0.11
Tarsus	0.40	0.36	0.29	0.32
Total	1.64	1.50	0.94	1.21

Epigynal ducts wide, twisted (figs. 53, 54).

MATERIAL EXAMINED: Only the holotype.

Anapis choroni, new species
Figures 55, 56

TYPE: Female holotype from Choroní, Aragua, Venezuela (March 9, 1959; A. M. Nadler), deposited in AMNH.

DIAGNOSIS: Females of *A. choroni* may be recognized by the following combination of characters: abdomen with distinct dorsal tail, epigynum with long, wing-shaped anterior margin (fig. 55).

MALE: Unknown.

FEMALE: Total length 1.51. Carapace 0.61

long, 0.47 wide, 0.39 high. Abdomen 0.91 long, 0.86 wide. Clypeal height 1.5 times the anterior lateral eye diameter. Abdomen triangular in lateral view, with distinct dorsal tail; sclerotizations small, largest ones in five oblique rows on sides; dorsum with white patches (as in female *A. saladito* with additional long lateral patches surrounding lateral row of sclerotizations).

	I	II	III	IV
Femur	0.50	0.47	0.26	0.39
Patella	0.16	0.16	0.11	0.13
Tibia	0.39	0.30	0.22	0.25
Metatarsus	0.18	0.13	0.14	0.14
Tarsus	0.36	0.34	0.25	0.25
Total	1.59	1.40	0.98	1.16

Epigynum with long, wing-shaped anterior margin (figs. 55, 56).

MATERIAL EXAMINED: One female taken with the holotype (AMNH).

Anapis amazonas, new species
Figures 23, 57, 58

TYPES: Male holotype and female paratype from Berlese sample of forest litter taken 7 km. north of Leticia, Amazonas, Colombia (February 20-25, 1972; S. and J. Peck), deposited in FMNH.

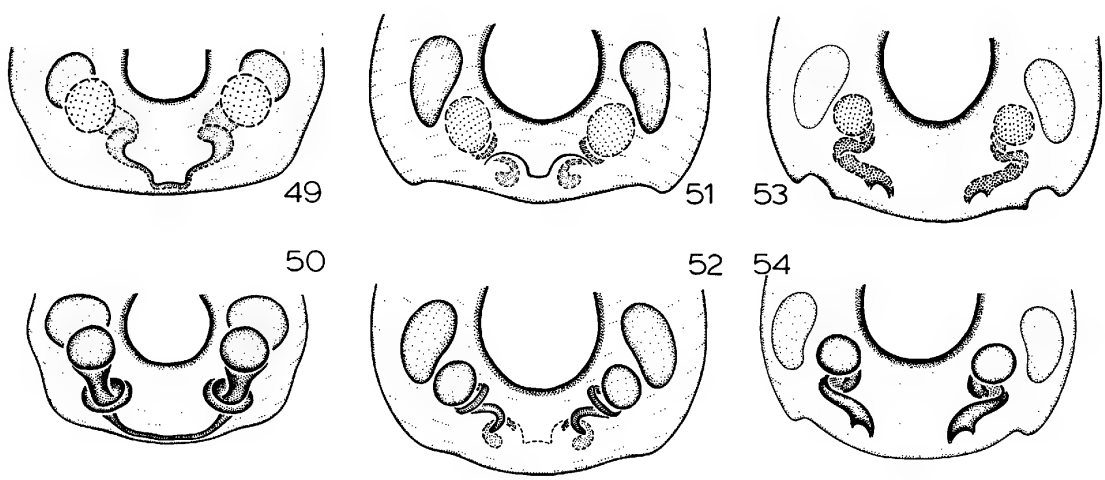
DIAGNOSIS: Males of *A. amazonas* may be recognized by the following combination of characters: palpal patella with a dorsal apophysis, palpal conductor relatively long (fig. 23); females by: anterior lateral eyes separated by less than their diameter, abdomen not elongated, with distinct dorsal scutum.

MALE: Total length 0.90. Carapace 0.49 long, 0.36 wide, 0.24 high. Abdomen 0.66 long, 0.58 wide. Body and appendages light orange. Soft portions of abdomen with few sclerotizations.

