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Studies on the

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e Insects - No. 14

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# A SELECTED BIBLIOGRAPHY OF THE COCCOIDEA (HOMOPTERA)

# THIRD SUPPLEMENT (1970 - 1985)

Compiled by

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**Agricultural Experiment Station Bulletin No. 88-1**
**Virginia Polytechnic Institute and State University**
**Blacksburg, Virginia 24061-0402 U.S.A.**
**1988**

***ANATOMY***

***BIOLOGY***

***CHEMISTRY***

***CYTOLOGY***

***ECOLOGY***

***HISTOLOGY***

***MORPHOLOGY***

***TAXONOMY***

**James R. Nichols, Dean and Director**
**College of Agriculture and Life Sciences**
**Virginia Agricultural Experiment Station**
**Virginia Polytechnic Institute and State University**
**Blacksburg, Virginia 24061-0402**

The Virginia Agricultural and Mechanical College came into being in 1872 upon acceptance by the Commonwealth of the provisions of the Morrill Act of 1862 "to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." Research and investigations were first authorized at Virginia's land-grant college when the Virginia Agricultural Experiment Station was established by the Virginia General Assembly in 1886.

The Virginia Agricultural Experiment Station received its first allotment upon passage of the Hatch Act by the United States Congress in 1887. Other related Acts followed, and all were consolidated in 1955 under the Amended Hatch Act which states "It shall be the object and duty of the State agricultural experiment stations . . . to conduct original and other researches, investigations and experiments bearing directly on and contributing to the establishment and maintenance of a permanent and effective agricultural industry of the United States, including the researches basic to the problems of agriculture and its broadest aspects and such investigations as have for their purpose the development and improvement of the rural home and rural life and the maximum contributions by agriculture to the welfare of the consumer . . . "

In 1962, Congress passed the McIntire-Stennis Cooperative Forestry Research Act to encourage and assist the states in carrying on a program of forestry research, including reforestation, land management, watershed management, rangeland management, wildlife habitat improvement, outdoor recreation, harvesting and marketing of forest products, and "such other studies as may be necessary to obtain the fullest and most effective use of forest resources."

In 1966, the Virginia General Assembly "established within the Virginia Polytechnic Institute a division to be known as the Research Division . . . which shall encompass the now existing Virginia Agricultural Experiment Station . . . "

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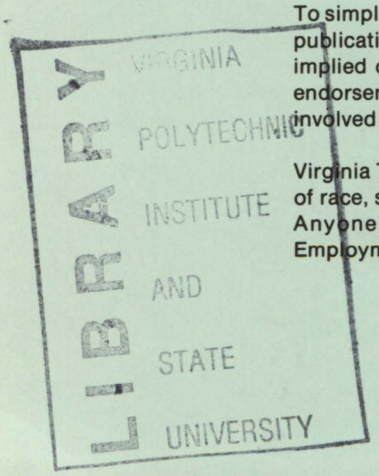

Studies on the
Morphology and Systematics of Scale Insects - No. 14

# A SELECTED BIBLIOGRAPHY OF THE COCCOIDEA (HOMOPTERA)

## THIRD SUPPLEMENT (1970 - 1985)


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Agricultural Experiment Station Bulletin No. 88-1
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MANUSCRIPTS FOR THIS SERIES of bulletins are published as they become available from this university's Coccidology Laboratory in the Department of Entomology. The publisher of these bulletins is the Virginia Agricultural Experiment Station, Virginia Polytechnic Institute and State University.

Only unpublished findings of original research dealing with the morphology, systematics, and biology of scale insects are published. Before publication, as a rule, each manuscript is reviewed by scientists familiar with the subject matter. Reviewers are named under Acknowledgments in each bulletin.

Throughout the world, scale insects are among the most important pests of agricultural, silvicultural, ornamental, and greenhouse plantings. More than 6,000 species are known; and adequate descriptions, illustrations, and keys that could enable specialists to make identification before attempting control are lacking even for the more common species. It is difficult to detect scale insects on plants because they are extremely small and often hidden. Therefore, this series of bulletins was initiated to expand our knowledge of scale insects.

COMPOSITION AND PRESSWORK BY
VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
BLACKSBURG, VIRGINIA

# A SELECTED BIBLIOGRAPHY OF THE COCCOIDEA (HOMOPTERA)

## THIRD SUPPLEMENT (1970 - 1985)

By

Michael Kosztarab and Matilda P. Kosztarab

The Third Supplement to "A Selected Bibliography of the Coccoidea" cites the important literature on the classification of coccoids that appeared between January 1, 1970, the cutoff date of the Second Supplement (United States Department of Agriculture Miscellaneous Publication 1281, 1974), and December 31, 1985. In addition, it includes numerous earlier articles that were omitted from the previous bibliographies but that are now available and appear to be relevant. Letters following dates are a continuation from earlier bibliographies where they are needed to insure the continuity of the citation system and the sequence of publication. Where the date of publication differs from that on the title page of the volume containing the article, the latter date is shown in parenthesis before the volume number of the serial. This Supplement contains about 2400 entries and more than 850 **author cross-references** to assist users in finding articles by other than the first author. The general format and scope of this supplement, with few exceptions, is similar to the earlier bibliographies as outlined in the introduction of the original bibliography (United States Department of Agriculture Miscellaneous Publication 734, 1957).

The **coverage** includes articles primarily in systematics, external morphology, biology, ecology, and distribution of scale insects. In addition, articles on coccoid pheromones have been included when these deal primarily with their biochemistry and behavior, rather than with their use in control. To assist specialists with the retrieval of articles on some other topics, **subject indices** have been provided for articles dealing primarily with coccoid anatomy, both external and internal, chemistry of coccoids and of their products, cytology and genetics, histology, paleontology and fossils, pheromones, preservation and mounting techniques, and symbionts. Many articles include topics that belong to more than one subject category; therefore it was not practical to expand further the indexing of the subject matter. Ibekwe and Lawani (1977) published the abstracts of 504 articles dealing with mealybugs and including 71 titles on morphology and taxonomy. Their compilation may serve as a complement to this bibliography.

There is a departure from the practice of earlier bibliographies in that titles of unpublished **theses and dissertations** on coccoids are included. **Obituaries** of late coccidologists are also included; these often list the person's articles.

The **annotations** are intended to supplement the information given in the titles. They are written in telegraphic style, often with abbreviated words; therefore a list of abbreviations is given here. If the title included sufficient information, or if the article was not available to the authors (marked "Not seen"), annotations were not prepared.

Because of space limitations, articles have been omitted if they dealt primarily with economic aspects of coccidology--including controls, parasites, predators and other coccoid-associated organisms, plant quarantine records, and laws and regulations--or if they are abstracts of papers given at conferences, casual notes on distribution or economic importance, pest survey records, general entomological texts, or extension leaflets.

We have used the English translation of titles in other languages, except for French, German, and Spanish titles, for which the original language is used except when the article was not available and we had only the English of the computer search to rely on.

## ACKNOWLEDGMENTS

The authors are indebted to the following persons for assistance with this publication: Douglass R. Miller, Chairman, Systematic Entomology Laboratory, Agricultural Research Service, U.S. Department of Agriculture, for the use of the extensive library and the Coccoidea index catalogues available in his office; Douglas J. Williams, of the Commonwealth Agricultural Bureaux, International Institute of Entomology, for reviewing parts of our first draft of this manuscript; Mary C. Holliman, for reviewing and editing the entire manuscript before publication; Mary H. Rhoades and Akke V. Hulburt, of our laboratory, who provided generous technical assistance. The preparation of a camera-ready copy began with Joseph L. Despins; the major work was completed by Brian E. Rhoades, both of this university. Colleagues, too numerous to list here, provided many of the articles and books used for this compilation and assisted in making this publication more complete.

Initial funding for cataloging the Coccoidea literature during the years 1970-1985 was provided to the authors through Cooperative Agreements with the U.S. Department of Agriculture, Agricultural Research Service. Funds for printing this publication were provided by the Virginia Agricultural Experiment Station, through Associate Director E. N. Boyd. National Science Foundation Grant (BSR-8415644) helped fund the processing of data and the preparation of the camera-ready manuscript.

## LIST OF ABBREVIATIONS USED IN ANNOTATIONS

| | |
|---|---|
| Acad. | Academy |
| Abstr. | Abstract |
| Afr. | Africa |
| Agr. | Agraria(n) |
| Agric. | Agricultur(e)(al) |
| Agron. | Agronom(y)(ia)(ie) |
| Amer. | America(n) |
| & | and |
| Ann. | Annals |
| Annu. | Annual |
| Anz. | Anzeiger |
| Appl. | Applied |
| Arch., Arh., or Arq. | Archives |
| Assoc. | Association |
| Beitr. | Beiträge |
| Biol. | Biolog(y)(ical) |
| Bot. | Botan(y)(ical) |
| Bul. | Bulletin |
| ca. | circa |
| CAB | Commonwealth Agricultural Bureaux |
| Calif. | California |
| Cent. | Cent(er)(re)(ral)(ro) |
| Chem. | Chemi(cal)(stry) |
| CIAT | Centro International de Agricultura Tropical in Cali, Colombia |
| Cien. | Ciencia |
| Cir. | Circular |
| Co. | Company |
| Coll. | College |
| comb. | combination |
| Comm. | Committee |
| Commun. | Communications |
| Comp. | Comparative |
| Conf. | Conference |
| Congr. | Congress |
| Contr. | Contribution |
| Coop. | Cooperative |
| cult. | cultur(e)(a) |
| Def. | Defens(e)(a) |
| Dept. | Department |
| Diss. | Dissertation |
| Div. | Division(al) |
| Ecol. | Ecolog(y)(ia) |
| Econ. | Economic |
| Embryol. | Embryology |
| Entomol. or Ent. | Entomolog(y)(ical) |
| Environ. | Environment(al) |
| EPPO | Organ. Européene & Mediterranée pour la Protection des Plantes |
| Expt. | Experiment(al) |
| Ext. | Extension |
| Fac. | Faculty |
| fam. | family |
| FAO | Food & Agricultural Organization |
| Fed. | Federal |

| | |
|---|---|
| For. | Forest, Fôret |
| Franç. | Française |
| Gaz. | Gazett(e)(a) |
| gen. | gen(us)(era) |
| Hebd. | Hebdomadaire |
| Hort. | Horticulture |
| Inc. | Incorporated |
| Ind. | Industr(y)(ial) |
| Inf. | Information |
| Int. | International |
| Invest. | Investigation |
| Ist. | Istituto |
| J. | Journal |
| Lab. | Laborator(y)(io) |
| Leaf. | Leaflet |
| Lett. | Letter(s) |
| Med. | Medical |
| Mem. | Memoire(s) |
| Min. | Ministry |
| Misc. | Miscellaneous |
| Morph. | Morphology |
| Mus. | Muse(um)(e)(ul) |
| n. | new |
| Nac. | Nacional |
| Nat. | Natural(ist) |
| Natl. | National |
| n. gen. | new genus |
| n. name | new name |
| No. | Number |
| N.S. (n.s.) | New Series |
| n. sp. | new species |
| n. ssp. | new subspecies |
| n. syn. | new synonym |
| Org. | Organization, Organic |
| PANS | Pest Articles & News Summaries |
| Pathol. | Pathology |
| Patol. | Patologia |
| Ph.D. | Doctor of Philosophy |
| Phys. | Physics |
| Proc. | Proceeding(s) |
| Prot. | Protection |
| Przeg. | Przeglad |
| Pt. | Part |
| Publ. | Publication, Publisher |
| Quart. | Quarterly |
| Rep. | Report |
| Repub. | Republic |
| Res. | Research |
| Rev. | Rev(iew)(ue)(ista) |
| Riv. | Rivista |
| Roy. | Royal |
| Scand. | Scandinavian |
| Sci. | Science, Scientific |
| Serv. | Servic(e)(io) |
| Soc. | Society |
| South. | Southern |
| sp. | species (singular) |
| spp. | species (plural) |
| SROP | Section Regionale Ouest Palearctique (Groupe de Travail de Organisation International de Lutte Biologique, in Antibes, France) |
| ssp. | subspecies (singular) |
| sspp. | subspecies (plural) |
| Sta. | Station |
| Sup. | Superior |
| Suppl. | Supplement |
| Symp. | Symposium |
| Syst. | System(atic)(atics) |
| Tec. | Tecnica |
| Tech. | Techn(ical)(ology) |
| Trans. | Transaction |
| Trop. | Tropical(e) |
| U.A.R. | United Arab Republic |
| U.K. | United Kingdom |
| Univ. | University |
| U.S. | United States |
| USSR | Union of Soviet Socialist Republics |
| Vet. | Veterinar(y)(io) |
| Wash. | Washington |
| Ztschrt. | Zeitschrift |

## INDICES ON SELECTED SUBJECTS

(a) **Anatomy:** Bareth & Van Liefferinge 1976; Beardsley 1984b; Ben-Dov 1980b; Bielenin 1974a, 1974b, 1975; Bielenin & Weglarska 1973; Fisher & Frame 1984; Foldi 1982; Goidanich 1963, 1977; Gullan 1983; Gunn 1978; Hashimoto & Kitaoka 1971; Hashimoto & Ueda 1983; Howell & Tippins 1973; Korenaga & Okudai 1970; Koteja 1974b, 1974c, 1976, 1980a; Koteja & Liniowska 1974, 1976; Koteja, Liniowska, & Lubowiedzka 1976; Mahdihassan 1970, 1976a; 1983; Mkrtchian & Sarkisian 1975; Mkrtchian, Sarkisian, & Sarkisov 1978; Mkrtchian, Sarkisov, & Sarkisian 1979, 1980; Okudai, Korenaga, & Sakagami 1975; Parameswaran & Liese 1982; Pataki 1971, 1975; Sarkisov & Mkrtchian 1981; Tranfaglia 1980; Tranfaglia & Tremblay 1982; Yadava 1967b.

(b) **Chemistry** of coccoids, including their products (dye, lac, wax), and excluding chemistry of pheromones (given separately): Addae-Mensah & Cameron 1978; Adomako 1972; Ali, Das, Khan, & Ahmed 1980; Andrzejewska 1981; Banks 1977; Banks & Cameron 1970, 1973; Banks, Cameron, & Crossley 1976; Banks, Cameron, Edmonds, & Raverty 1976; Banks, Cameron, & Raverty 1976; Baranyovits 1978; Brown 1975; Cameron, Conn, & Feutrill 1981; Cameron, Crossley, Feutrill, & Griffiths 1978; Cameron, Deutscher, Feutrill, & Griffiths 1981; Cameron, Feutrill, Griffiths, & Hodder 1978; Cameron, Feutrill, Karge, & Patti 1981; Cameron, Feutrill, Patti, Raston, Raverty, & White 1978; Cameron, Feutrill, & Perlmutter 1982; Cameron & Raverty 1976; Chakravarty, Ghosh, & Roy 1982; Doi 1971; Dimroth & Scheurer 1913; Donkin 1977a, 1977b; Ebstein & Gerson 1971; Eisner, Nowicki, Goetz, & Meinwald 1980; Fiecchi, Galli, & Gariboldi 1981; Ganguly 1979; Gharib, Girardie, & De Reggi 1981; Gurr 1975; Haque 1975a, 1975b, 1975c; Hashimoto 1982; Hashimoto, Ichimoto, & Kitaoka 1980; Hashimoto & Kitaoka 1974, 1979, 1982; Ishaaya 1971; Ishaaya, Swirski & Neubauer 1980; Jenkins 1970; Kamei & Asano 1976; Kashino, Endo, & Hasumi 1985; Kashino, Nobata, Endo, & Hasumi 1983, 1984; Kenmochi & Katayama 1976; Khachatrian 1984; Khachatrian, Akopian, Petrosian, Karalova, Makarian, & Magakian 1979; Khachatrian, Karalova, & Magakian 1980; Khachatrian, Magakian, & Karalova 1980; Kozár & Varjas 1976; Kunkel & Kloft 1977; Kusumi, Kimoshita, Fujita, & Kakisawa 1979; Lloyd 1980; Mehendale, Rama-Rao, & Venkataraman 1972; Meinwald, Smolanoff, Chibnall, & Eisner 1975; Miyamoto, Naoki, & Naya 1979; Miyamoto, Naoki, Naya, & Nakanishi 1980; Miyamoto, Naoki, Takemoto, & Naya 1979; Moreno, Fargerlund, & Shaw 1976; Naya 1979; Naya, Miyamoto, & Takemoto 1978; Naya, Yoshihara, Iwashita, Komura, Nakanishi, & Hata 1981; Negishi, Asano, Uchida, & Nakagawa 1978; Ogiwara, Nozawa, Hirata, Amakawa, Oishi, & Seki 1980; Pallotta & Berlowitz 1970; Pawlak, Tempesta, Iwashita, Nakanishi, & Naya 1983; Peleg 1982; Peleg & Gothilf 1981; Robertson 1971, 1973; Robertson & Slowiak 1974; Rothschild & Reichstein 1973; Rotundo 1975, 1978; Rotundo & Tremblay 1980a; Salama & Saleh 1984; Saleh & Salama 1971; Sands 1984; Sankaran & Rao 1982; Shioyama 1977; Singh, Mhaskar, & Dev 1978; Su, Zhai, Liang, & Guo 1981; Takahashi & Nomura 1982; Tamaki 1968a, 1968b, & 1970; Tempesta, Iwashita, Miyamoto, Yoshihara, & Naya 1983; Tremblay, Tranfaglia, Rotundo, & Iaccarino 1977; Varshney 1978, 1983; Yamada, Noda, Hayakawa, Mikami, & Uno 1985; Yasuda 1981.

(c) **Cytology and Genetics:** Akopian & Magakian 1985; Alstad & Edmunds 1983a, 1983b; Berlowitz 1974; Berlowitz & Pallotta 1972; Berlowitz, Pallotta, & Pawlowski 1970; Bielenin & Weglarska 1973; Blackman, Hewitt, & Ashburner 1980; Bonafonte 1979, 1981; Brown 1977; Chandra & Brown 1975; Chauhan & Mishra 1970a; Deobagkar, Muralidharan, Devare, Kalghatgi, & Chandra 1982; Foldi & Pesson 1978; Harris & Robison 1973; Huang 1970, 1971; Khachatrian 1984; Khachatrian, Akopian, Petrosian, Karalova, Makarian, & Magakian 1979; Khachatrian, Karalova, & Magakian 1980; Khachatrian, Magakian, & Karalova 1980; Kitchin 1970, 1975; Klein & Eckhardt 1976; Korecka 1974; Ksiazkiewicz 1980; Ksiazkiewicz-Kapralsa 1984; Lorick 1970; Magakian, Karalova, & Khachatrian 1979a, 1979b, 1980; Magakian, Makarian, Akopian, & Petrosian 1979; Magakian, Makarian, Petrosian, Abroian, & Akopian 1976; Matesovian 1977; Miller, Berlowitz, & Regelson 1971; Mkrtchian 1977, 1982; Nelson-Rees 1963; Nur 1970, 1971, 1972a, 1972b, 1973a, 1973b, 1977a, 1977b, 1979, 1980, 1982, 1983; Nur & Brett 1985; Pallotta 1972; Pallotta, Berlowitz, & Rodriguez 1970; Parida & Moharana 1981, 1982; Pawlowski 1970; Perondini, Basile, & Mori 1981;

Rice 1983; Robison 1971, 1972, 1977; Ross 1971, 1975; Royer 1971a, 1971b, 1971c, 1972, 1973a, 1973b, 1973c; Royer & Delavault 1971, 1974; Sabour 1971, 1972b, 1978; Sabour & Barati 1976; Sarkisov, Mkrtchian, & Khechoian 1981; Sarkisov, Sevumian, & Mkrtchian 1978; Sarkisov, Sevumian, Sarkisian, & Mkrtchian 1974; Scarbrough, Hattman, & Nur 1984; Sprackling & Twigg 1980; Swanson, Merz, & Young 1981; Swiderski 1980; Tremblay 1972; Tubert & Berlowitz 1974; Wang 1976; Yao 1985; Young & Wu 1983; Young, Wu, & Yao 1984.