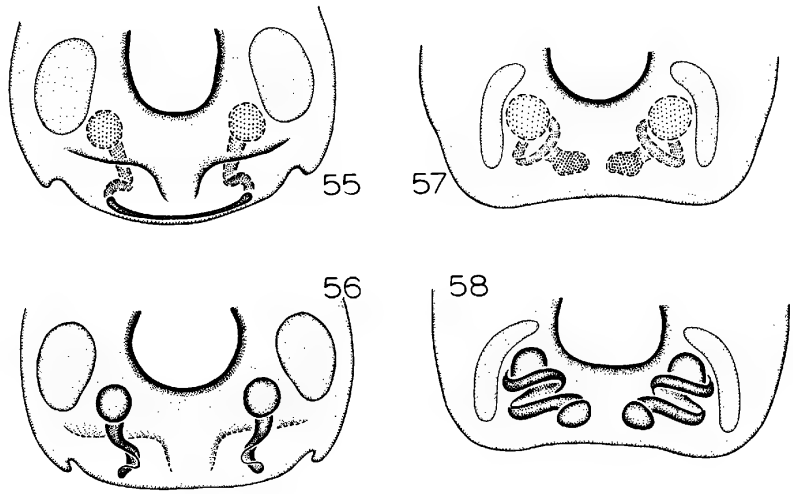
	I	II	III	IV
Femur	0.32	0.29	0.22	0.24
Patella	0.16	0.12	0.09	0.09
Tibia	0.29	0.24	0.16	0.15
Metatarsus	0.16	0.11	0.11	0.09
Tarsus	0.29	0.25	0.18	0.20
Total	1.22	1.01	0.76	0.77

Palpal patella with a dorsal ledgelike apophysis as well as retrolateral apophysis; conductor long, wide (fig. 23).

FEMALE: Total length 0.83. Carapace 0.54 long, 0.43 wide, 0.36 high. Abdomen 0.86 long, 0.79 wide. Clypeal height slightly less than twice the anterior lateral eye diameter. Posterior median eyes separated by twice their diameter from posterior laterals. Abdomen with distinct scutum covering entire dorsum; soft portions with numerous sclerotizations.



FIGS. 49-54. Epigyna, ventral views (top) and dorsal views (bottom). 49, 50. *Anapis digua*, new species. 51, 52. *A. calima*, new species. 53, 54. *A. circinata* (Simon).



FIGS. 55-58. Epigyna, ventral views (top) and dorsal views (bottom). 55, 56. *Anapis choroni*, new species. 57, 58. *A. amazonas*, new species.

	I	II	III	IV
Femur	0.29	0.26	0.18	0.25
Patella	0.11	0.11	0.09	0.12
Tibia	0.23	0.22	0.14	0.18
Metatarsus	0.11	0.10	0.10	0.11
Tarsus	0.24	0.24	0.15	0.18
Total	0.98	0.93	0.66	0.84

Sclerotized patches beside spermathecae narrow (figs. 57, 58).

MATERIAL EXAMINED: Only the types.

Anapis mexicana Forster
Figures 21, 59, 60

Anapis mexicana Forster, 1958, p. 3, figs. 1-7, 25 (male holotype from Baños de Sulfre, Tabasco, Mexico, in AMNH, examined).

DIAGNOSIS: Males of *A. mexicana* may be recognized by the following combination of characters: anterior lateral eyes separated by less than their diameter but not contiguous, palpal patella without dorsal apophysis, tarsus I without a cusp, conductor expanded retrolaterally (fig. 21); females by: anterior lateral eyes separated by less than their diameter, abdomen not elongated, without distinct dorsal scutum, epigynal ducts narrow and coiled (fig. 60)

MALE: Described by Forster (1958).

FEMALE: Described by Forster (1958).

MATERIAL EXAMINED: **Mexico**: *Chiapas*: Monte Libano, 20 km. E El Real, July 4-5, 1950 (C. and M. Goodnight, L. J. Stannard, AMNH), 1♀ (allotype). *Tabasco*: Baños de Sulfre, near Teapa, Aug. 1, 1948 (C. and M. Goodnight, AMNH), 1♂ (holotype). *Veracruz*: 4 mi. NE Acayucan, Apr. 27, 1963 (W. J. Gertsch, W. Ivie, AMNH), 1♀; El Fortín, Río Metlac, Dec. 15, 1948, banana grove (H. B. Leech, AMNH), 1♂ (paratype). **Belize**: Caves Branch, Aug. 4-14, 1972, Berlese sample from high canopy forest (S. and J. Peck, FMNH, AMNH), 2♂.