(d) **Histology:** Albrigo & Brooks 1977; Bielenin 1971; Blasquez 1966; Cox & Pearce 1983; Delage-Darchen, Matile-Ferrero, & Balachowsky 1972; Duelli 1979; Fisher & Frame 1984; Foldi 1973, 1978, 1981b, 1982, 1983a, 1983b, 1983c, 1984a; Foldi & Cassier 1985; Foldi & Pearce 1985; Foldi & Pesson 1978; Ganguly & Varshney 1974; Gullan 1979; Haque 1975b; Hartley, Walter, & Morrison 1983; Pesson & Foldi 1978; Srivastava & Sinha 1964; Waku & Foldi 1984; Waku & Manabe 1981; Yasuda 1979.

(e) **Paleontology and Fossils:** Heie 1981; Koteja 1984e, 1985b, 1985c; Larson 1978; Menge 1856; Miller & Kosztarab 1979; Pampaloni 1903; Popov 1980; Scudder 1890; Szelegiewicz 1971; Zeuner 1938.

(f) **Pheromones:** Baeckström, Bjorking, Hogberg, & Norin 1985; Bichina, Kovalev, Smetnik, & Vaganova 1982; Bierl-Leonhardt, Moreno, Schwarz, Foster, Plimmer, & Devilbiss 1980, 1982; Bierl-Leonhardt, Moreno, Schwarz, Fargerlund, & Plimmer 1981; Carlsen & Odden 1984; Dean 1979; Dunkelblum, Sternlicht, Bar-Zakkai, & Goldschmidt 1983; Einhorn, Bianchi, & Bénassy 1983; Gieselmann, Moreno, Fargerlund, Tashiro, & Roelofs 1979; Gieselmann, Rice, Jones, & Roelofs 1979; Gonzales & Barria 1983; Heath, Doolittle, Sonnet, & Tumlison 1980; Heath, McLaughlin, Tumlison, Ashley, & Doolittle 1979; Henrick, Carney, & Anderson 1982; Hoyt, Westigard, & Rice 1983; Moreno 1972; Moreno, Carman, Rice, Shaw, & Bain 1972; Moreno & Fargerlund 1975; Moreno, Fargerlund, & Ewart 1984; Moreno, Fargerlund, & Shaw 1973; Moreno, Rice, & Carman 1972; Mori 1981; Mori, Hummel, & Miller 1984; Nagakawa & Mori 1984; Negishi, Ishiwatari, & Asano 1980; Negishi, Uchida, Tamaki, Mori, Ishiwatari, Asano, & Nakagawa 1980; Pettersson 1970; Pfeiffer 1985; Qi, Yang, & Zhao 1983; Quijano 1981; Rice 1974; Rice, Flaherty, & Jones 1982; Rice & Hoyt 1980; Rice & Jones 1977; Roelofs, Gieselmann, Cardé, Tashiro, Moreno, Hendrick, & Anderson 1977, 1978; Rotundo 1978; Rotundo, Gaston, & Shorey 1979; Rotundo & Tremblay 1973, 1974, 1975a, 1975b, 1976a, 1976b, 1976c, 1977, 1978, 1980b, 1981, 1982a, 1982b; Rotundo, Tremblay, & Giacometti 1979; Rotundo, Tremblay, & Papa 1980; Tremblay & Rotundo 1975, 1978; Uchida, Nakagawa, Negishi, Asano, & Mori 1981; Wolk, Goldschmidt, Dunkelblum, & Ben-Dov 1985; Young, Miller, & McClure 1984; Young & Qi 1983.

(g) **Preservation and Mounting:** Banks & Williams 1972; Bullington & Kosztarab 1985; Hamon & Kosztarab 1979; Howell & Kosztarab 1972; Lambdin & Kosztarab 1977; MacGregor 1972; Rosas Costa 1979; Sandlant 1978; Wang 1981b; Wilkey 1977; Williams & Kosztarab 1972; Willoughby & Kosztarab 1974.

(h) **Symbionts:** Ganguly 1979; Houk & Griffiths 1980; Iaccarino & Tremblay 1970; Jiron & Salas 1975; Louis 1969, 1971, 1972; Louis & Kuhl 1972; Makarian 1980; Parameswaran 1983; Tremblay 1972, 1979; Tremblay & Caltagirone 1972; Tremblay & Tripodi 1980.

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Biology; hosts & distribution; natural enemies.

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Ecological study; control recommendations.

**Abd El-Hadi, N. H. 1974.** A revised list of insect fauna in Yemen Arab Republic. FAO (Rome, Italy), Ser. No. 2, Hodeidah, Yemen Arab Republic. 26 pp.

**Abdelrahman, I. 1974.** The effect of extreme temperatures on California red scale, *Aonidiella aurantii* (Mask.) (Hemiptera, Diaspididae), and its natural enemies. Austral. J. Zool. 22(2):203-212.
Cold more critical than heat to red scale; heat more critical than cold to natural enemies of red scale.

**Abdul-Ahad, I. & Jassim, H. K. 1983.** The life-cycle of *Parlatoria blanchardii* (Targ.) (Diaspididae, Homoptera). (In Arabic, English summary). Arab J. Plant Prot. 1(1):22-24.
Two year study; number of generations per year; duration of instars; distinguishing marks between males and females.

**Abdul-Sattar, A.**, *see* Al Hafidh, E. M. T., Swair, I. A., & Abdul-Sattar, A.

**Abo-Setta, M. M.**, *see* Amin, A. H., Gaber, I., & Abo-Setta, M. M.

**Abrahamson, L. P. 1977.** Red pine scale. Appl. Forestry Res. Inst., State Univ. New York. 2 pp.
*Matsucoccus resinosae*; biology; hosts; distribution; damage.

**Abrahao, J. 1970.** Roots of coffee plants attached by scale insects. Biologico 36(11):325.
Damage by *Pseudococcus cryptus*.

**Abramovic, T. 1980.** Contribution to the study of scale bugs on apple- and peach-trees in the regional territory of Belgrade. Arh. Poljopr. Nauke 41(143):523-529. (In Serbo-Croatian, English summary).
*Quadraspidiotus perniciosus* & *Lepidosaphes ulmi* were the most frequent; 3 other spp. mentioned.

**Abroian, L. O.**, *see* Magakian, Y. A., Makarian, S. R., Petrosian, A. V., Mkrtchian, L. P., Abroian, L. O., & Akopian, L. A.

**Abul-Nasr, S., Swailem, S., & Dawood, M. Z. 1976.** Survey of aphids and mealy-bugs infesting some cut flowering plants in certain regions of Egypt. Bul. Soc. Entomol. Egypte 59:281-288.
*Icerya purchasi*, *aegyptica*, & *Ferrisiana virgata*; hosts & distribution.

**Abu Yaman, I. K. 1970.** The pistachio cushion scale, *Anapulvinaria pistaciae* Boden. and its control in Iraq. Ztschrt. f. Angew. Entomol. 66(3):242-247.

Life history; control.

**Adams, C. T.**, *see* Apperson, C. S., & Adams, C. T.

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Comprehensive survey of lipids supported the chemotaxonomic separation of aphids & coccids from the remainder of the Hemiptera; four coccoid spp. analyzed.

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**Adeli, E. & Soleimani, P. 1976.** Insects on Oriental beech (*Fagus orientalis* ssp. *macrophylla*) in Iran and their importance for forestry practices and wood utilization. Ztschrt. f. Angew. Entomol. 80(2):132-138.
*Cryptococcus fagi*; *Quadraspidiotus zonatus*.

**Adenuga, A. O. 1975.** Mutualistic association between ants and some Homoptera - its significance in cocoa production. Psyche 82(1):24-28.
Discusses 9 coccoid spp. in 4 fam.; distinction was made between facultative & obligatory association.

**Adomako, D. 1972.** Studies on mealybug (*Planococcoides njalensis* (Laing)) nutrition: a comparative analysis for the free carbohydrate and nitrogenous compounds in cocoa bark and mealybug honeydew. Bul. Entomol. Res. 61(3):529-591.
Paper chromatographic analysis.

**Adzhemian, L. A., Babaian, G. A., & Oganesian, S. B. 1978.** Metabolic changes in the leaves of mulberry tree attacked by Comstock mealybug. Biol. Zhur. Armenii 31(3):310-313. (In Russian, Armenian and English summaries).
*Pseudococcus comstocki*; infestation interfered with the normal process of metabolism in the infected & non-infected leaves of the host plant.

**Afifi, S. A.**, *see* Amin, A. H., Afifi, S. A., & Nada, S. M. A.; Kamel, A. H., & Afifi, S. A.; Nada, S. M. A., Afifi, S. A., & Amin, A. H.

**Afifi, S. A., Amin, A. H., & Nada, S. M. A. 1976.** Taxonomy of males of two species of Pseudococcidae (Homoptera: Coccoidea). Bul. Entomol. Soc. Egypte 60:141-151.
*Planococcus ficus*, *Trionymus lounsburyi*; key for adult males of 2 gen.

**Aguilera, A. P. 1970.** Observaciones sobre *Melanaspis sitreara* (Hempel) (Hom: Diaspididae). Idesia 1:111-133.
Biology & habits; development; ecology; distribution; describes female, male, egg, larva, nymph, exuvia; hosts.

**Aguilera, A. P. & Grana, S. F. 1976.** Presence de *Orthezia olivicola* Beingolea (Homoptera: Ortheziidae) en Chile. Idesia 4:97-100. (English summary).
New record; hosts & distribution.

**Ahmad, R. 1970.** A new species of *Fiorinia* (Hom. Diaspididae) from Pakistan. Ann. Soc. Entomol. France 6(3):709-711.
*F. pakistanensis* n. sp. from *Olea cuspidata*.

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Twenty-two coccid spp. were reared for mass breeding of parasites & predators.

**Ahmed, K.**, *see* Ali, M. E., Das, D. C., Khan, M. I. H., & Ahmed, K.

**Ahmed, N. M. A. S.**, *see* Swailem, S. M., Ismail, I. I., & Ahmed, N. M. A. S.

**Ahmed, O. S.**, *see* Rizk, G. N., & Ahmed, O. S.

**Aibasov, K. A. 1974.** Cicads and coccids (Homoptera, Cicadinea, Coccinea) damaging *Populus diversifolia*. Akad. Nauk Kazakhskoi SSR, Inst. Zool. 35:126-132. (In Russian).
Biological & descriptive notes on *Acanthococcus populi*, *Parthenolecanium corni*, *Eulecanium rugolosum* & *Diaspidiotus slavonica*.

**Akhmedov, S. A. & Ismailov, F. I. 1980.** New pest of grapevine. Sadovod. Vinograd, Vinodel. Moldavii No. 11:37. (In Russian).
*Neopulvinaria imeretina*

**Akinlosotu, T. A. & Leuschner, K. 1981.** Outbreak of two new cassava pests *Monomychellus tanajoa* and *Phenacoccus manihoti* in southwestern Nigeria. Trop. Pest Management 27(2):247-250.
First record in Nigeria; damage; control recommendations.

**Akman, K.**, *see* Kozár, F., Konstantinova, G. M., Akman, K., Altay, M., & Kiroglu, H.

**Akopian, L. A.**, *see* Khachatrian, M. G., Akopian, L. A., Petrosian, A. V., Karalova, E. M., Makarian, S. R., & Magakian, Y. A.; Magakian, Y. A., Makarian, S. R., Akopian, L. A., & Petrosian, A. V.; Magakian, Y. A., Makarian, S. R., Petrosian, A. V., Mkrtchian, L. P., Abroian, L. O., & Akopian, L. A.

**Akopian, L. A. & Magakian, Y. A. 1985.** The oogenesis of the Ararat cochineal. 5. Changes in trophocyte ultrastructure during the follicular period of ovariole development. Tsitologiya (1984) 26(12):1391-1395. (In Russian).
*Porphyrophora hamelii*; detailed study.

**Alam, M. S.**, *see* Alam, S., Alam, M. S., & Karim, A. N. M. R.

**Alam, M. Z. 1975.** Entomological problems of agriculture in Bangladesh. PANS 21(4):380-383.
Lists 14 coccoid spp. on several crops.

**Alam, S., Alam, M. S., & Karim, A. N. M. R. 1979.** Rice mealybug outbreak in Bangladesh. Int. Rice Res. Newsletter 4(5):20-21.
*Brevennia rehi* (*Heterococcus rehi*); damage; control recommendations; distribution.

**Alayo, R.**, *see* Alayo Soto, R.

**Alayo Soto, R. 1976.** Introducción al estudio de los Coccoideos de Cuba. Acad. Cien. Cuba, Inst. Zool. Ser. Biol. No. 61:25 pp.
General introduction to coccoid females; metamorphosis; mounting technique; description & hosts for 11 spp. in 9 gen.

*See* Blahutiak, A., & Alayo, R.; Pruna, P. M., & Alayo, R.

**Alayo Soto, R. & Blahutiak, A. 1980.** Dinámica estacional de *Saissetia hemisphaerica* Targioni (Homoptera: Coccoidea) en Cuba. Poeyana Inst. Zool. Acad. Cienc. Cuba 210:16 pp. (English summary).
Host; physiological condition of food plant in relation to population fluctuation; mortality.

**1981.** Aspectos biológicos y taxonómicos en *Saissetia hemisphaerica* Targioni (Homoptera: Coccoidea). Poeyana Inst. Zool. Acad. Cienc. Cuba 220:18 pp. (English summary).
Describe first stage male & female; damage; host list; table for world distribution on different host plants.

**Albrigo, L. G. & Brooks, R. F. 1977.** Penetration of citrus cuticles and cells by citrus snow scale, *Unaspis citri* (Comst.). Proc. Int. Soc. Citriculture (Int. Soc. Citriculture Symp., Orlando, Fla., 1977) 2:463-467.
Scanning & transmission electron microscope was used to reveal the damage to citrus cells; detailed discussion of the stylet & mouthpart of *U. citri*.

**Alexandrakis, V. 1980a.** Essai d'appreciation des dégâts provoques sur oranger en Crète par la presence d'*Aonidiella aurantii* (Mask.) (Hom. Diaspididae). Fruits 35(9):555-560. (English, German, & Spanish summaries).
Reduction in new growth; weight loss & reduced yield were observed in the following year.

**1980b.** Données bio-écologiques sur *Pollinia pollini* (Hom. Coccoidea, Asterolecaniidae) sur olivier en Crète. Ann. Soc. Entomol. France 16(1):9-17. (English summary).
Damage; control; natural enemies; sex ratio; fecundity; natural mortality; hibernation; population density.

**1983.** Données biologiques sur *Aonidiella aurantii* Mask. (Hom. Diaspididae) sur agrumes en Crète. Fruits 38(12):831-838.
Studied biological features in mixed orange-mandarin groves; population dynamics; sex ratio; mortality.

*See* Neuenschwander, P., Michelakis, S., & Alexandrakis, V.

**Alexandrakis, V. & Bénassy, C. 1979.** Essai d'appreciation des dégâts provoques sur olivier en Crète par la presence d'*Aspidiotus nerii* Bouché (Homoptera, Diaspididae). Rev. Zool. Agric. Pathol. Végét. 78(2):49-56. (English summary).
Heavy infestation caused chemical changes, losses in weight, size & oil content, a yield loss over 70%, which had not been previously suspected.

**1982.** Influence de la plante-hôte l'olivier sur la dynamique des populations d'*Aspidiotus nerii* Bouché (Homoptera, Diaspididae). Agronomie 2(9):843-850. (English summary).
Results showed that each of the 3 generations of *A. nerii* coincided with a particular vegetative stage of the olive tree; resistant & susceptible varieties of olive.

**Alexandrakis, V. & Michelakis, S. 1980.** Distribution d'*Aonidella aurantii* (Mask.) (Hom.. Diaspididae) en fonction de son emplacement sur l'arbre et de la variété d'agrumes en Crète. Fruits 35(10):639-644.
*A. aurantii* was the major pest of citrus; position of pest was influenced by the microclimate of the tree.

**Alford, D. V. 1984.** A colour atlas of fruit pests, their recognition, biology and control. Wolfe Publ. Ltd., London, U.K. 320 pp. (coccoids on p. 63-65).
Mentions 4 spp. in chapter on scale insects.

**Al Hafidh, E. M. T., Swair, I. A., & Abdul-Sattar, A. 1981.** Ecological studies and chemical control of parlatoria date scale insect (*Parlatoria blanchardii* Targ.) (Homoptera, Diaspididae) on date palms in Iraq. Date Palm J. 1(1):117-127. (In Arabic & English).
Susceptible & resistant date palm varieties; rate of infestations at different times of the year; control recommendations.

**Ali, M. 1980.** A report on the wax scales, *Ceroplastes pseudoceriferus* Green and *Chloropulvinaria polygonata* (Ckll.) (Homoptera: Coccidae) on mango and their natural enemies. Bangladesh J. Zool. (1978) 6(1):69-70.
First record on mango in Bangladesh; damage.

**Ali, M. E., Das, D. C., & Khan, M. I. H. 1978.** Investigation on lac. Part II. Selection of host other than ber (*Zizyphus jujuba*) by altering the life cycle of lac insects from one kind of host to another. Bangladesh J. Sci. Ind. Res. (1976) 11(1/4):79-81.
*Tachardia lacca*; location; hosts; natural enemies.

**1980.** Investigation on lac insects. 4. Use of raintree (*Pithecolobium saman*) as lac host. Bangladesh J. Sci. Ind. Res. (1979) 14(1/2):269-271.
Raintree infested with lac insect from katki crops resulted in good encrustation; infestations on ber were not satisfactory in terms of development & yield.

**Ali, M. E., Das, D. C., Khan, M. I. H., & Ahmed, K. 1980.** Investigation on lac. 5. Effect on the composition of lac due to change of host plants of lac insects. Bangladesh J. Sci. Ind. Res. (1979) 14(1/2):286-288.
Very little variation in sticklac composition was produced in Bangladesh by the ranginee type lac insect.

**Ali, S. M. 1970a.** A catalogue of the Oriental Coccoidea. (Part III.) (Insecta: Homoptera: Coccoidea). Indian Mus. Bul. 5(1):9-94.
Hosts & distribution of 289 spp. in 92 gen. & 7 fam.; literature citations.

**1970b.** A catalogue of the Oriental Coccoidea. (Part IV.) (Insecta: Homoptera: Coccoidea). Indian Mus. Bul. 5(2):71-150.
Hosts & distributions of 290 spp. in 80 gen. & 4 fam.; literature citations.

**1971.** A catalogue of the Oriental Coccoidea. (Part V.) (Insecta: Homoptera: Coccoidea) (with an index). Indian Mus. Bul. 6(2):7-82.
Hosts & distributions of 184 spp. in 44 gen. & 2 fam.; literature citations.

**1973a.** Some coccids from Goa. J. Bombay Nat. Hist. Soc. 69(3):669-671.
First record from Goa; 6 spp. in 2 fam.; hosts & distribution.

**1973b.** A note on the systematic position of the paddy mealybug (Insecta: Homoptera: Coccoidea: Pseudococcidae) from India. J. Zool. Soc. India 25(1/2):53-56.
*Heterococcus rehi* tentatively placed in *Brevennia*; redescription; hosts & distribution.

**1975.** *Birendracoccus*, new genus for the sugarcane leaf mealybug (Insecta: Homoptera: Coccoidea: Pseudococcidae). Dr. B. S. Chauhan Commemorative Vol. p. 279-283.
*B. saccharifolii* n. comb.; detailed description of female, short description of male; distribution.

**Aliniazee, M. T. 1980.** Filbert insect and mite pests. Oregon St. Univ. Agric. Expt. Sta. Bul. No. 643. 12 pp.
*Phenacoccus aceris*, *Lecanium corni* & *excrescens*; life history; damage; control.

**Almeida, D. M. de. 1971.** Diaspididae (Homoptera - Coccoidea) of Mozambique, with the description of a new species. Novos Taxa Entomol. 90:3-17. (In Portuguese).
*Andaspis laurentina* n. sp.; 33 spp. recorded, including new records; hosts.

**1972.** Pests of mango. Gazeta Agric. 24(272):2-5. (In Portuguese).
Notes were given on habits and control of insect pests of mango in Mozambique; dámage; characters for field identification; *Aulacaspis tubercularis* (*cinnamomi*); *Phenacaspis cockerelli*; *Ferrisia (Ferrisiana) virgata.*

**1973a.** *Felixiella* n. gen. and other Diaspididae (Homoptera: Coccoidea) of Mozambique. Novos Taxa Entomol. 100:3-8. (In Portuguese).
*Felixiella* n. gen.; *F. infulenensis* n. sp. description; 8 spp. in 7 gen. listed; hosts; distribution; first records.

**1973b.** Notes on the coccoid *Stictococcus dimorphus* Newst. (Hemiptera Coccoidea). "Livro de homenagem" ao Prof. Fernando Frade Viegas da Costa 70 Anniv. 27 April, 1968:19-26. (In Portuguese, English & French summaries).
Describes nymphs of male & female and adult female; hosts, distribution; parasite.

**1974.** Contribution to a listing of the Coccoidea of Mozambique. Acta Biologica Ser. B (1972-1974) 12(1/4):49-68. (In Portuguese, English summary).
61 spp. in 9 fam. listed; 14 spp. recorded for the first time; hosts & distribution.

**Al-Omar, M. A.**, *see* Al-Rawy, M. A., Kaddou, I. K., & Al-Omar, M. A.

**Al-Rawy, M. A., Kaddou, I. K., & Al-Omar, M. A. 1977.** The present status of the spherical mealybug, *Nipaecoccus vastator* (Maskell) (Homoptera: Pseudococcidae). Bul. Biol. Res. Cent. (Baghdad) 8:3-15.
Life cycle; hosts; distribution; natural enemies; new host records.

**Alstad, D. N.**, *see* Edmunds, G. F., Jr., & Alstad, D. N.

**Alstad, D. N. & Edmunds, G. F., Jr. 1983a.** Selection, outbreeding depression and the sex ratio of scale insects. Science 220(4592):93-95.
*Nuculaspis californica*; host selection & adaptation; impact of gene flow produced predictable changes in sex ratio.

**1983b.** Adaptation, host specificity, and gene flow in the black pineleaf scale. *In* "Variable Plants and Herbivores in Natural and Managed Systems," edited by Denno, R. F. & McClure, M. S. New York, Academic Press. p. 413-426.
*Nuculaspis californica*; density dependence; examined colonizing ability as affected by density; survivorship patterns & sex ratio; genetic model of adaptation & specificity; some implications of genetic variation; natural enemies.

**Alstad, D. N., Edmunds, G. F., Jr., & Johnson, S. C. 1980.** Host adaptation, sex ratio, and flight activity in male black pineleaf scale. Ann. Entomol. Soc. Amer. 73(6):665-667.
*Nuculaspis californica*; male frequency correlated with insect density; diurnal pattern of male flight activity; sex ratio biased, varied from tree to tree.

**Alston, F. H.**, *see* Knight, R. L., & Alston, F. H.

**Altay, M.**, *see* Kozár, F., Konstantinova, G. M., Akman, K., Altay, M., & Kiroglu, H.

**Altinayar, G. 1981.** Studies on the insect fauna of cereal fields in the region of central Anatolia. Bitki Koruma Bul. 21(2):53-88. (In Turkish, English summary).
*Margarodes tritici*, *Neomargarodes* sp. & *Heterococcus* sp.; host & distribution.

**Altona, R. E.**, *see* Bradford, B., Whitehead, G. B., & Altona, R. E.

**Alvarez, M.**, *see* Grillo, M., Valle, N. del, & Alvarez, M.

**Amakawa, E.**, *see* Ogiwara, T., Nozawa, T., Hirata, K., Amakawa, E., Oishi, M., & Seki, H.

**Amin, A. H. 1981.** An estimation of the population density of California red scale, *Aonidiella aurantii* (Mask.) in Giza-Egypt using sex pheromone traps (Homoptera: Diaspididae). Ain Shams Univ., Fac. Agric. Res. Bul. 1537:1-11. (Arabic summary).

Observed four generations in 1979 on lemon trees.

*See* Afifi, S. A., Amin, A. H., & Nada, S. M. A.; Habib, A., Salama, H. S., & Amin, A. H.; Hafez, M., Salama, H. S., & Amin, A. H.; Hosny, M. M., Amin, A. H., & El-Saadany, G. B.; Nada, S. M. A., Afifi, S. A., & Amin, A. H.; Salama, H. S., Amin, A. H., & Hawash, M.

**Amin, A. H., Afifi, S. A., & Nada, S. M. A. 1976.** Taxonomy of four adult males of family Lecanodiaspididae. Bul. Soc. Entomol. Egypte 60:153-169.
*Lecanodiaspis hodgsoni*, *rufescens*, *varioseta* & *baculifera*; key to adult males of these spp.; confirmed exclusive character of *Lecanodiaspis*.

**Amin, A. H., Gaber, I., & Abo-Setta, M. M. 1981.** The seasonal variations in the population density of the purple scale, *Lepidosaphes beckii* (Newm.) in relation to three main weather factors in Egypt (Homoptera: Diaspididae). Ain Shams Univ. Fac. Agric. Res. Bul. 1538:1-12. (Arabic summary).
Three generations present on orange trees.

**Amin, A. H. & Salem, Y. S. 1978.** Population studies on the scale insect species *Parlatoria zizyphus* (Lucas), a new pest of citrus trees in Egypt (Homoptera: Coccoidea: Diaspididae). Proc. 4th Conf. Pest Control (Cairo, 1978) Part I. p. 40-48.
Biology; hosts & distribution; climatic conditions; seasonal variations.

**Amitai, S.**, *see* Ben-Dov, Y., & Amitai, S.

**Ammar, E. D.**, *see* Awadallah, K. T., Ammar, E. D., & Rashad, A.; Awadallah, K. T., Ammar, E. D., Tawfik, M. F. S., & Rashad, A.

**Ammar, E. D., Awadallah, K. T., & Rashad, A. 1979.** Ecological studies on *Ferrisia virgata* Ckll., on *Acalypha* shrubs in Dokki Giza. Deutsche Entomol. Ztschrt. 26(4/5):207-213.
Population dynamics; seasonal abundance; effect of temperature & humidity; biology; distribution.

**Anand, N. 1983.** The market for annatto and other natural colouring materials, with special reference to the United Kingdom. Trop. Devel. & Res. Inst. U.K. Rep. No. G174:32 pp.
*Dactylopius coccus*

**Ananda Rao, L. V.**, *see* Rao, L. V. A.

**Anathakrishnan, T. N. 1984.** Bioecology of thrips. Oak Park Michigan, Indira Publ. House. 233 pp. (coccoids on p. 84-85).

Mentions 7 scale insects & their coccidophagous thrips.

**Anderson, J. F., Ford, R. P., Kegg, J. D., & Risley, J. H. 1976.** The red pine scale in North America. Conn. Agric. Exp. Sta. Bul. No. 765:5 pp.
*Matsucoccus resinosae.* biology; related spp.; hosts & geographic distribution; control.

**Anderson, R. I.**, *see* Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P.

**Anderson, R. J.**, *see* Henrick, C. A., Carney, R. L., & Anderson, R. J.; Roelofs, W. L., Gieselmann, M. J., Carde, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J.

**Andres, L. A. 1971.** The suppression of weeds with insects. Proc. Tall Timbers Conf. Ecol. Animal Control by Habitat Management (Tallahasse, Fla.) 3:185-195.
*Dactylopius opuntiae*

**Andrewartha, H. G. & Birch, L. C. 1973.** The history of insect ecology. *In* "History of Entomology." Annu. Rev. Inc. Palo Alto, Calif. p. 229-266.

**Andrzejewska, E. 1981.** Detection of the natural organic dye, cochineal, in meat products. Roczniki Panstwowego Zakladu Higieny 32(4):315-318.
A method was developed for identification & detection of the concentration of cochineal in certain meat products.

**Anesnansley, D. J.**, *see* Eisner, T., Jutro, P., Anesnansley, D. J., & Niedhauk, R.

**Anjaneyulu, A., Singh, S. K., Shukla, V. D., & Shenoi, M. M. 1980.** Chlorotic streak, a new virus disease of rice. Int. Rice Res. Newsletter 5(3):12-13.
*Heteroccus rehi* implicated as disease vector.

**Annecke, D. P. 1978.** Soft green scale. *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. No. 391:103.
*Coccus aethiopicus.*

*See* Moran, V. C., & Annecke, D. P.

**Annecke, D. P., Burger, W. A., & Coetzee, H. 1976.** Pest status of *Cactoblastis cactorum* (Berg.) (Lepidoptera: Phycitidae) and *Dactylopius opuntiae* (Cockerell) (Coccoidea: Dactylopiidae) in spineless *Opuntia* plantations in South Africa. J. Entomol. Soc. South. Africa 39(1):111-116.
Damage; control recommendations.

**Annecke, D. P. & Georgala, M. B. 1978.** Soft brown scale. *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. No. 391:99-102.
*Coccus hesperidum*; hosts; economic importance; life & seasonal history; biological & chemical control.

**Annecke, D. P. & Moran, V. C. 1978.** Critical reviews of biological pest control in South Africa. 2. The prickly pear, *Opuntia ficus-indica* (L.) Miller. J. Entomol. Soc. South. Africa 41(2):161-188.
*Dactylopius opuntiae*; biology; effectiveness; natural enemies; attempt to improve effectiveness.

**Annecke, D. P. & Neser, S. 1977.** On the biological control of some cape pest plants. Proc. 2nd Natl. Weed Conf. South Africa (Stellenbosch, 1977). p. 303-319.
*Dactylopius ceylonicus* & *opuntiae* were used for control of *Opuntia vulgaris* & *ficus-indica.*

**Anonymous. 1971.** Pernicious (San Jose) scale (*Quadraspidiotus perniciosus*). Rhodesian Farmer 42(8):27.
Distribution in Rhodesia; hosts; damage.

**1976.** Le pou a poche blanche (*Pulvinaria iceryi*). Rev. Agric. Sucr. Île Maurice 55(4):405-407.
Biology; hosts; first record for natural enemies.

**1981.** Oil palm and coconut pests in West Africa. Oleagineux 36(4):168-228.
*Aspidiotus destructor*; description of male and female; biology; damage; control methods.

**Anthony, M. 1972.** Developpment de la galle du *Gallacoccus anthonyae* Beardsley sur la feuille de *Shorea pauciflora* King (Dipterocarpaceae). Compt. Rend. Acad. Sci., Paris, Ser. D 275(20):2263-2266.
Galls grew in 3 stages, corresponding to the molts & movements of the developing *Gallacoccus anthonyae* inside them.

**1973.** Sur la parenchymatisation de l'apex neoforme de la galle du *Gallacoccus anthonyae* Beardsley. Compt. Rend. Acad. Sci., Paris, Ser. D. 276(8):193-196. (Not seen).

**1974.** Cecidogenese comparee de deux galles de coccides (*Gallacoccus anthonyae* Beardsley et *Gallacoccus secundus* Beardsley) developpees sur le *Shorea curtisii* Dyer ex King (Dipterocarpaceae). Part II. Marcellia 38:99-144. (English summary).
Description, morphology, anatomy, development of the 2 galls; temporary classification of epiphyllous bud-shaped galls presented.

**1977.** Morphological and anatomical comparison of normal and cecidial shoots in *Shorea curtisii* Dyer ex King. Marcellia 40(1/4):181-192.
*Gallacoccus anthonyae* & *secundus*.

**1980a.** Comparative study of the rates of organogenesis of normal and cecidial shoots in *Shorea curtisii* Dyer ex King (Dipterocarpaceae). Flora, Morphologie, Geobotanik, Oekophysiologie 169(5):365-375.
*Gallacoccus anthonyae* & *secundus*.

**1980b.** Étude des bourgeonnements epiphylles determines par l'action d'eriococcides cecidogenes chez les Dipterocarpacees du genre *Shorea*. Part I. Doctoral Diss. Univ. Louis Pasteur, Strasbourg. 44 pp.
*Gallacoccus anthonyae* & *secundus*.

**Antonucci, A.**, *see* Pellizzari Scaltriti, G., & Antonucci, A.

**Aoki, J. 1974.** Taxonomic considerations on the red-headed scale fungi in Japan. Japanese J. Appl. Entomol. Zool. 18(3):115-120. (In Japanese, English summary).
*Lepidosaphes tubulorum*, *Pseudaulacaspis pentagona*, *Pseudaonidia paeoniae*.

**Apperson, C. S. & Adams, C. T. 1983.** Medical and agricultural importance of red imported fire ant. Florida Entomol. 66(1):121-126.
*Toumeyella parvicornis* was attended by red imported fire ants in north Florida on slash pine trees.

**Appleby, J. E.**, *see* Miller, D. R., & Appleby, J. E.

**Arbaugh, M. J.**, *see* Morse, J. G., Arbaugh, M. J., & Moreno, D. S.

**Archibald, R. D., Cox, J. M., & Deitz, L. L. 1979.** New records of plant pests in New Zealand. N. Zeal. J. Agric. Res. 22:201-207.
First record of *Pulvinaria hydrangeae* & *Kuwanaspis pseudoleucaspis*; presence of *Aulacaspis rosarum* & *Pinnaspis aspidistrae* clarified.

**Argyriou, L. C. 1976.** Some data on biology, ecology and distribution of *Aspidiotus nerii* Bouché (Homoptera: Diaspididae) in Greece. Ann. Inst. Phytopathol. Benaki (n.s.) 11(3):209-218.
Hosts; natural enemies.

**1977.** Données sur la recrudescence d'attaque des Cochenilles en Grèce. Fruits 32(5):360-362. (English summary).
Recorded 9 coccoid spp.; first record for *Saissetia privigna*.

**1979.** Zoogeographical consideration of scale insects of citrus in Greece. Biol. Gallo-Hellenica 9:307-313. (French & Greek summaries).
Discusses 16 coccoid spp. in 4 fam.; new records; abundance & distribution; natural enemies for some spp.

**1984.** Faunal analysis of some scale insects in Greece. Proc. 10th Int. Symp. of Central European Entomfaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 364-367.
Notes on hosts, distribution, biology & economic importance of 32 coccoid spp. in 6 fam.; new records.

**Argyriou, L. C. & Ioannides, A. G. 1975.** *Coccus aegaeus* (Homoptera, Coccoidea, Coccidae) De Lotto: nouvelle espece de lecanine des citrus en Grece. Fruits 30(3):161-162.
Distribution; biology; natural enemies.

**Argyriou, L. C. & Kourmadas, A. L. 1977.** Ecological studies on *Filippia follicularis* Targioni in Greece. Med. Fac. Landbouww. Rijksuniv. Gent 42(2):1353-1360.
Biology; natural enemies; host.

**1979.** Notes on the biology and natural enemies of the olive scale *Parlatoria olea* Colvée on olive trees in central Greece. Med. Fac. Landbouww. Rijksuniv. Gent 44(1):39-48.
Detailed study; other hosts.

**1980a.** The phenology and natural enemies of *Aspidiotus nerii* Bouché in central Greece. Fruits 35(10):633-638. (French summary).
Biology; damage; economic importance.

**1980b.** *Ceroplastes floridensis* Comstock an important pest of citrus trees in Aegean Islands. Fruits 35(11):705-708. (French summary).
Biology; damage; hosts & distribution; natural enemies.

**Argyriou, L. C. & Santorini, A. P. 1980.** On the phenology of *Ceroplastes rusci* L. (Hom. Coccidae) on fig-trees in Greece. Med. Fac. Landbouww. Rijksuniv. Gent 45(3):593-601.
Biology; natural enemies; damage; chemical control recommendation.

**Arnett, R. H., Jr. 1985.** American insects - a handbook of the insects of America north of Mexico. Van Nostrand Reinhold Co., New York 850 pp.
In section of Homoptera (p. 207-243) key to superfamily Coccoidea & 17 families within; lists 160 coccoid spp. of economic importance in 71 genera.

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Degree of attack & resistance; hosts.

**Arruda, G. P. de. 1972.** A new scale insect (Homoptera, Diaspididae), found on cashew in the state of Pernambuco. Anais Inst. Cien. Biol. Brazil Univ. Fed. Rural de Pernambuco 2(2):13-17. (In Portuguese, English summary).
*Mycetaspis bezerrai.*

**1976.** A new species of scale insect (Homoptera, Diaspididae), found in Pernambuco. Anais Inst. Cien. Biol. Brazil Univ. Fed. Rural de Pernambuco (In Portuguese, English summary). 3(1):21-26.
*Mycetaspis eneideae.*

**Arutiunian, L. D.**, *see* Sarkisov, R. N., & Arutiunian, L. D.

**Arzone, A. 1983.** *Pseudoccous obscurus* Essig and *Cryptolaemus montrouzieri* Mulsant in Torino. Proc. XIII Italian Natl. Congr. Entomol. (Turin). p. 448-452. (In Italian).
Host & distribution; first record on *Cercis siliquastrum*; natural enemies; description; biology.