Anapis heredia, new species
Figures 22, 61, 62

TYPES: Male holotype and female paratype from an elevation of 50 m. at Finca La Selva, near Puerto Viejo, Heredia, Costa Rica (January, 1978; W. G. Eberhard), deposited in MCZ.

DIAGNOSIS: Males of *A. heredia* may be recognized by the following combination of characters: anterior lateral eyes separated by less than their diameter but not contiguous, palpal patella without dorsal apophysis, tarsus I without a cusp, conductor expanded prolaterally (fig. 22); females by: anterior lateral eyes separated by less than their diameter, abdomen not elongated, without distinct dorsal scutum, epigynal ducts short and not coiled (fig. 62).

MALE: Total length 1.12. Carapace 0.54 long, 0.47 wide, 0.43 high. Abdomen 0.74 long, 0.63 wide. Dorsal abdominal scutum yellow, margined with gray at sides and rear; ventral scuta yellow. Anterior lateral eyes separated by their radius. Chelicerae greatly expanded laterally at one-fourth their length. Soft portions of abdomen without sclerotizations.

	I	II	III	IV
Femur	0.39	0.37	0.22	0.25
Patella	0.18	0.15	0.11	0.12
Tibia	0.28	0.24	0.18	0.18
Metatarsus	0.14	0.14	0.11	0.12
Tarsus	0.29	0.29	0.17	0.21
Total	1.28	1.19	0.79	0.88

Conductor expanded prolaterally (fig. 22).

FEMALE: Total length 1.22. Carapace 0.61 long, 0.47 wide, 0.34 high. Abdomen 0.97 long, 0.97 wide. Anterior lateral eyes as in male. Abdomen distinctly pointed posteriorly.

	I	II	III	IV
Femur	0.44	0.36	0.23	0.32
Patella	0.16	0.16	0.11	0.11
Tibia	0.32	0.30	0.18	0.26
Metatarsus	0.16	0.13	0.10	0.12
Tarsus	0.33	0.33	0.29	0.29
Total	1.41	1.28	0.91	1.10

Epigynal ducts short, straight (figs. 61, 62).

MATERIAL EXAMINED: **Costa Rica**: *Cartago*: 10 km. S Tapantí, Río Grande de Orosi, elevation 1500 m., Berlese sample of mixed forest litter, Apr. 14, 1973 (J. Wagner, J. Kethley, FMNH), 1♀. *Heredia*: Finca La Selva, near Puerto Viejo, elevation 50 m., Jan. 1978 (W. G. Eberhard, MCZ), 1♂, 3♀.

Anapis meta, new species
Figures 63, 64

TYPE: Female holotype from Berlese sample of forest litter, elevation 500 m., Villavicencio, Meta, Colombia (March 1-4, 1972; S. and J. Peck), deposited in FMNH.

DIAGNOSIS: Females of *A. meta* may be recognized by the following combination of characters: anterior lateral eyes separated by less than their diameter, abdomen not elongated, without distinct dorsal scutum, epigynal ducts wide and coiled (fig. 64).

MALE: Unknown.

FEMALE: Total length 1.22. Carapace 0.60 long, 0.46 wide, 0.32 high. Abdomen 1.01 long, 0.86 wide. Posterior median eyes separated by their diameter from posterior laterals. Abdomen distinctly pointed posteriorly.

	I	II	III	IV
Femur	0.47	0.43	0.25	0.34
Patella	0.14	0.13	0.11	0.11
Tibia	0.32	0.32	0.18	0.26
Metatarsus	0.14	0.12	0.11	0.12
Tarsus	0.32	0.24	0.23	0.26
Total	1.39	1.24	0.88	1.09

Epigynal ducts wide, coiled (figs. 63, 64).

MATERIAL EXAMINED: Only the holotype.

Anapis chiriboga, new species
Figure 24

TYPE: Male holotype from Berlese sample of moss and wet forest litter taken at an elevation of 1400 m. 20 to 30 km. east-northeast of Alluriquín on the Chiriboga road, Pichincha, Ecuador (June 19, 1975; S. Peck), deposited in FMNH.