**Arzone, A. & Vidano, G. 1981.** *Matsucoccus feytaudi* Duc. (Homoptera, Margarodidae), a plant-sucking insect lethal to *Pinus pinaster* Ait. in Italy. Informatore Fitopatol. 31(10):3-10. (In Italian, English summary).
First record in Italy; symptoms of attack; locality.

**Asano, S.**, *see* Kamei, M., & Asano, S.; Negishi, T., Asano, S., Uchida, M., & Nakagawa, K.; Negishi, T., Ishiwatari, T., & Asano, S.; Negishi, T., Uchida, M., Tamaki, Y., Mori, K., Ishiwatari, T., Asano, S., & Nakagawa, K.; Uchida, M., Nakagawa, K., Negishi, T., Asano, S., & Mori, K.

**Ashburner, M.**, *see* Blackman, R. L., Hewitt, G. M., & Ashburner, M.

**Ashley, T. R.**, *see* Heath, R. R., McLaughlin, J. R., Tumlinson, J. H., Ashley, T. R., & Doolittle, R. E.; McLaughlin, J. R., & Ashley, T. R.

**Ashley, T. R. & Miller, D. 1981.** Propagation of the white peach scale, *Pseudaulacaspis pentagona*, and a technique for producing virgin female scales. J. Georgia Entomol. Soc. 16(4):501-504.
Laboratory test; describe methods for producing a hundred-fold increase per generation in the scale population & for physically removing all of the male scales from each generation prior to their eclosion.

**Atkinson, P. R. 1983.** Estimates of natural mortality related to environmental factors in a population of citrus red scale, *Aonidiella aurantii* (Maskell) (Hemiptera: Diaspididae). Bul. Entomol. Res. 73(2):239-258.
Population estimates; 3 methods of analysis; estimates of mortality; regression equations & analysis; natural enemies & their relative effectiveness.

**Atkinson, T. H.**, *see* Gonzáles-Hernándes, H., & Atkinson, T. H.

**Auld, B. A., Hosking, J., & McFadyen, R. E. 1982/83.** Analysis of the spread of tiger pear and parthenium weed in Australia. Austral. Weeds 2(2):56-60.
*Dactylopius austrinus.*

**Aurelio Flores, M., Sanchez de Leon, A., & del Cid Ortiz, J. R. 1978.** Estudio reciente sobre las escamas del cafeto. Rev. Cafetalera 175:35-40.

*Saissetia hemisphaerica* & *oleae*, *Coccus viridis*; *Chrysomphalus* spp., *Lecanium* spp.; descriptions; damage.

**Avasthi, R. K. & Shafee, S. A. 1977a.** *Nipaecoccus vastator* (Maskell) (Homoptera: Pseudococcidae) and its chalcid parasites. Geobios 4(3):119-120.
Described & illustrated *N. vastator*

**1977b.** *Cerococcus hibisci* Green (Homoptera: Asterolecaniidae) and its chalcid parasites. J. Bombay Nat. Hist. Soc. 74:374-376.
Described & illustrated *C. hibisci*; list 12 chalcid parasites.

**1979.** A new species of *Cerostegia* De Lotto (Homoptera: Coccidae) from Ajmer (India). Current Sci. 48(1):36-37.
*C. ajmerensis*; description; key to spp.; host.

**1980.** A new species of *Peliococcus* Borchsenius from India (Homoptera: Pseudococcidae). J. Bombay Nat. Hist. Soc. (1978) 75(3):905-908.
*P. indicus*.

**1981.** A new species of *Dysmicoccus* Ferris (Homoptera: Pseudococcidae) from India. Syst. Entomol. 6(1):1-3.
*D. williamsi*; key to Oriental spp. of *Dysmicoccus*.

**1982.** A new species of *Heliococcus* Sulc (Coccoidea: Pseudococcidae) from south India. Current Sci. 51(6):306-308.
*H. singularis*.

**1983a.** A new species of *Rastrococcus* Ferris (Homoptera: Pseudococcidae) from India. Entomol. Monthly Mag. 119(1428-1431):103-104.
*R. cappariae*.

**1983b.** First record of *Paracoccus* Ezzat & McConnell (Homoptera: Pseudococcidae) from India with description of a new species. J. Bombay Nat. Hist. Soc. 80(2):398-402.
*P. burnerae*, new record; *P. nellorensis* n. sp.; key to Oriental spp. of *Paracoccus*.

**1984.** Two new species of *Coccus* Linnaeus (Homoptera: Coccidae) from India. Proc. 10th Int. Symp. of Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 389-392.
*C. almoraensis* & *kosztarabi*.

**1985.** Two new species of *Pulvinaria* Targ.-Tozz. (Homoptera: Coccidae) from India. Current Sci. 54(24):1289-1291.
*P. aligarhensis* & *indica*.

**Avetyan, A. S. 1971.** A list of new taxa of insects, ticks and mites (Insecta and Acarina) published in Armenian publications in the period 1920-1970. Entomol. Obozr. 50(4):931-936. (In Russian). Entomol. Rev. 50(4):530-535. (In English).
Mentions 8 coccid spp. & 2 n. gen.

**Awadallah, K. T.**, *see* Ammar, E. D., Awadallah, K. T., & Rashad, A.; Swailem, S. M., Awadallah, K. T., & Shaheen, A. A.

**Awadallah, K. T., Ammar, E. D., & Rashad, A. 1979.** Description of immature stages of the white mealybug, *Ferrisia virgata* (Ckll.) (Homoptera: Pseudococcidae). Deutsche Entomol. Ztschrt. 26(1/3):9-20.
Morphological characters of the egg & nymphal stages of males & females.

**Awadallah, K. T., Ammar, E. D., Tawfik, M. F. S., & Rashad, A. 1979.** Life history of the white mealybug *Ferrisia virgata* (Ckll.) (Homoptera: Pseudococcidae). Deutsche Entomol. Ztschrt. 26(1/3):101-110.
Natural enemies; laboratory rearing & study.

**Ayanru, D. K. G. & Sharma, V. C. 1984.** Changes in total cyanide content of tissues from cassava plants infested by mites (*Mononychellus tanajoa*) and mealybugs (*Phenacoccus manihoti*). Agric. Ecosyst. & Environ. 12(1):35-46.
The authors concluded that enhanced total cyanide content of the tuber pulp was caused by pest infestation.

**Aylor, D. E.**, *see* Stephens, G. R., & Aylor, D. E.

**Azhar, I. 1983.** Some preliminary observations on the ecology of selected cocoa pests in west Malaysia. Malaysian Plant Prot. Soc. Newsletter 7(1) (Supplement):15.
*Cataenococcus hispidus.*

**Babaev, T. 1971.** Introduction and acclimatization of the lac insect (*Lacifer lacca* Kerr) in Tadzhikistan. Dokl. Akad. Nauk Tadzh. SSR 14(2):76-77. (In Russian).
Lists hosts with distribution.

*See* Bazarov, B. B., & Babaev, T.

**Babaeva, Z. 1980.** Coccid fauna (Homoptera: Coccoidea) of the Fergana Valley. Izv. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk 1:55-60. (In Russian).
Taxonomic data for 67 spp. in 7 fam.; hosts.

*See* Bazarov, B. B., & Babaeva, Z.

**Babaian, G. A. 1970.** On the morphology and biology of *Rhodococcus turanicus* Arch. (Homoptera, Coccoidea) in Armenia. Entomol. Obozr. 49(4):729-732. (In Russian). Entomol. Rev. 49(4):449-452. (In English).
First & second instar nymphs & adult female described; frost resistance of nymphs were high; hosts.

**1973.** The soft scale *Didesmococcus unifasciatus* (Arch.) (Homoptera, Coccoidea) in Armenia and the characteristics of its morphology. Entomol. Obozr. 52(1):136-142. (In Russian). Entomol. Rev. 52(1):97-101. (In English).
Armenian & Central Asian forms of *D. unifasciatus* morphologically not different; syn.; description of adults & larvae.

**1975.** New data on the morpholgy of *Pulvinaria betulae* L. (Homoptera, Coccoidea) in Armenia. Sbor. Trudov Inst. Zashch. Pact. Mskh. Arm. SSR 2:27-32. (In Russian, Armenian summary).
Description of adult female, first instar & second instar male & female.

**1976.** Morphological and biological characteristics of *Eulecanium tiliae* L. (Homoptera, Coccoidea, Coccidae) in Armenia. Entomol. Obozr. 55(1):52-57. (In Russian). Entomol. Rev. 55(1):34-38. (In English).

Descripiton of adult female, first & second instar of male & female, scale of male and female; hosts.

**1983.** On the mechanism of action of the Comstock mealybug in leaves of mulberry. Biol. Zhur. Armenii 36(4):344-345. (In Russian).
*Pseudococcus comstocki*; damage to mulberry & in turn to silkworms feeding on the infested leaves of mulberry in Armenia.

*See* Adzhemian, L. A., Babaian, G. A., & Oganesian, S. B.; Oganesian, S. B., & Babaian, G. A.

**Babaian, G. A. & Oganesian, S. B. 1979.** New data on the bioecology of the Armenian mussell scale (*Lepidosaphes malicola* Borchs.) (Diaspididae) in Armenia. Biol. Zhur. Armenii 32(3):187-193. (In Russian, Armenian & English summaries).
Distribution; hosts; biology.

**Babujee, C. R. & Raman, A. 1982.** On the developmental morphology of some abnormal stomatal types in the leaf galls of *Barleria prionotis* Linn. (Acanthaceae) induced by *"Ferisina" virgata* (Coccidae: Insecta). Current Sci. 51(9):471-472.
Detailed study; galls induced by coccoid.

**Badar, M. 1980.** Biology and population dynamics of tea scale, *Fiorinia theae* Green (Diaspididae: Coccoidea: Homoptera). Ph.D. Diss., Univ. Fla., Gainesville. 137 pp.

**Baeckström, P., Bjorkling, F. Hogberg, H. E., & Norin, T. 1985.** Cross-coupling of vinyl cuprated and allylic halides and synthesis of the Comstock mealybug pheromone via photooxidation of 2,6-di-methyl-2,5-heptadiene. Acta. Chem. Scand. Ser. B Organic Chem. Biochem. 38(9):779-782.
*Pseudococcus comstocki*.

**Baer, R. G. 1980.** A new species of gall-like coccid from southwestern United States. J. Georgia Entomol. Soc. 15(1):20-25.
*Kermes kosztarabi*; description of first instar; hosts & distribution; key to first instars to separate closely related spp.

**Baer, R. G. & Kosztarab, M. 1981.** Two new species of gall-like scale insects on oaks from the Nearctic region (Homoptera: Coccoidea: Kermesidae). Florida Entomol. 64(2):226-234.
*Kermes iselini* & *prinus*; description of first instars; key to spp.; hosts & distribution.

**1985.** Studies on the morphology and systematics of scale insects - No. 12. II. A morphological and systematic study of the first and second instars of the family Kermesidae in the Nearctic region (Homoptera: Coccoidea). Va. Polytech. Inst. & State Univ. Agric. Expt. Sta. Bul. No. 85-11:119-261.
Detailed study; keys and descriptions of 15 spp., phylogeny; indices to hosts & scale insect taxa.

**Baganich, M. I. 1977.** *Kermes* - pests of oaks. Lesnoe Khoziaistvo 1:82. (In Russian).
*Kermococcus quercus* & *roboris*.

**Bahamondes, L. A.**, *see* Mallea, A. R., Macola, G. S., Garcia, S. J. G., Bahamondes, L. A., & Suarez, J. H.

**Bain, N. S.**, *see* Moreno, D. S., Carman, G. E., Rice, R. E., Shaw, J. G., & Bain, N. S.

**Bain-Lay**, *see* Young, B. L.

**Bajoi, A. H. 1983.** Bionomics and control of coccids in Baluchistan. Agric. Res. Inst., Entomol. Sect., Sariabquetta, Pakistan. 21 pp.
Host & distribution; economic importance, seasonal history & natural enemies for 3 coccoid spp.; new records.

**Baker, J. R. & Horn, K. F. 1981.** Surveys of lace bugs and mealybugs on ornamental plants in North Carolina. Proc. South. Nurserymen's Assoc. Res. Conf. 26th Annu. Rep. (Nashville, Tennessee). 278 pp. (p. 107).
List 12 coccoid spp.; hosts.

**Baker, L.**, *see* Haley, M. J., & Baker, L.

**Baker, W. L. 1972.** Eastern forest insects. U.S. Dept. Agric. Forest Serv. Misc. Publ. 1175. 642 pp.
Includes Coccoidea (p. 92-112); spp. in various fam. discussed; key to gen., based principally on host plants; economic importance; biology.

**Balachowsky, A. S. 1970.** Sur un *Discodiaspis* Kor. nouveau de la forêt centrafricaine (Coccoidea Diaspididae Odonaspidini). Contribution à l'étude des Coccoidea de l'Afrique tropicale et équatoriale (15-e note). Bul. Soc. Entomol. France 75:161-164.
*D. janinae* n. sp.

**1971a.** Sur un nouveau genre de Coccoidea Diaspidinae du sud de Madagascar (Hom. Sternor.). Contribution à l'étude des Coccoidea de Madagascar (1-re note). Bul. Soc. Entomol. France 76:102-106.
*Capricornaspis* n. gen.; *C. armineae* n. sp.; biology; habitat.

**1971b.** Sur un nouveau genre de Diaspidini-Rugaspidiotina du sud de Madagascar (Hom. Coccoidea). Contribution à l'étude des Coccoidea de Madagascar (2-e note). Bul. Soc. Entomol. France 76:221-226.
*Mahafalyaspis* n. gen.; *M. teteforti* n. sp.; biology; habitat.

**1973.** Nouveau nom de genre pour un Diaspididae de Sao-Tomé (Hom. Coccoidea). Bul. Soc. Entomol. France 78:225.
Proposes *Saotomaspis* to replace *Parandaspis* Balachowsky, 1968, which was preoccupied by *Parandaspis* Mamet, 1967.

*See* Delage-Darchen, B., Matile-Ferrero, D., & Balachowsky, A. S.; Matile-Ferrero, D., & Balachowsky, A. S.

**Balachowsky, A. S. & Matile-Ferrero, D. 1970.** Les Cochenilles (Hom. Coccoidea) de la République Islamique de Mauritanie. Contribution à l'étude des Coccoidea de l'Afrique tropicale et équatoriale (14-e note). Bul. Inst. Fondamental d'Afrique Noire (Ser A.) Sci. Nat. 32:1078-1087.
Mention 28 spp. in 27 gen. & 3 fam.; hosts; distribution; natural enemies; first record for *Lepidosaphes tapleyi*.

**1980.** Un nouveau genre de Diaspidinae Afro-tropical, à bouclier familial géant (Homoptera, Coccoidea, Diaspididae). Rev. Franç. Entomol. (n.s.) 2(2):69-74. (English summary).
*Gynandraspis* n. gen.; *G. gabonensis* n. sp.

**Balás, G. & Sáringer, G. 1982.** Horticultural pests. Akadémiai Kiadó - Budapest. 1069 pp. (In Hungarian).
In the chapter "Coccoidea" (p. 394-418), 26 spp. in 5 fam. are discussed, of which 2 spp. are also known in North America; biology; damage; hosts; control; short descriptions.

**Balda, R. P.**, *see* Ditsworth, T. M., Butt, S. M., Beley, J. R., Johnson, C. D., & Balda, R. P.

**Ball, G. E.**, *see* Lindroth, C. H., & Ball, G. E.

**Ball, J. C. 1980.** Development and fecundity of the white peach scale at two constant temperatures. Florida Entomol. 63(1):188-194.
*Pseudaulacaspis pentagona*; detailed study.

**Banks, H. J. 1977.** Pigments of the coccoidea - current knowledge and chemotaxonomic implications. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:51-67.
Chemotaxonomic characters; chemical structures; problems in the use of pigments; pigments provide taxonomic characters.

**Banks, H. J. & Cameron, D. W. 1970.** Polyhydroxyanthraquinones from the insect *Eriococcus coriaceus*. Chem. Comm. 1970:1577-1578.
Isolated 7 polyhydroxyanthraquinones.

**1973.** Phenolic glycosides and pterins from the Homoptera. Insect Biochem. 3:139-162.
Homoptera can be divided into arylglycoside-containing (Aphidoidea-Coccoidea) & pterin-containing insects (the remainder of the Homoptera).

**Banks, H. J., Cameron, D. W., & Crossley, M. J. 1976.** Chemistry of the Coccoidea. IV. Polyhydroxyanthraquinones and their glucosides from *Eriococcus coriaceus* (Hemiptera: Insecta). Austral. J. Chem. 29(10):2231-2245.

**Banks, H. J., Cameron, D. W., Edmonds, J. S., & Raverty, W. D. 1976.** Chemistry of Coccoidea. III. Isolation of a bianthrone glucoside from *Callococcus acaciae* and of cerolbolinic acid from *Cryptes baccatum* (Hemiptera: Insecta). Austral. J. Chem. 29(10):2225-2230.

**Banks, H. J., Cameron, D. W., & Raverty, W. D. 1976.** Chemistry of the Coccoidea. II. Condensed polycyclic pigments from two Australian pseudococcids (Hemiptera). Austral. J. Chem. 29(7):1509-1521.
*Nipaecoccus aurilanatus*; *Pseudococcus albizziae.*

**Banks, H. J. & Williams, D. J. 1972.** Use of the surfactant, Decon 90, in the preparation of coccids and other insects for microscopy. J. Austral. Entomol. Soc. 11:347-348.
Decon 90 was useful for the preparation of hardened, dry specimens of coccids, in biological operation & for removal of wax & other secretions.

**Barak, R.**, *see* Berlinger, M. J., & Barak, R.

**Baranowski, R. A.**, *see* Burditt, A. K., Jr., & Baranowski, R. A.

**Baranyovits, F. L. C. 1978.** Cochineal carmine: an ancient dye with a modern role. Endeavour (n.s.) 2:85-92.
*Kermococcus vermilius*; *Dactylopius coccus*; description; biology; use of the cochineal.

**Barati, S.**, *see* Sabour, M., & Barati, S.

**Barbagallo, S. 1974.** Notes on the presence of a new coccoid in Sicily on citrus: preliminary biological observations. Entomologica 10:121-139. (English summary).
*Coccus pseudomagnoliarum*; all stages of females described; biology; hosts and distribution; damage; chemical control recommendation.