DIAGNOSIS: Males of *A. chiriboga* may be recognized by the embolus and conductor protruding far beyond the tip of the cymbium.

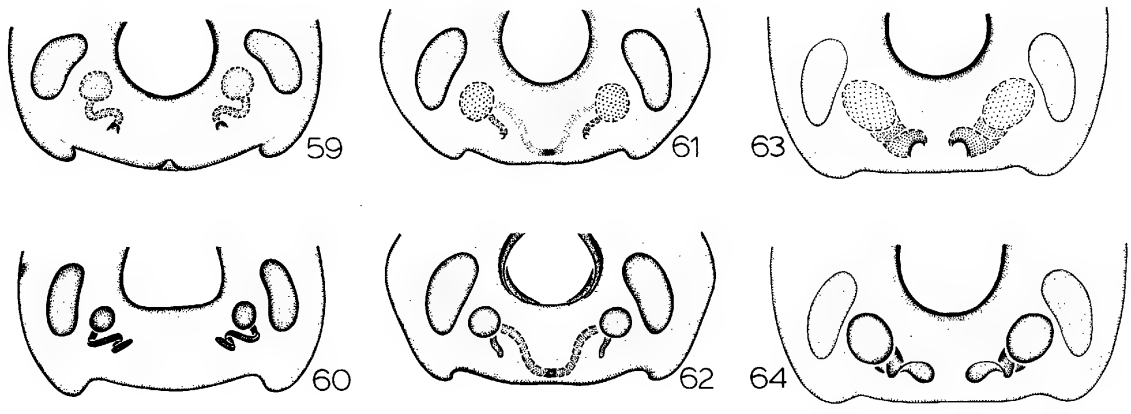
MALE: Total length 1.04. Carapace 0.52 long, 0.47 wide, 0.41 high. Abdomen 0.81 long, 0.58 wide. Tarsus I with single prolateroventral cusp at about half its length. Soft portions of abdomen with few sclerotizations.

	I	II	III	IV
Femur	0.50	0.47	0.25	0.38
Patella	0.21	0.18	0.11	0.13
Tibia	0.43	0.33	0.21	0.28
Metatarsus	0.18	0.17	0.11	0.12
Tarsus	0.47	0.38	0.28	0.30
Total	1.79	1.53	0.96	1.21

Embolus and conductor protruding more than twice the length of the palpal bulb (fig. 24).

FEMALE: Unknown.

MATERIAL EXAMINED: Only the holotype.



FIGS. 59-64. Epigyna, ventral views (top) and dorsal views (bottom). 59, 60. *Anapis mexicana* Forster. 61, 62. *A. heredia*, new species. 63, 64. *A. meta*, new species.

Anapis castilla, new species
Figure 20

TYPE: Male holotype from Berlese sample of forest litter taken at the edge of the Amazon River at Ramón Castilla (5 km. northwest of Leticia, Colombia), Loreto, Peru (February 23, 1972; S. and J. Peck), deposited in FMNH.

DIAGNOSIS: Males of *A. castilla* may be recognized by the contiguous anterior lateral eyes.

MALE: Total length 0.96. Carapace 0.58 long, 0.46 wide, 0.45 high. Abdomen 0.76 long, 0.72 wide. Anterior lateral eyes contiguous, projecting forward.

	I	II	III	IV
Femur	0.40	0.36	0.25	0.29
Patella	0.17	0.14	0.11	0.12
Tibia	0.28	0.25	0.22	0.24
Metatarsus	0.14	0.13	0.13	0.14
Tarsus	0.40	0.28	0.22	0.23
Total	1.39	1.16	0.93	1.02

Conductor with relatively few ridges (fig. 20).

FEMALE: Unknown.

MATERIAL EXAMINED: Only the holotype.

Anapis minutissima (Simon), new combination

Epecthinula minutissima Simon, 1903, p. 28 (female holotype from Jamaica, should be in MNHN, lost).

DIAGNOSIS: This enigmatic species is known only from Simon's brief description. The clypeus is described as being strongly sloped backward (reclinate), which if true would be diagnostic of the species.

MALE: Unknown.

FEMALE: Described by Simon (1903).

MATERIAL EXAMINED: None.

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