**Barbosa, V. M. B.**, *see* Corseuil, E., & Barbosa, V. M. B.

**Barclay, L. W. & Koehler, C. S. 1980.** Mealybugs on house plants and in the home landscape. Univ. Calif. (Berkley) Coop. Ext. Serv. Leaf. 21197: 2 pp.
Mealybugs discussed in general (no specific sp.); description; life cycle; damage; control.

**Bareth, C. & Van Liefferinge, M. 1976.** Complements a la diagnose d'une Cochenille du hêtre: *Cryptococcus fagi* Baer. (Insect Homoptère). Nouv. Rev. Entomol. 6(2):209-221. (English summary).
Studied structure of antennal hairs & sense organs; new sense organs described; main morphological characters presented in a table.

**Bar-Joseph, M. & Gerson, U. 1973.** Avocado bark pitting associated with the latania scale. Yearbook 1972-73 of the Calif. Avocado Soc. p. 146-147.
*Hemiberlesia lataniae*.

**Barooti, S.**, *see* Behad, E., & Barooti, S.

**Barquin, J.**, *see* Pérez, G., Carnero, A., & Barquin, J.

**Barr, W. F.**, *see* Furniss, M. M., & Barr, W. F.; Horning, D. S., Jr., & Barr, W. F.

**Barria, P. G.**, *see* Gonzalez, R. H., & Barria, P. G.

**Barrion, A. T. & Litsinger, J. A. 1978.** *Brevennia rehi* (Lindinger) is the valid name for rice mealybug. Int. Rice Res. Newsletter 3(5):15.
*Heterococcus rehi* becomes *Brevennia rehi*, as does *Ripersia oryzae*.

**Barry, P.**, *see* Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P.

**Barry, R. M.**, *see* Tippins, H. H., Clay, H., & Barry, R. M.

**Barsegyan, A. M., Ziroyan, A. N., & Kocharyan, N. I. 1984.** Some ecological-biological characteristics and chemical composition of Araratian cochineal fodder plants. Biol. Zhur. Armenii 37(9):757-761. (In Russian, English summary).
*Porphyrophora hamelii*; data were presented on the rhythm development, vegetative & generative reproduction, biochemical content of fodder plants, including under- & overground parts.

**Bartlett, P. W. 1981.** *Trionymus diminutus* (Leonardi) (Homoptera: Pseudococcidae) infesting New Zealand flax in England. Plant Pathology 30(1):56-58.
Host & distribution; damage.

**Bartra, P. C. E. 1977.** Observationes biologicas sobre la 'quersa del laurel (*Aspidiotus hederae* Vallot, Homoptera: Diaspididae). Rev. Peru. Entomol. 19(1):43-48.
Detailed study.

**Bar-Zacay, I. (Bar-Zakkai, I.)**, *see* Dunkelblum, E., Sternlicht, M., Bar-Zakkai, I., & Goldschmidt, Z.; Podoler, H., Bar-Zacay, I., & Rosen, D.

**Basco, H. J.**, *see* Costilla, M. A., Osores, V. M., & Basco, H. J.

**Basile, R.**, *see* Perondini, A. L. P., Basile, R., & Mori, L.

**Bastos, J. A. M., Sales, F. M., Gomes, N. G., & Figueiredo, R. W. de. 1980.** Preliminary survey of the population of insects and related forms on "manicoba," *Manihot glaziovii* Muell. Agric. Fitossanidade 4(1):17-20. (In Portuguese, English summary).

Found Coccoidea, Diaspididae & Pseudococcidae among the examples taken; no specific sp. mentioned.

**Batra, S. W. T. 1981.** Biological control of weeds: principles and prospects. Beltsville Symp. in Agric. Res. 5. Biological Control in Crop Production (Beltsville, 1980). Allenheld, Osmun, & Granada, Publ., London. 461 pp. (p. 45-59).

*Dactylopius ceylonicus* on *Opuntia vulgaris*.

**Baum, H. 1970.** Untersuchungen zum Wurzelschmierlauskomplex von *Planoccocus citri* (Risso) an Coffea arabica in Kenia/Ostafrika. Ztschrt. f. Angew. Entomol. 65(3):295-304.

Two-year study of association of ecotype of scale with *Pheidole punctalata* & a polyporoid fungus.

**Baylac, M. 1980.** Faune associée a *Cryptococcus fagi* (Baer.) (Homoptera: Coccoidea) dans quelques hêtraies du nord de la France. Acta Oecologica, Oecologia Applicata 1(2):199-208. (English summary).

Discusses predators.

**Bazarov, B. B. (Bazarov, B.) 1971a.** Zoogeographical analysis and distribution of the armoured scale fauna (Coccoidea, Diaspidoidea) of central Asia. Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 1:109-110. (In Russian).

Seventy-eight coccoid spp. represented in this area; 26 spp. endemic, 21 spp. subendemic; distribution of spp. depended on plants & climate; area was divided into 4 zones: plane zone, foot hills, mountains & high mountain peaks.

**1971b.** A new coccid species *Pulvinaria myricariae* Bazarov sp. n. (Homoptera, Coccoidea, Coccidae) from roots of German tamarix in the Tadzhikistan fauna. Dokl. Akad. Nauk Tadzh. SSR 14(9):64-67. (In Russian, Tadzhik summary).

*P. myricariae* was found at the altitude of 3200 meters above sea level; description of adult female, nymph of first generation & the female of third generation.

**1971c.** Two new species of coccids from the genus *Peliococcus* Borchs. from the fauna of central Asia. (In Russian, Tadzhik summary). Izv. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk 1:91-95.

*P. xerophylus* & *orientalis*; key to spp; hosts & distribution.

**1971d.** Coccid (Homoptera, Coccoidea) fauna of the Gorno-Badakhshan autonomus region (Pamir). (In Russian, Tadzhik summary). Izv. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk 3(44):87-91.

Lists 56 coccoid spp. in 32 gen. & 7 fam.

**1973.** A new species of mealybug (Homoptera, Coccoidea, Pseudococcidae) from the eastern Pamirs. Dokl. Akad. Nauk Tadzh. SSR 16(8):79-81. (In Russian, Tadzhik summary).

*Metadenopus connectens*; description; hosts & distribution.

**1974a.** Revision of the genus *Heliococcus* Sulc (Homoptera, Coccoidea) in the Soviet Fauna. I. Entomol. Obozr. 53(2):346-361. (In Russian). Entomol. Rev. 53(2):78-88. (In English).

Key to 22 spp.; taxonomic notes; description, hosts & distribution of 6 n. spp.; n. syn.; genus divided into 3 groups & several subgroups by morphological characters.

**1974b.** Revision of the genus *Heliococcus* Sulc (Homoptera, Coccoidea) in the Soviet Fauna. II. Entomol. Obozr. 53(3):623-644. (In Russian). Entomol. Rev. 53(3):97-114. (In English).

Description; host & distribution of 16 spp.

**1975a.** New species of mealybugs of the genus *Atrococcus* Goux (Homoptera, Coccoidea, Pseudococcidae) in the fauna of central Asia. Dokl. Akad. Nauk Tadzh. SSR 18(12):51-54. (In Russian).
*A. bartangica*; key to central Asian spp. of *Atrococcus*.

**1975b.** Vertical belt distribution of soft scales (Homoptera, Coccoidea: Coccidae) in Tadzhikistan. Entomol. Tadzh. Sbornik Statii 1975:62-66.
Discusses 25 coccoid spp. with hosts.

**1977.** A new species of mealybug from the genus *Dysmicoccus* Ferris (Homoptera, Pseudococcidae) from Pamir. Dokl. Akad. Nauk Tadzh. SSR 20(5):65-67. (In Russian).
*D. glandularis*.

**1979.** A new species of mealybug of the genus *Phenacoccus* Ckll. (Homoptera, Coccoidea, Pseudococcidae). Trudy Vses. Entomol. Obsh. 61:44-46. (In Russian).
*P. nurmamatovi*.

**1981.** A new species of the genus *Neotrionymus* Borchs. (Homoptera, Coccoidea, Pseudococcidae) in Kirghizia. Dokl. Akad. Nauk Tadzh. SSR 24(4):262-264. (In Russian, Tadzhik summary).
*N. swetlanae*; key to spp. of Central Asia.

*See* Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, E., Gura, N., & Knyazatova, V. J.

**Bazarov, B. B. & Babaev, T. 1972.** "Wrinkled false scale insect" (*Eulecanium rugulosum* (Arch.)) and its parasites in Tadzhikistan. Izv. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk 3(48):54-60. (In Russian).
Distribution; hosts; biology.

**Bazarov, B. B. & Babaeva, Z. 1981.** A new species of the genus *Peliococcus* Borchs. (Homoptera, Coccoidea, Pseudococcidae) from Tadzhikistan. Dokl. Akad. Nauk Tadzh. SSR 24(5):323-325. (In Russian, Tadzhik summary).
*P. montanus*.

**Bazarov, B. B. & Nurmamatov, A. M. 1975a.** New species of mealybug of the genus *Heterococcopsis* Borchs. (Homoptera, Coccoidea, Pseudococcidae) in east Pamir. Dokl. Akad. Nauk Tadzh. SSR 18(5):63-65. (In Russian).
*H. desertus*; key to Central Asian spp. of *Heterococcopsis*.

**1975b.** New species of mealybug of the genus *Mirococcopsis* Borchs. (Coccoidea, Pseudococcidae) from Tadzhikistan. Akad. Nauk Tadzh. SSR, Otd. Biol. Nauk 1:94-96. (In Russian).
*M. ammophila*.

**1975c.** Mealybugs of the genus *Phenacoccus* Ckll. (Homoptera, Coccoidea, Pseudococcidae) in the fauna of Tadzhikistan. Entomol. Tadzh. Sbornik Statii 1975:54-61. (In Russian).
Key to Tadzhikistan spp.; hosts & distribution for 18 spp.

**1976.** Some peculiarities of the biology of mealybugs (Homoptera, Coccoidea, Pseudococcidae) of the Tadzhikistan fauna. Izv. Akad. Nauk Tadzh. SSR 4:35-38. (In Russian).

Various body forms; no secretion of egg sacks; saucer shaped egg rack; fertility rate; number of eggs; 27 coccoid spp. discussed.

**Bazarov, B. & Shmelev, G. P. 1970.** Hard scales brought in with plants and fruit in Tadzhikistan. Izv. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk 41(4):109-111. (In Russian).
Key to 8 spp.; original drawings given for 4 spp.

**1971.** Scale insects (Homoptera, Coccoidea) of Tadzhikistan and the adjoining regions of middle Asia. *In* "Fauna of Tadzhikistan SSR." Akad. Nauk Tadzh. SSR Inst. Zool. Parazitol. 11:238. (In Russian).
General morphology; ecology; zoogeographic analysis; keys to gen.; descriptions; biology; hosts & distribution; 78 coccid spp. in 38 gen. discussed.

**1975.** New species of the cottony soft scales *Rhizopulvinaria* (Homoptera, Coccoidea, Coccidae) in Tadzhikistan. Entomol. Tadzh. Sbornik Statii 1975:107-112. (In Russian).
*R. narzykulovi* & *zygophylli*.

**Beardsley, J. W. (Beardsley, J. W., Jr.) 1970a.** *Aspidiotus destructor* Signoret, an armored scale pest new to the Hawaiian Islands. Proc. Hawaii. Entomol. Soc. 20(3):505-508.
Hosts; damage; description; natural enemies; key to spp. which occur in the Hawaiian Islands.

**1970b.** Three new species of *Chavesia* Balachowsky from tropical America (Homoptera: Coccoidae). Proc. Hawaii. Entomol. Soc. 20(3):509-520.
*Chavesia* redefined; *C. eversi*, *trinidadensis*, & *weberi* n. spp.; description; illustrations; key; hosts; distribution.

**1971a.** Notes and exhibitions - February. Proc. Hawaii. Entomol. Soc. 21(1):5.
*Melanaspis aliena* new for Hawaii; hosts & distribution.

**1971b.** Notes and exhibitions - May. Proc. Hawaii. Entomol. Soc. (1970) 21(1):12.
New state record for *Parlatoreopsis* sp.; host.

**1971c.** A new genus of gall-inhabiting Eriococcidae from Singapore (Homoptera: Coccoidea). Proc. Hawaii. Entomol. Soc. 21(1):31-39.
*Gallacoccus* n. gen., *G. anthonyae* & *secundus* n. spp.; key to spp. based on adult females & first instar larvae.

**1971d.** New genera and species of Hawaiian Pseudococcidae (Homoptera). Proc. Hawaii. Entomol. Soc. 21(1):41-58.
Host & distribution recorded for 31 spp. endemic to Hawaii; 5 n. gen.; 4 n. spp.; n. combs.; key to *Chlorococcus* spp. further described.

**1974a.** A new genus of Coccoidea from Australian eucalyptus (Homoptera). Proc. Hawaii. Entomol. Soc. 21(3):325-328.
*Floracoccus* n. gen.; *F. elevans* (Maskell) n. comb.

**1974b.** A review of the genus *Sphaerococcopsis* Cockerell, with descriptions of two new species (Homoptera: Coccoidea). Proc. Hawaii. Entomol. Soc. 21(3):329-342.
*S. umbilicus* & *platynotum*; description; key to adult females; biology; hosts; distribution.

**1975.** Insects of Micronesia (Homoptera: Coccoidea). Supplement. Insects of Micronesia 6(9):657-662.
Lists 16 coccid spp. in 3 fam.; new records; n. syns.; hosts & distribution.

**1979a.** *Brevennia rehi* (Lindinger). Proc. Hawaii. Entomol. Soc. 23(1):6-7.
New state record; Berlese funnel extraction of a sugarcane field sample; location: Waialua, Oahu.

**1979b.** *Pseudococcus* n. sp. (undescribed). Proc. Hawaii. Entomol. Soc. 23(2):189.
New state record; sp. will be described by D. J. Williams; host: Orchid (*Dendrobium*); location: Kohala, Hawaii.

**1979c.** New immigrant insects in Hawaii 1962 through 1976. Proc. Hawaii. Entomol. Soc. 23(1):35-44.
Lists 15 coccoid spp. in 4 fam.; measures to reduce influx of foreign insects were recommended.

**1981.** *Chortinaspis subchortina* (Laing). Proc. Hawaii. Entomol. Soc. 23(3):319-320.
New state record; hosts: *Brachiaria mutica* & *Stenotaphum secundatum*; location: Honolulu.

**1982a.** Notes and exhibitions. Proc. Hawaii. Entomol. Soc. 24(1):11.
*Rhizoecus caladii* new for Hawaii on *Diffenbachia* roots in Hilo.

**1982b.** On the taxonomy of the genus *Pseudopsylla* Froggatt, with a redescription of the type-species (Homoptera: Coccoidea). Proc. Hawaii. Entomol. Soc. 24(1):31-35.
*Pseudopsylla* was placed as a junior syn. of *Lachnodius*; n. comb.

**1983a.** Notes and exhibitions. Proc. Hawaii. Entomol. Soc. 24(2/3):182.
*Conchaspis angraeci* new for Hawaii; on *Pittosporum* twigs in Honolulu.

**1983b.** Notes and exhibitions. Proc. Hawaii. Entomol. Soc. 24(2/3):189.
*Morganella conspicua* new for Hawaii; on oleander stems in Manoa.

**1984a.** Gall-forming Coccoidea. *In* "Biology of gall insects," edited by Ananthakrishnan, T. N. Oxford & IBH. Publ. Co., New Delhi. 400 pp. (p. 79-106).
Over 100 coccoid spp. discussed; taxonomy; host & distribution; host-plant relationships; morphological specializations associated with gall-formation in Coccoidea.

**1984b.** List of terms and comments on morphological terminology used for descriptions of scale insects. The Scale 10(1):50-52.
Gives terminology for Pseudococcidae.

**1985.** Notes and exhibitions. Proc. Hawaii. Entomol. Soc. 25(1):27.
*Maconellicoccus hirsutus* new for Hawaii; on hibiscus hedge in Honolulu.

**Beardsley, J. W., Jr. & Gonzalez, R. H. 1975.** The biology and ecology of armored scales. Annu. Rev. Entomol. 20:47-73.
Host relationships of principal armored scales of the world; life history; diaspidid digestive system; scale covering; pupillarial forms.

**Beardsley, J. W., Jr., Su, T. H., McEwen, F. L., & Gerling, D. 1982.** Field investigations on the interrelationships of the big-headed ant, the gray pineapple mealybug and pineapple mealybug wilt disease in Hawaii. Proc. Hawaii. Entomol. Soc. 24(1):51-67.
*Dysmicoccus neobrevipes* & *spevipes.*

**Beccari, F. 1971.** Contribution to the knowledge of the entomofauna of Saudi Arabia. First list of insects, mites and nematodes. Riv. Agric. Subtrop. Trop. 65(4/6):178-211. (In Italian).
Enumerates 31 coccoid spp.; hosts & distribution.

**Bedford, E. C. G. 1978.** Other scale insects of minor importance. *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. 391:129-133.
Lists 13 coccoid spp. in 3 fam.

*See* Cilliers, C. J., & Bedford, E. C. G.

**Bedford, E. C. G. & Georgala, M. B. 1978.** Red scale *Aonidiella aurantii* (Mask.). *In* :"Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. 391:109-118, 227-242.
Hosts & distribution; economic importance; life- & seasonal history; natural enemies; control.

**Bednar, L. F.**, *see* Walker, G. P., & Bednar, L. F.

**Behad, E. & Barooti, S. 1978.** Biological studies on *Eulecanium coryli* L., the pest of fruit trees in Esfahan. Entomol. Phytopathol. Appl. 46(1/2):55-65. (In Persian & English).
Hosts; natural enemies.

**Beingolea, O. (Beingolea G., O. D.) 1971a.** Contribucion al conocimiento de los Ortezidos del Peru. 1. Taxonomia. Rev. Peru. Entomol. 14(1):1-32. (English summary).
Detailed study; status & systematic placement; keys to gen. & spp. of *Orthezia*; 7 n. spp.; 1 n. ssp.; description & redescription; hosts & distribution.

**1971b.** Contribucion al conocimiento de los Ortezidos del Peru. 2. Biologia: desarrollo y reproduccion. Rev. Peru. Entomol. 14(1):33-40. (English summary).
Study of 4 spp.

**1971c.** Contribucion al conocimiento de los Ortezidos del Peru. 3. Ecologia. Rev. Peru. Entomol. 14(1):41-51.
Host relations; natural enemies.

**Beirne, B. P. 1972.** Pest insects of annual crop plants in Canada. IV. Hemiptera-Homoptera. V. Orthoptera. VI. Other groups. Mem. Entomol. Soc. Can. No. 85:73 pp.
*Eriopeltis festucae*, *Phenacoccus aceris* & *Pseudococcus maritimus*.

**Bejer, B. & Esbjerg, P. 1978.** Injurious insects, 1977. Entomol. Meddelesher 46(3):122-124. (In Dutch, English summary).
*Cryptococcus fagi*.

**Beley, J. R.**, *see* Ditsworth, T. M., Butt, S. M., Beley, J. R., Johnson, C. D., & Balda, R. P.

**Beley, J. R., Ditsworth, T. M., Butt, S. M., & Johnson, C. D. 1982.** Arthropods, plants and transmission lines in Arizona: community dynamics during secondary succession in a pinyon juniper chaparral habitat. Southwest. Nat. 27(3):325-334.
Arthropod numbers were reduced for only 2 years after disturbance caused by the construction of high voltage power lines; significant reduction occurred in Coccoidea.

**Bellotti, A. C. (Bellotti, A.) 1978.** An overview of cassava entomology. Proc. Cassava Prot. Workshop, CIAT, Cali, Colombia, 1977. 244 pp. (p. 29-39).
Mentions 4 coccoid spp.

**1983.** More on the mealybug: a major cassava pest. Cassava Newsletter 7(1):1,3-4.
*Phenacoccus herreni*; damage; dispersal; natural enemies; biology; also mentions *P. manihoti* & *gossypii*.

*See* Lozano, J. C., Toro, J. C., Castro, A., & Bellotti, A.; Milena-Varela, A., & Bellotti, A. C.; Milena-Varela, A., Bellotti, A. C., & Reyes, J. A.

**Belton, M. 1979.** Beech scale insect: the place of the beech scale insect (*Ultracoelostoma assimile*) in the ecology of mountain beech forest. Apiarist 8:4-6.
Distribution & damage by *U. assimile* in northern South Island of New Zealand; conditions & rate of flow of honeydew.

**Bénassy, C.**, *see* Alexandrakis, V., & Bénassy, C.; Bianchi, H., & Bénassy, C.; Einhorn, J., Bianchi, H., & Bénassy, C.; Gharib, B., & Bénassy, C.

**Bénassy, C., Bianchi, H., & Einhorn, J. 1983.** La cochenile du mûrier en vergers de pêchers: perspectives nouvelles de lutte. Phytoma 351:28-30.
*Pseudaulacaspis pentagona*.

**Bénassy, C. & Franco, E. 1974.** Sur l'écologie de *Ceroplastes rusci* L. (Homoptera, Lecanoidae) dans les Alpes-Maritimes. Ann. Zool. Ecol. Animale 6(1):11-39. (English summary).
Natural enemies; host-parasite relationship.

**Bénassy, C. & Onillon, J. C. 1975.** Troisième reunion du groupe de travail OILB/SROP "Cochenilles et aleurodes des agrumes" état des recherches en cours. Fruits 30(1):23-30.
Discuss 10 coccoid spp.; ecology; natural enemies.

**Bénassy, C. & Pinet, C. 1972.** Notes bio-ecologiques sur *Unaspis yanonensis* Kuw. (Homoptera, Diaspidinae) dans les Alpes-Maritimes. Ann. Zool. Ecol. Animale 4(2):187-212. (English summary).
Geographical distribution increased; sex ratio; mortality; biology; natural enemies.

**Ben-Dov, Y. 1970a.** The wax scales of the genus *Ceroplastes* Gray (Homoptera: Coccidae) and their parasites in Israel. Israel J. Entomol. 5:83-92.
Annotated list of host plants and parasites of *C. floridensis* & *rusci*; key to 3 spp.; biological note; new host records.

**1970b.** Laboratory rearing of wax scales. J. Econ. Entomol. 63(6):1998.
Rearing notes for *Ceroplastes floridensis* & other coccoid spp.

**1970c.** A redescription of the Florida wax scale *Ceroplastes floridensis* Comstock (Homoptera: Coccidae). J. Entomol. Soc. South. Africa 33(2):273-277.
Variation of Israeli material from description of Ferris; records; hosts.

**1971.** An annotated list of the soft scale insects (Homoptera: Coccidae) of Israel. Israel J. Entomol. 6(1):23-34.
Includes information on systematics, distribution & hosts; lists 27 spp. in 17 gen.; new host records; biology.

**1972.** A new species of *Pseudotargionia* Lindinger (Homoptera: Diaspididae) from South Africa. J. Entomol. Soc. South. Africa 35(2):309-312.
*P. subcorticis*; description of female; host & distribution.

**1973a.** The genus *Euphilippia* Berlese & Silvestri (Homoptera: Coccoidea) with redescription of its type-species. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" (1972-1973) 30:282-290.
*Euphilippia olivina* n. syn. of *Filippia follicularis*; *Euphilippia* n. syn. of *Filippia*; identity of type-species established; *Lichtensia viburni* redescribed.

**1973b.** New species of *Africaspis* MacGillivray (Homoptera: Diaspididae) from southern Africa and Australia. Phytophylactica 5:135-142.
*A. commiphorae*, *muntingi* & *wilkey* n. spp.; female described; key; hosts & distribution.

**1973c.** A new species of *Hulaspis* Hall (Homoptera: Diaspididae) from South Africa. J. Entomol. Soc. South. Africa 36(2):257-259.
*H. namaquensis*; description; key; host & distribution.

**1974a.** A revision of *Ischnaspis* Douglas with a description of a new allied genus (Homoptera: Diaspididae). J. Entomol. (B) 43(1):19-32.
General characters of *Ischnaspis*; *I. longirostris* & *macrolobii* redescribed; *I. tecleae* n. sp.; *Trischnaspis* n. gen.; hosts & distribution.

**1974b.** On the species of Conchaspididae (Homoptera: Coccoidea) from Africa and Madagascar with description of a new species. Rev. Zool. Africaine 88(2):363-373.
Discusses 7 *Conchaspis* spp.; hosts & distribution; *C. mameti* n. sp.; *C. angraeci* recorded for first time; new host record for *C. phylicae*; key to female spp. of *Conchaspis*.

**1974c.** On a new genus and species and on some described armoured scale insects (Homoptera: Diaspididae) mainly from southern Africa. J. Entomol. Soc. South. Africa 37(2):315-325.
*Phaspis* n. gen.; *P. lobulata*, *Eremiaspis graminis* & *Pseudotargionia anareolae* n. spp.; descriptions; hosts & distribution; key to *Pseudotargionia*; re-examination of *Aonidia glandulosa*.

**1974d.** New species of armoured scale insects (Homoptera: Diaspididae) from South Africa. Phytophylactica 6:19-30.
Description of females of 6 n. spp.; keys to spp.; hosts & distribution.

**1975a.** On the identity of *Filippia* Targioni Tozzetti, 1868 and *Lichtensia* Signoret, 1873 (Homoptera: Coccidae). J. Entomol. Soc. South. Africa 38(1):109-121.
Identity of type species discussed; *F. follicularis* established & clarified; n. syn.; *Lichtensia viburni* redescribed.

**1975b.** A new species of *Crisicoccus* Ferris from mangrove in the Sinai Peninsula. Rev. Zool. Africaine 89(2):451-454.
*C. mangrovicus*; description of female; host & distribution; addition & alteration of key to spp.

**1976a.** A new species of *Chortinaspis* Ferris from the Sinai peninsula (Homoptera: Diaspididae). Rev. Zool. Africaine 90(1):204-208.
*C. senapirensis*; host & distribution; taxonomic note.

**1976b.** Redescription of *Natalaspis leptocarpi* n. comb. (Homoptera: Diaspididae). New Zeal. J. Zool. 3:27-29.
Female of *Odonaspis leptocarpi* redescribed & transferred to *Natalaspis*; host & distribution; taxonomic notes; distinguishing characters.

**1976c.** The identity of two species from the *"Lecanium* series" of Signoret (Homoptera, Coccidae). Entomol. Monthly Mag. 111(April-June, 1975):115-116.
Synonymizes *L. maculatum* with *Coccus hesperidum* & *L. wistariae* with *Parthenolecanium rufulum*.

**1976d.** *Lecanium acuminatum* Signoret 1873 (Insecta, Homoptera, Coccidae): request for designation of a neotype under the plenary powers Z.N.(S.) 2119. Bul. Zool. Nomenclature 32(4):257-260.
Author wanted to ensure the continued application of the name *L. acuminatum* for the soft scale as it is currently understood by coccidologists.

**1976e.** Phenology of the Florida wax scale *Ceroplastes floridensis* Comstock (Homoptera: Coccidae), on citrus in Israel. Phytoparasitica 4(1):3-7. See also Hassadeh 50:873-875 (1970). (In Hebrew).
Two generations per year; first instars in May-June & August-September.

**1977a.** Taxonomy of the long brown scale *Coccus longulus* (Douglas), stat. n. (Homoptera: Coccidae). Bul. Entomol. Res. 67:89-95.
Detailed study; n. syn.

**1977b.** New species of *Aclerda* Signoret (Homoptera: Aclerdidae) from southern Africa. J. Nat. Hist. 11:371-376.
*A. constricta* & *namibensis*; hosts & distribution; revised key couplets to 5 spp.

**1977c.** Comment on the request to conserve the family-group name Eriococcidae Cockerell, 1899 (Insecta, Homoptera) and to designate a type-species for *Eriococcus* Targioni Tozzetti, 1868 Z.N.(S.) 2140. Bul. Zool. Nomenclature 34:7-8.

**1978a.** *Andaspis formicarium* n. sp. (Homoptera, Diaspididae) associated with a species of *Melissotarsus* (Hymenoptera, Formicidae) in South Africa. Insectes Sociaux 25(4):315-321. (French summary).
Description of adult female; host & distribution; taxonomic note; association of ants with diaspidids.

**1978b.** Taxonomy of the nigra scale *Parasaissetia nigra* (Nietner) (Homoptera: Coccoidea: Coccidae), with observations on mass rearing and parasites of an Israeli strain. Phytoparasitica 6(3):115-127.
Description of adult female & first instar; syns.; taxonomic note; biological observations.

**1978c.** The citricola scale, a potential citrus pest new to Israel. Hassadeh 57:2232-2234. (In Hebrew, English summary).
*Coccus pseudomagnoliarum*; hosts; status.

**1978d.** The striped mealybug, a potential pest new to israel. Hassadeh 58:1199-1200. (In Hebrew, English summary).
*Ferrisia virgata*; hosts.

**1979a.** A taxonomic study of the soft-scale genus *Kilifia* (Coccidae). Syst. Entomol. 4:311-324.
General diagnosis; key to spp.; description, hosts & distribution of 3 spp.; neotype for *K. acuminata*; lectotype for *K. diversipes*.

**1979b.** The soft scale insects of the genus *Coccus* (Homoptera: Coccidae) infesting citrus in Israel. Hassadeh 59:1410-1411. (In Hebrew, English summary).
*C. capparidis* first record in Israel.

**1980a.** Observations on scale insects (Homoptera: Coccoidea) of the Middle East. Bul. Entomol. Res. 70:261-271.
Taxonomy, hosts, distribution & biology for 16 coccoid spp. in 14 gen.; new records; n. syns. of spp. and gen.

**1980b.** On the abdominal segmentation in the adult female of armoured scale insects of the Odonaspidini and Antakaspidini (Diaspididae). Israel J. Entomol. 14:71-79.
Presents a pattern previously not recorded in the Diaspididae.

**1981a.** Redescription of *Matsucoccus josephi* Bodenheimer and Harpaz (Homoptera: Coccoidea: Margarodidae). Israel J. Entomol. 15:35-51.
First & second instar; adult female & male; third instar of male; wax secretion.

**1981b.** The Israel matsucoccus, *Matsucoccus josephi* (Homoptera: Margarodidae) - taxonomy, distribution and host plants. La-Yaaran 31(1-4):18-23, 45. (In Hebrew, English summary).
Taxonomic redescription of first, second, third instars & adult female; intraspecific variation.

**1981c.** A new species of *Coccus* (Hemiptera: Coccidae) from mango in Israel, and a redescription of *C. gymnospori* (Green). Bul. Entomol. Res. 71:649-654.
*C. elatensis.*

**1981d.** A catalogue of the Conchaspididae (Insecta, Homoptera, Coccoidea) of the world. Ann. Soc. Entomol. France (n.s.) 17(2):143-156.
Lists 25 coccoid spp. in 3 gen.; 1 n. comb.; 1 n. syn.; hosts & distribution; first records.

**1981e.** Addendum to: a catalogue of the Conchaspididae (Insecta, Homoptera, Coccoidea) of the world. Ann. Soc. Entomol. France (n.s.) 17(3):271.
Addition of *Conchaspis vaccinii.*

**1985a.** Coccoidea. *In* "Insects of Southern Africa," edited by Scholtz, C. H. & Holm, E. Butterworths, Durban. 502 pp. (p. 168-175).
Key to 15 fam.; description for each fam.

**1985b.** Further observations on scale insects (Homoptera: Coccoidea) of the Middle East. Phytoparasitica 13(3-4):185-192.
*Phenacoccus yerushalmi* n. sp.; new information on host, distribution & economic importance of 9 coccoid spp.

*See* Berlinger, M. J., Dahan, R., Ben-Dov, Y., & Cohen, M.; De Klerk, C. A., Ben-Dov, Y., & Giliomee, J. H.; De Klerk, C. A., Giliomee, J. H., & Ben-Dov, Y.; Furth, G. D., Ben-Dov, Y., & Gerson, U.; Prins, A. J., Ben-Dov, Y., & Rust, D. J.; Wolk, J. L., Goldschmidt, Z., Dunkelblum, E., & Ben-Dov, Y.

**Ben-Dov, Y. & Amitai, S. 1980.** The pyriform scale, *Protopulvinaria pyriformis* (Cockerell), in Israel. Alon Hanotea 34(12):797-798. (In Hebrew, English summary).
First record in Israel.

**Ben-Dov, Y. & Harpaz, I. 1985.** An annotated list of taxa of Coccoidea (Homoptera) described by F. S. Bodenheimer (1897-1959). Israel J. Entomol. 19:23-36.
List 84 taxa; discussions on taxonomic status.

**Ben-Dov, Y. & Matile-Ferrero, D. 1984.** On the association of ants, genus *Melissotarsus* (Formicidae), with armoured scale insects (Diaspididae) in Africa. Proc. 10th Int. Symp. of Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 278-380.
Observed 5 coccoid spp. & concluded that both parties benefited from the association.

**Ben-Dov, Y., Swirski, E., Qafisha, W., & Chen, C. 1985.** The sphaerical mealybug, *Nipaecoccus vastator* (Maskell), a new citrus pest in Israel. Hassadeh 65:716. (In Hebrew, English summary).

Damage.

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*N. formosana* n. comb.; *Chionaspis simplex* regarded congeneric with *N. formosana*; description; illustration; taxonomy; hosts; distribution.

**Ben-Dov, Y. & Venezian, A. 1983.** New scale insects (Coccoidea) - orchard pests in the Arava. Phytoparasitica 11(2):124-125.
*Coccus elatensis*; *Aonidiella aurantii*; *Dysmicoccus brevipes*.

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*C. malesiana*.

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Numerical data on morpholological characters; all stages described; hosts & distribution; *Coccus mangiferae* transferred to *Protopulvinaria*.

**Benefatto, D.**, *see* Martino, E. di. & Benefatto, D.

**Benke, Gy.**, *see* Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, E., Gura, N. A., & Knyazatova, V. J.

**Bennett, F. D.**, *see* Herren, H. R., & Bennett, F. D.

**Berlese, A.**, *see* Leonardi, G., & Berlese, A.

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*Planococcus* sp. (not identical with *P. vitis*) a distinct sp. for which no name is at present available.

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Host relationship; differences in infestation rate; population density; reproduction.

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Damage; biology.

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*Planococcus citri*; hosts.

**Berlowitz, L. 1974.** Chromosomal inactivation and reactivation in mealybugs. Genetics 78(1):311-322.
Detailed study; discusses molecular nature & developmental significance of facultative heterochromatin.

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Used *Planococcus citri* & a cricket.

**Beshear, R. J.**, *see* Howell, J. O., & Beshear, R. J.; Tippins, H. H., & Beshear, R. J.; Tippins, H. H., Howell, J. O., & Beshear, R. J.

**Beshear, R. J. & Tippins, H. H. 1977.** Collection records for the Hoke species of diaspidids. J. Georgia Entomol. Soc. 12(2):180-182.
New collection records for 8 of the 9 diaspidids described by Hoke.

**Beshear, R. J., Tippins, H. H., & Howell, J. O. 1973.** The armored scale insects (Homoptera: Diaspididae) of Georgia and their hosts. Univ. Georgia Coll. Agric. Expt. Sta. Res. Bul. No. 146:15 pp.
Report 100 spp. of armored scales from Georgia; Aspidiotini 42, Diaspidini 55, Odonaspidini 3; 4 of these spp. appear to be endemic in Georgia.

**Bhalla, O. P.**, *see* Dinabandhoo, C. L., & Bhalla, O. P.; Mishra, R. C., & Bhalla, O. P.

**Bhardwaj, S.**, *see* Bhardwaj, S. P., & Bhardwaj, S.

**Bhardwaj, S. P. & Bhardwaj, S. 1983.** Insect pests of apple in Himachal Pradesh - a review. Pesticide 17(11):23-30.
*Quadraspidiotus perniciosus*; history; damage; biology.

**Bhat, P. K.**, *see* Chacko, M. J., Bhat, P. K., & Ramanarayan, E. P.

**Bhola, B.**, *see* Brüssel, E. W. van, & Bhola, B.

**Bianchi, H.**, *see* Bénassy, C., Bianchi, H., & Einhorn, J.; Einhorn, J., Bianchi, H., & Bénassy, C.

**Bianchi, H. & Bénassy, C. 1979.** La cochenille rouge du poirier, *Epidiaspis leperii* Sign. (Homoptera, Coccoidea) ravageur en France du prunier. Ann. Zool. Ecol. Animale 11(3):493-511.
Bio-ecological observations; damage; natural enemy.

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*Pseudococcus comstocki*; test with synthetic pheromone proved to be very successful; chemical components; biological note.

**Bichina, T. I., Rotar, M. G., & Rozinskaya, E. M. 1984.** The effect of light and trap construction on catches of coccids. Zashch. Rast. 8:38. (In Russian).
*Quadraspidiotus perniciosus* & *Pseudococcus comstocki*.

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**1974b.** Studies on the process of postembryonic morphogenesis in scale insects (Coccoidea, Homoptera). Part II. The central nervous system of *Quadraspidiotus ostreaeformis* (Curt.) during postembryonic development. Acta Biol. Cracoviensia (Ser. Zool.) 17:183-212.
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Developmental stages in females & males; comparison with other coccoids.

**Bielenin, I. & Weglarska, B. 1973.** The salivary glands in *Quadraspidiotus ostreaeformis* (Curt.) (Homoptera, Coccoidea, Aspidiotini). Acta Biol. Cracoviensia (Ser. Zool.) 16:95-112.
Morphology & innervation of the salivary glands; cytochemical & cytological observations.

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Detailed study; gas chromatography; natural & synthetic pheromone; trapping males with lure.

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*Pseudococcus comstocki*.

**1982.** Isolation, identification, synthesis, and bioassay of the pheromone of the Comstock mealybug and some analogs. J. Chem. Ecol. 8(4):689-700.
*Pseudococcus comstocki*; pheromone collection; analytical instrumentation; identification.

**Bigger, M. 1972.** Recent work on the mealybug vectors of cocoa swollen shoot disease in Ghana. PANS 18(1):61-70.
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**1973.** Mealybug studies. Ghana Cocoa Res. Inst. Annu. Rep. 1971-72. 236 pp. (p. 106-122).
*Planococcus citri* & *Planococcoides njalensis*; incidence; population cycle; movement & distribution between & within trees; virus outbreak; association.

**1975a.** Susceptibility of two cocoa progenies to attack by insect species. I. Proportion of trees infested. Expt. Agric. 11(3):187-192.
Lists 7 coccoid spp.; degree of infestation presented in a table.

**1975b.** Susceptibility of two cocoa progenies to attack by insect species. II. Effects of canopy size on numbers of mealybugs. Expt. Agric. 11(3):193-199.
Lists 6 mealybugs; results presented in a table.

**1975c.** Mealybug studies. Ghana Cocoa Res. Inst. Annu. Rep. 1972-73. 184 pp. (p. 84-90).
Survey & distribution within canopy; virus outbreak & association analysis; discusses 8 coccoid spp.

**1976a.** Oscillations of tropical insect populations. Nature (London) 259(5540):207-209.
*Planococcoides njalensis* & *Planococcus citri*.

**1976b.** Mealybug studies. Ghana Cocoa Res. Inst. Annu. Rep. 1973-74. 210 pp. (p. 101-118).
*Planococcoides njalensis*. *Planococcus citri*, *Phenacoccus hargreavesi*; virus outbreak; sampling of mealybug males & parasites; population changes; time of fertilization; age specific fertility & mortality of *P. njalensis*.

**1976c.** Mealybug studies: mealybug resistance testing trial. Ghana Cocoa Res. Inst. Annu. Rep. 1973-74. 210 pp. (p. 118-119).
*Planococcoides njalensis*; *Gascardia* near *zonatus*; *Ferrisia virgata*.

**1981a.** Observations on the insect fauna of shaded and unshaded amelonado cocoa. Bul. Entomol. Res. 71(1):107-119.
*Stictococcus sjostedtii*; *Planococcoides njalensis*; ant association.

**1981b.** The relative abundance of the mealybug vectors (Hemiptera: Coccidae and Pseudococcidae) of cocoa swollen shoot disease in Ghana. Bul. Entomol. Res. 71(3):435-448.
Discusses 6 mealybug spp. in descending order of abundance.

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**Bigger, M. & Lockwood, G. 1973.** Clonal resistance to mealybug. Ghana Cocoa Res. Inst. Annu. Rep. 1971-72. 236 pp. (p. 116-117).
*Planococcoides njalensis*, *Planococcus citri* & *Ferrisia virgata* on p. 116-117.

**Bigger, M., Lockwood, G., & Boafo, E. O. 1976.** Mealybug studies: mealybug resistance testing, clonal trial. Ghana Cocoa Res. Inst. Annu. Rep. 1973-74. 210 pp. (p. 118).
*Planococcoides njalensis* & *Planococcus citri*.

**Birch, L. C.**, *see* Andrewartha, H. G., & Birch, L. C.

**Birjandi, A. K.**, *see* Komeli Birjandi, A. K.

**Bisessar, S., McLaughlin, D. L., & Linzon, S. N. 1985.** The first occurrence of the beech scale insect *Cryptococcus fagisuga* on American beech *Fagus grandifolia* in Ontario, Canada. J. Arboriculture 11(1):13-14.
Distribution.

**Bissanti, G.**, *see* Liotta, G., Bissanti, G., & Lombardo, A.

**Bjorkling, F.**, *see* Baeckström, P., Bjorkling, F., Hogberg, H. E., & Norin, T.

**Blackburn, V. L. & Miller, D. R. 1984a.** Pests not known to occur in the United States or of limited distribution, No. 44: Black parlatoria scale. U.S. Dept. Agric. - Plant Prot. & Quarantine, Animal & Plant Health Inspection Service. 81-45:13 pp.

*Parlatoria ziziphi*; economic importance; hosts & distribution; characters; damage; detection; biology; natural enemies.

**1984b.** Pests not known to occur in the United States or of limited distribution, No. 45: Arrowhead scale. U.S. Dept. Agric. - Plant Prot. & Quarantine, Animal & Plant Health Inspection Service. 81-45:14 pp.
*Unaspis yanonensis*; economic importance; hosts & distribution; characters; damage; detection; biology; natural enemies.

**Blackman, R. L., Hewitt, G. M., & Ashburner, M. (eds.) 1980.** Insect cytogenetics. Symp. Roy. Entomol. Soc. London No. 10. Blackwell Scientific Publications, Oxford. 278 pp.
Contains 15 papers by different authors on the organization, structure & function, breeding system, ecology & speciation & medical importance of insect chromosomes.

**Blackmore, P. J. M.**, *see* Hill, M. G., & Blackmore, P. J. M.

**Blackmore, S. 1981.** Penetration of the host plant tissues by the stylets of the coccoid *Icerya seychellarum* (Coccoidea, Margarodidae) on Aldabra atoll. Atoll Res. Bul. 254:33-38.
Depth of penetration & hosts.

**Blahutiak, A.**, *see* Alayo Soto, R., & Blahutiak, A.

**Blahutiak, A. & Alayo, R. 1979.** Seasonal dynamics of the hemisphaerical scale *Saissetia hemisphaerica* Targ. (Homoptera, Coccidae) and its natural enemies in Cuba. Slovak Acad. Sci., Slovak Soc. Agric. Forest and Food Sci., Ser. A. 1:146. (In Slovak, Russian & Spanish summaries).
Detailed study; description; hosts & distribution; abundance, mortality; effectiveness of natural enemies.

**Blair, B. W.**, *see* Williams, D. J., Blair, B. W., & Khasimuddin, S.

**Blanchard, R. O.**, *see* Ostrofsky, W. D., Shortle, W. C., & Blanchard, R. O.

**Blanck, A. 1966.** Le rôle de la cochenille *"Matsucoccus Feytaudi"* dans le dépérissement du pin maritime de la Fôret des Maures. Phytoma 18(175):15-26.
Damage described; biological notes; chemical control; natural enemies.

**Blaisinger, P. 1979.** Évolution d'une population de la cochenille rouge du poirier *Epidiaspis leperii* Sign. (Homoptera, Diaspidoidea) dans un verger de mirabelliers en Alsace. Sa repercussion sur le rendement du verger. Ann. Zool. Ecol. Animale 11(3):487-492. (English summary).
Control; no economic importance.

**Blasco, J.**, *see* Melia, A., & Blasco, J.

**Blasquez, J. R. E. 1966.** Ètude des glandes cirières tégumentaires chez *Pseudococcus citri* Risso (Homoptera, Coccoidea). Variation de la chétotaxie, des organes sensoriels et des glandes cirières tégumentaires au cours du développement larvaire. Ann. Inst. Natl. Agron. (Paris) 4:263-314.
Detailed description of dermal structures in *P. citri*.

**Blumberg, D., Swirski, E., & Greenberg, S. 1975.** Evidence for bivoltine populations of the Mediterranean black scale, *Saissetia oleae* (Olivier) on citrus in Israel. Israel J. Entomol. 10:19-24.

Discuss 2 theories which might be responsible for changing the population of *S. oleae* from univoltine to bivoltine.

**Boafo, E. O.**, *see* Bigger, M., Lockwood, G., & Boafo, E. O.

**Bobb, M. L. 1973.** Insect and mite pests of apple and peach in Virginia. Va. Polytech. Inst. & State Univ. Ext. Div. Pub. 566:29 pp.
Description, damage & life history of San Jose scale, scurfy scale, oystershell scale, white peach scale, terrapin scale & European fruit lecanium.

**Bobirnac, B.**, *see* Matei, I., & Bobirnac, B.

**Boer, J. A. de**, *see* Williams, D. J., & Boer, J. A. de.

**Boer, J. A. de & Valentine, E. W. 1977.** The identity of *Leucaspis gigas* (Homoptera: Diaspididae), with descriptions of four similar species in New Zealand. New Zeal. J. Zool. 4(2):153-164.
*L. mixta* n. sp.; *L. ohakunensis*, *morrisi* & *Salicicola maskelli* redescribed.

**Bogacheva, V. I. & Ogorodnikova, V. I. 1980.** Pests and diseases of hippeastrum. Tsvetovodstvo, "Kolos" Moskva 3:28. (In Russian).
*Coccus hesperidum*, *Pseudococcus maritimus* & *amaryllidis*; short description; biology.

**Bogenschutz, H. & König, E. 1982.** Behandlung von Buchenbestanden nach Befall durch die Wollschildlaus. Allgemeine Forstzeitung 43:1304-1305.
Recommend removal of trees only if groups are infested; no special effort should be made to remove isolated moderately to severely infested trees.

**Bognár, S. & Vinis, G. 1979.** Scale insects in the parks and avenues of Budapest. Acta Agron. Acad. Sci Hungaricae 28(1-2):13-26.
List 45 coccoid spp. in 6 fam.; first record for 5 spp.; damage; hosts; biology & natural enemies for some; control recommendations.

**Böhm, H. 1976.** Immer wieder Schildläuse an Zimmerpflanzen. Pflanzenarzt 29(4):41-42.
*Aspidiotus hederae*, *Lecanium corni*, *Quadraspidiotus perniciosus* & *Pseudococcus* spp.

**Bonafonte, P. 1979.** Structure du sperme et migration des spermatozoides dans les voies genitales femelles de *Chrysomphalus ficus* (Homopt. Diaspididae). Ann. Soc. Entomol. France (n.s.) 15(3):505-512. (English summary).
Detailed study.

**1981.** Contribution a l'étude de la reproduction chez les cochenilles diaspines. I. Influence de l'elevage au laboratoire et de l'accouplement differe sur la fecondite et le sex-ratio de *Chrysomphalus ficus* Ashmead (Homoptera - Diaspididae). Ann. Soc. Entomol. France (n.s.) 17(2):157-170. (English summary).
Detailed study.

*See* Bourijate, M., & Bonafonte, P.; Loucif, Z., & Bonafonte, P.

**Bond, R. W.**, *see* Miskimen, G. W., & Bond, R. W.

**Bonneau, M., Timbal, J., & Schvester, D. 1975.** La nutrition des semis de pin maritime dans différentes stations du Massif des Maures. Ann. Sci. For. (Paris) 31(3):181-188. (English summary).
*Matsucoccus feytaudi*; nutrition might influence resistance of *Pinus pinaster* to parasite.

**Boratynski, K. (Boratynski, K. L.) 1970a.** Advances in our knowledge of Coccoidea (Homoptera) with reference to the studies of the males and the application of some numerical methods of classification. Polish Congr. Contemporary Sci. & Culture in Exile 1:585-595.

**1970b.** On some species of *"Lecanium"* (Homoptera, Coccidae) in the collection of the Naturhistorishes Museum in Vienna; with description and illustration of the immature stages of *Parthenolecanium persicae*. Ann. Nat. Hist. Mus. Wien. 74:63-76.
Taxonomic discussion; hosts; 9 spp. from Vienna collection listed.

**1971.** Application of numerical methods in the taxonomy of male Coccoidea. Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 1:113-114.
Numerical methods seem to produce results in shorter time than those obtained by traditional methods.

*See* Davies, R. G., & Boratynski, K. L.

**Boratynski, K. & Davies, R. G. 1971.** The taxonomic value of male Coccoidea (Homoptera) with an evaluation of some numerical techniques. Biol. J. Linnean Soc. 3:57-102.
Taxonomical value of characters reviewed in relation to traditional classification based on females; numerical methods applied to classification of some Diaspididae; techniques compared & evaluated.

**Boratynski, K., Pancer-Koteja, E., & Koteja, J. 1982.** The life history of *Lecanopsis formicarum* Newstead (Homoptera, Coccinea). Ann. Zool. (Warszawa) 36(27):517-537. (Polish & Russian summaries).
Described developmental stages, except male; hosts & habitat; growth & metamorphosis; reproduction; ecology; natural enemies; behavior; taxonomic status of *Lecanopsis.*

**Boratynski, K. & Williams, D. J. 1964.** Coccoidea. *In* "Checklist of British Insects," by Kloet, G. S. & Hincks, W. D., 2nd ed. Handbk. Ident. British Insects 11(1):87-94.
List 174 spp. in 95 gen. & 10 fam.

**Borchsenius, N. S. 1973.** Practical determination of scale insects (Coccoidea) of cultivated plants and trees of the USSR. Akad. Nauk SSR Zool. Inst. Leningrad, No. 81. 311 pp. (In Russian).
Lists 312 spp., systematic position of superfamilies; internal body structure & protective covers; collection methods; preservation; control; keys to spp. on different hosts.

**1978.** Notes on the Coccoidea of east Asia. XII. A new genus and new species of the Diaspididae (Homoptera, Coccoidea). (edited by E. M. Danzig) Entomol. Obozr. 57(1):106-110. (In Russian). Entomol. Rev. 57(1):70-73. (In English).
*Parainsulaspis szetchwanensis* & *Cornimytilus alnicola* n. spp.; *Palaeomytilus* n. gen.; *P. daphniphylli* n. sp.

**Borovikova, Y. Z.**, *see* Saakyan-Baranova, A. A., & Borovikova, Y. Z.

**Bouchra, G. 1978.** Sur deux races biologiques distinctes chez *Lepidosaphes ulmi* L. (Homoptera, Coccoidea, Diaspididae). Compt. Rend. Hebd. Seances Ser. D. 286(18):1313-1314. (English summary).
First strain on apple tree oviparous & multivoltine; second strain on poplar ovoviparous & univoltine.

**Boulard, M. 1977.** Une progéniture de cochenille dans la ponte d'une cigale. Entomologiste 33(2):95-96.

*Trionymus lanata*; biology.

*See* Lavabre, E. M., & Boulard, M.

**Boulay, C.**, *see* Carle, P., Carde, J. P., & Boulay, C.

**Boulbria, A.**, *see* Riom, J., Gerbinot, B., Boulbria, A., & Fabre, J. P.

**Bourijate, M. & Bonafonte, P. 1982.** Influence de l'accouplement différé sur la fécondité, le sex-ratio, l'oviposition, la formation du bouclier et le comportement chez quatre espèces de cochenilles diaspines (Hom., Diaspididae). Ann. Soc. Entomol. France (n.s.) 18(3):303-315. (English summary).
*Aonidiella aurantii*, *Lepidosaphes beckii*, *Parlatoria zizyphus* & *pergandei*.

**Boussiengue, J.**, *see* Fabres, G., & Boussiengue, J.

**Brachman, R. C. 1971.** The Pseudococcidae of Virginia (Homoptera: Coccoidea). Ph.D. Diss., Va. Polytech. Inst. & State Univ. Blacksburg. 220 pp.
Described & illustrated 32 spp. in 12 gen.; keys to taxa; hosts & distribution; habits.

**Bradford, B., Whitehead, G. B., & Altona, R. E. 1949.** A coccid pest of turf. J. Entomol. Soc. South. Africa 12:134-136.
*Antonina indica*.

**Brady, B. L. K. 1979.** *Verticillium-lecanii*. Commonwealth Mycology Inst. Description Pathogenic Fungi & Bacteria 61(610):1-2.
Scale insect (*Pulvinaria floccifera*, *Coccus hesperidum* & *viridis*) control.

**Braun, H. J. 1976a.** Das Rindsterben der Buche, *Fagus sylvatica* L. verursacht durch die Buchenwollschildlaus *Cryptococcus fagi* Bär. I. Die Anatomia der Buchenrinde als Basis-Ursache. European J. Forest Pathol. 6(3):136-146.
Detailed study.

**1976b.** Beech bark necrosis: basic causes and development of the disease (triggered by *Cryptococcus fagi*). Allgemeine Forst und Jagdezeitung 147(6/7):121-130. (English & French summaries).
Detailed study.

**1977.** Das Rindsterben der Buche, *Fagus sylvatica* L. verursacht durch die Buchenwollschildlaus *Cryptococcus fagi* Bär. II. Ablauf der Krankheit. European J. Forest Pathol. 7(2):76-93. (English & French summaries).
Recognized 7 phases.

*See* Fink, S., & Braun, H. J.

**Braun, S.**, *see* Fluckiger, W., Braun, S., & Fluckiger-Keller, H.

**Bremi-Wolf, J. J. 1847a.** Über Schildläuse. Verhandlungen Schweitzer. Naturforschenden Gesellschaft Schaffhausen. p. 41-45.

**Brett, B. L. H.**, *see* Nur, U., & Brett, B. L. H.

**Brewer, B. S. & Howell, J. O. 1981.** Description of the immature stages and adult female of *Saissetia coffeae*. Ann. Entomol. Soc. Amer. 74(6):548-555.

Detailed study; key to various stages.

**Brewer, B. S. & Oliver, A. D. 1984.** The euonymus scale - a problem in Louisiana landscapes. Louisiana Agric. 28(1):10-12.
*Unaspis euonymi*; life-cycle; damage; chemical control.

**Briese, D. T. 1982.** Damage to saltbush by the coccid *Pulvinaria maskelli* Olliff, and the role played by the attendant ant. J. Austral. Entomol. Soc. 21(4):293-294.
Presents table about the *P. maskelli* infestation effect on saltbush; ant: *Iridomyrmex* sp.

**Briozzo Beltrame, J.**, *see* Carbonell Bruhn, J., & Briozzo Beltrame, J.

**Brookes, H. M. 1970.** *Chorizococcus herbicola* (Maskell) (comb. n.): (Homoptera: Pseudococcidae) a grass-infesting species in Australia. J. Austral. Entomol. Soc. 9:53-56.
Redescription.

**1972.** Two species of *Eurycoccus* Ferris on *Acacia* in Australia (Homoptera: Pseudococcidae). J. Austral. Entomol. Soc. 11:129-134.
*Dactylopius australiensis* redescribed & designated as a new combination of *Eurycoccus australiensis*; *E. yanchepae* n. sp.

**1976.** New species and records of *Chorizococcus* McKenzie in Australia (Homoptera: Pseudococcidae). J. Austral. Entomol. Soc. 15:421-432.
*C. lii*, *loweri*, *petilus*, *radicalis* & *subalpinus* n. spp.; provisional key to spp., first record for 3 spp.

**1978.** A new species of *Heliococcus* Sulc from Australia and Pakistan and a redescription of *Heliococcus glacialis* (Newstead) comb. n. (Homoptera: Pseudococcidae). J. Austral. Entomol. Soc. 17:241-245.
*H. summervillei*; description of adult female; hosts; first record of genus from both localities.

**1981.** A new genus and species of mealybug on *Callitris* in south Australia (Homoptera: Pseudococcidae). J. Austral. Entomol. Soc. 20(2):127-129.
*Poecilococcus* n. gen.; *P. longilobus* n. sp.

**1982.** *Epicoccus* Cockerell and its type-species, *Epicoccus acaciae* (Maskell), redescribed (Homoptera: Coccoidea: Pseudococcidae). J. Austral. Entomol. Soc. 21(3):237-240.
Taxonomic notes on morphological changes in adults; host & distribution.

*See* Koteja, J., & Brookes, H. M.; Williams, D. J., Radunz, L. A. J., & Brookes, H. M.

**Brookes, H. M. & Koteja, J. 1982.** *Waricoccus parvisetosus* gen. et sp. n. (Homoptera, Coccidae) from Australia. Polskie Pismo Entomol. 52(3/4):183-187.
Description; host & distribution.

**Brooks, R. F. 1977.** *Chrysomphalus ficus*, *Unaspis citri*, *Insulaspis gloverii*. In chapter: Leafhoppers, whiteflies, aphids, scale insects, etc.; *In* "Diseases, Pests and Weeds in Tropical Crops," edited by Kranz, J., Schmutterer, H., & Koch, W. Verlag Paul Parey, Berlin and Hamburg. 666 pp. (p. 357-359, 364-367).
Host & distribution; economic importance; life cycle; ecology; natural enemies & control for 12 spp.; notes on 13 other spp.

*See* Albrigo, L. G., & Brooks, R. F.

**Brown, K. S., Jr. 1975.** The chemistry of aphids and scale insects. Chem. Soc. Rev. 4(2):263-288.
Discusses secondary compounds of 23 coccoid spp.

**Brown, S. W. 1977.** Adaptive status and genetic regulation in major evolutionary changes of coccid chromosome systems. Nucleus 20(1/2):145-157.
Detailed study; levels of adaptive specialization of coccoids; chromosome system of bisexual coccoids; evolutionary transitions.

*See* Chandra, H. S., & Brown, S. W.

**Brown, S. W. & Chandra, H. S. 1977.** Chromosome imprinting and the differential reguiation of homologous chromosomes. *In* "Cell Biology," vol. 1 "Genetic Mechanisms of Cells," edited by Goldstein, L. & Prescott, D. M. Academic Press, New York. p. 109-189.

**Brown, W. L.**, *see* Fabres, G., & Brown, W. L.

**Brüning, D. 1967.** Befall mit *Eulecanium corni* Bché f. *robinarium* Dgl. und *Eulecanium rufulum* Ckll. in Düngungsversuchen zu Laubgehölzen. Arch. f. Pflanzenschutz 3(3):193-200.
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Life history.

**Brussino, G.**, *see* Ugolini, A., & Brussino, G.

**Buckmire, K. U. 1979a.** Pests of grain legumes and their control in the Commonwealth Caribbean. *In* "Pests of grain legumes: ecology and control," edited by Singh, S. R., Van Emden, H. F., & Taylor, T. A. Int. Symp. on Pests of Grain Legumes (Ibadan, Nigeria, 1976). Acad. Press Inc., London, New York (1978). 454 pp. (p. 179-184).
*Icerya purchasi* a major pest on soybeans.

**1979b.** Potentials and problems of peanut production in St. Kitts. Proc. Caribbean Food Crops Soc. 15:234-247. (Joint Symp. on maize and peanut (Suriname, 1978), 75th Anniv. Agric. Expt. Sta. Paramaribo).
Mentions an unidentified mealybug which had recently become a problem in the dry season.

**Bullington, S. W. & Kosztarab, M. 1985**. Studies on the morphology and systematics of scale insects - No. 12. I. Revision of the family Kermesidae (Homoptera) in the Nearctic region based on adult and third instar females. Va. Polytech. Inst. & State Univ. Agric. Expt. Sta. Bul. No. 85-11:1-118.
A comprehensive study; key to fam., gen. & spp.; *Allokermes* & *Nanokermes* n. gen.; 4 n. spp., 4 n. syns.; 15 spp. redescribed; notes on unplaced spp.

**Bund, C. F. van de**, *see* Rossem, G. van, Bund, C. F. van de, & Burger, H. C.

**Burditt, A. K., Jr. & Baranowski, R. A. 1981.** Management of arthropod pests for subtropical fruits. Misc. Publ. Entomol. Soc. Amer. 12(1):85-90.
*Parlatoria pergandii* on lime & *Pseudaulacaspis cockerelli* on mango in Florida.

**Burger, H. C.**, *see* Rossem, G. van, Bund, C. F. van de, & Burger, H. C.

**Burger, W. A.**, *see* Annecke, D. P., Burger, W. A., & Coetzee, H.

**Bürges, G. & Gál, T. 1982.** Homoptera and Heteroptera from the biocenosis of the chestnut: bio-ecological notes. Mem. Soc. Entomol. Ital. (Genova) 60(2):105-110. (In Italian, English summary).
List 10 coccoid spp. dependent upon the chestnut as food.

**Burns, D. P. & Donley, D. E. 1970.** Biology of the tuliptree scale, *Toumeyella liriodendri* (Homoptera: Coccoidea). Ann. Entomol. Soc. Amer. 63(1):228-235.
Taxonomy; history; distribution; secondary hosts; parasites & predators.

**Burts, E. C.**, *see* Hill, W. B., & Burts, E. C.

**Burts, E. C., Hill, W. B., & Retan, A. H. 1984.** Grape mealybug in pears. Wash. St. Univ. Coop. Ext. Serv. Ext. Bul. No. 1307. 2 pp.
*Pseudococcus maritimus*; recognition characters; damage; life history; chemical control.

**Burzynski, J. & Rodziewicz, A. 1976.** Preliminary studies and observations on the occurrence and economic importance of *Matsucoccus pini* Green (Margarodidae: Coccoidae). Sylwan 120(6):1-10. (In Polish, English summary).
Hosts & distribution.

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Endemism.

**Butt, S. M.**, *see* Beley, J. R., Ditsworth, T. M., Butt, S. M., & Johnson, C. D.; Ditsworth, T. M., Butt, S. M., Beley, J. R., Johnson, C. D., & Balda, R. P.

**Butze, J. A.**, *see* Sampedro, G., & Butze, J. A.

**Bytinski-Salz, H. 1966.** An annotated list of insects and mites introduced into Israel. Israel J. Entomol. 1:15-48.
Lists 30 coccoid spp. in 20 gen.; hosts.

**Bytinski-Salz, H. & Sternlicht, M. 1967.** Insects associated with oaks (*Quercus*) in Israel. Israel J. Entomol. 2:107-143.
Zoogeographical analysis; 32 spp. of coccoids on 3 oak spp.

**Cadahia, D. 1971.** *Matsucoccus pini* Green (Homoptera: Margarodidae). Su descripción y bionomía en España. Bol. Serv. de Plagas Forestales 14(27):81-91. (English summary).
All stages described; review of world literature on distribution, hosts & damage; new host records; biology; parasite; predators.

**1982.** *Palaeococcus fuscipennis* Burm. Homoptera, Margarodidae, plaga de los pinares de la costa de Huelva. Bol. Serv. Def. contra Plagas 8(2):201-214. (English summary).
Description of all stages; development; life cycle; biocenotic complex; damage; natural enemies.

**Calabretta, C.**, *see* Inserra, S., & Calabretta, C.

**Caltagirone, L. E. 1981.** Landmark examples in classical biological control. Annu. Rev. Entomol. 26:213-232.
Discusses 4 coccoid spp. & their natural enemies.

*See* Tremblay, E. & Caltagirone, L. E.

**Cameron, D. W.**, *see* Addae-Mensah, I., & Cameron, D. W.; Banks, H. J., & Cameron, D. W.; Banks, H. J., Cameron, D. W., & Crossley, M. J.; Banks, H. J., Cameron, D. W., Edmonds, J. S., & Raverty, W. D.; Banks, H. J., Cameron, D. W., & Raverty, W. D.

**Cameron, D. W., Conn, C., & Feutrill, G. I. 1981.** Chemistry of the Coccoidea. VII. Synthesis of ceroalbolinic acid. Austral. J. Chem. 34(9):1945-1949.
Used *Ceroplastes albolineatus*, *rubens* & *Cryptes baccatum*.

**Cameron, D. W., Crossley, M. J., Feutrill, G. I., & Griffiths, P. G. 1978.** Chemistry of the Coccoidea. V. Synthesis of 2-acetylemodin and deoxyerythrolaccin. Austral. J. Chem. 31(6):1363-1370.
*Eriococcus coriaceus*.

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Detailed study.

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Xantholaccaic acid (first record in nature); used single crystal X-ray diffraction.

**Cameron, D. W., Feutrill, G. I., & Perlmutter, P. 1982.** Chemistry of the Coccoidea. X. Synthesis of the xantholaccaic acid B system and of related compounds. Austral. J. Chem. 35(7):1469-1480.
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Used *Nipaecoccus aurilanatus*.

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*Planococcus citri*, *Planococcoides njalensis*, & *Phenacoccus hargreavesi*.

**1983.** The assessment of mealybugs (Pseudococcidae) and other Homoptera on mature cocoa trees in Ghana. Bul. Entomol. Res. 73(1):137-151.
Data on 17 coccoid spp.; studied factors influencing abundance of mealybug vectors & by identifying those and to manipulate them to decrease the spread of disease.

**Campbell, C. A. M. & Bigger, M. 1976.** Mealybug studies: distribution of mealybugs within trees. Ghana Cocoa Res. Inst. Annu. Rep. (1973/74):210 pp. (p. 119-124).
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**Canard, M. 1971.** Contribution à l'étude des Rhizopulvinaires Méditerranéennes (Homoptera, Coccidae). Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 1:119-120.
Life cycle, hosts, parasites of 6 *Rhizopulvinaria* spp.

**1980.** Présence en Grèce d'*Eulecanium tiliae* (L.) (Homoptera, Coccidae) sur le figuier *Ficus carica* L. et de son parasite *Blastothrix sericea* (Dalm.) (Hymenoptera, Encyrtidae). Biol. Gallo-Hellenica 9(1):157-162. (English & Greek summaries).
Present in several biotopes with 2 parasites, 2 hyperparasites & egg predator *Anthribus fasciatus*.

*See* Laudého, Y., & Canard, M.

**Cannizzaro, G.**, *see* Rosciglione, B., Castellano, M., Martelli, G. P., Savino, V., & Cannizzaro, G.

**Carbonell Bruhn, J. & Briozzo Beltrame, J. 1975.** San Jose scale, *Quadraspidiotus perniciosus*. Bol. Divulgation Minist. Ganad. Agric. Cent. Invest. Agric. Alberto Boer Ger. 30: 11 pp.
Control; damage; life cycle & habits.

**Cardé, A. M.**, *see* Roelofs, W. L., Gieselmann, M. J., Cardé, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J.

**Carde, J.-P.**, *see* Carle, P., Carde, J.-P., & Boulay, C.

**Cardoso, H. L.**, *see* Ferrão, A. P. da Fonseca, & Cardoso, H. L.

**Carillo Sanches, J.**, *see* Urias Lopez, M. A., & Carillo Sanches, J.

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Detailed study.

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*Matsucoccus feytaudi*; infestation; population dynamics; damage; control.

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Female pheromone might be useful for mass trapping.

**Carman, G. E. 1981.** Comments on the red scale situation in South Africa. J. Citrus and Subtropical Fruit 575:7,9,11.
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*See* Moreno, D. S., Carman, G. E., Fargerlund, J., & Shaw, J. G.; Moreno, D. S., Carman, G. E., Rice, R. E., Shaw, J. G., & Bain, N. S.; Moreno, D. S., Rice, R. E., & Carman, G. E.

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*See* Vieira, R. M. da S., Carmona, M. M., & Pita, M. de S.

**Carnero, A.**, *see* Carnero Hernandez, A.

**Carnero Hernandez, A.**, *see* Pérez, G., Carnero, A., & Barquin, J.; Pérez Guerra, G., & Carnero Hernandez, A.

**Carney, R. L.**, *see* Henrick, C. A., Carney, R. L., & Anderson, R. J.

**Caron, D.**, *see* Decourt, N., Malphettes, C. B., Perrin, R., & Caron, D.

**Carrero, J. M.**, *see* Panis, A., Carrero, J. M., & Limon, F.

**Carroll, D. P. 1979.** Within-tree distribution and host substrate influences on California red scale, *Aonidiella aurantii* (Mask.); density, survival, reproduction and parasitization. Ph.D. Diss., Univ. Calif., Riverside. 145 pp.

**Carroll, D. P. & Luck, R. F. 1984.** Bionomics of California red scale, *Aonidiella aurantii* (Maskell) (Homoptera: Diaspididae), on orange fruits, leaves and wood in California's San Joaquin Valley. Environ. Entomol. 13(3):847-853.
Development & juvenile survivorship; reproduction & reproductive life span; settling of crawlers on fruit, leaves & wood; natural enemy.

**Cassidy, D. V.**, *see* Moore, W. S., Koehler, C. S., Joos, J. L., Donaldson, D. R., Cassidy, D. V., & Gill, R. J.

**Cassier, P.**, *see* Foldi, I., & Cassier, P.

**Cassino, P. C. R.**, *see* Gonçalves, C. R., & Cassino, P. C. R.; Lima, A. F. de, & Cassino, P. C. R.

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*A. pustulans* & *A. pustulans* var. *princeps* described & illustrated; biology; biological control discussed.

**Castellano, M. A.**, *see* Rosciglione, B., Castellano, M. A., Martelli, G. P., Savino, V., & Cannizzaro, G.

**Castro, A.**, *see* Lozano, J. C., Toro, J. C., Castro, A., & Bellotti, A.

**Cavalcante, L. C. C. 1975.** *Orthezia insignis* (Browne, 1887), a polyphagous pest. Fitossanidade 1(3):97.
Morphology; hosts & distribution; damage & control.

**Chacko, M. J.**, *see* Ramanarayan, E. P., Chacko, M. J., & Ramachandran, F.; Rao, L. V. A., & Chacko, M. J.

**Chacko, M. J., Bhat, P. K., & Ramanarayan, E. P. 1977.** New records of Coccoidea with notes on natural enemies of *Planococcus* spp. on coffee in India. J. Coffee Res. 7(3):69-71.
List 11 coccoid spp.

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Damage; locality.

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First record of *C. ornatus* on coffee in India.

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*Lepidosaphes newsteadi* & *Carulaspis minima*.

**Chandler, L. D.**, *see* Meyerdirk, D. E., Chandler, L. D., Summy, K. R., & Hart, W. G.

**Chandra, H. S.**, *see* Brown, S. W., & Chandra, H. S.; Deobagkar, D. N., Muralidharan, K., Devare, S. G., Kalghatgi, K. K., & Chandra, H. S.

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**Chang, Y. C.**, *see* Tao, C. C. C., Wong, C. Y., & Chang, Y. C.

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*Coccus longulus*, *Asterolecanium pustulans* & *Hemiberlesia implicata*; morphology; distribution; damage; hosts.

**Chapin, J. B.**, *see* Oliver, A. D., & Chapin, J. B.

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*Ferrisia virgata*.

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*Matsucoccus feytaudi*.

**Charles, J. G. 1981.** Distribution and life history of the long-tailed mealybug, *Pseudococcus longispinus* (Homoptera: Pseudococcidae) in Auckland vineyards. New Zeal. J. Zool. 8(2):285-294.

Biology; reproduction; starvation; alternative host plant; predation & parasitism.

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*P. longispinus* is widespread & achieved pest status; discusses sp. effect on the physical condition of vine & on the taste of wine; sooty mold; chemical control recommendation.

**Charlin, C. R. 1972.** Distribución geográfica de las plantas hospederas y nuevas identificaciones de Cóccidos para Chile. Rev. Peru. Entomol. Agric. 15(2):215-218. (English summary).
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Description of 3 nymphal instars; host; damage.

**Chaudhary, J. P.**, *see* Garg, D. C., & Chaudhary, J. P.

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**1970b.** Sex in relation to the sequence of larval emergence in lac insects. Indian J. Entomol. 32(3):273-275.
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Habits.

**1970b.** Genetic evidence of nutritional differences in the lac insects. Indian J. Entomol. 32(4):390-392.
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First record of *Kerria lacca* producing white lac; location: Madurai Ludhiana (Tamil Nadu, Punjab).

**Chen, C.**, *see* Ben-Dov, Y., Swirski, E., Qafisha, W., & Chen, C.

**Chen, F. G. 1974.** A new coccid of *Ceroplastes* on citrus trees. Acta Entomol. Sinica 17(3):325-328.
*C. centroroseus* n. sp.; hosts & distribution.

**1983.** The Chionaspidini (Diaspididae, Coccoidea, Homoptera) from China. Sci. & Tech. Publ. House of Sichuan Prov. 175 pp. (In Chinese, English summary).
Description, key, host & distribution of 74 spp. in 9 gen.; 21 n. spp., 1 n. ssp., 2 n. gen.

*See* Jiang, G. Z., & Chen, F. G.

**Chen, F. G., Wu, Z. Q., & Su, D. K. 1980.** New coccids of the genus *Aulacaspis* in China. Acta Zootaxonomica Sinica 5(3):289-296. (In Chinese & English).
Description of 5 n. spp.; hosts & distribution.

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Morphological characters of adult male & female; biology; life cycle; habitat.

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Life table; succession of natural enemies; chemical control.

**Chibnall, A. C.**, *see* Meinwald, J., Smolanoff, J., Chibnall, A. C., & Eisner, T.

**Chimak, P. I. A.**, *see* Kriventsov, I. U. I., & Chimak. P. I. A.

**Chinese Academy of Forestry Sciences. 1980.** Forest Insects of China. 1107 pp.
Lists 23 spp. in 5 fam. on p. 131-185.

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*Fiorinia theae*; reared on fruit instead of plant; survived on all, best on butternut squash.

**Chou, I. 1984.** Monograph of Diaspididae of China. Shanxi Publ. House of Science & Technology. 432 pp.
Describes 59 gen. & 316 spp; hosts; distribution; biology; morphology; economic importance.

**Chowdhury, S. H.**, *see* Ullah, G. M. R., & Chowdhury, S. H.

**Chowdhury, S. H. & Ullah, G. M. R. 1980.** Biology of striped mealybug, *Ferrisia virgata* (Cockerell) (Pseudococcidae, Coccoidea). Proc. 3rd Natl. Zool. Conf., Dhaka, Zool. Soc. Bangladesh. p. 73-82.
Life cycle; duration; size; coloration; rate of reproduction.

**1984a.** Coccoids and their host plants in Bangladesh - a checklist (Homoptera: Coccoidea). Bangladesh J. Zool. 12(1):39-45.
Host & distribution of 46 coccoid spp. in 5 fam.

**1984b.** Two species of *Rastrococcus* Ferris from Bangladesh. Bangladesh J. Zool. 12(2):121-123.
*R. iceryoides* was collected from mango plants & *R. spinosus* was collected from guava, mango, & citrus; description of both spp.

**1985a.** Further coccoids of Bangladesh and their host plants - a checklist (Homoptera: Coccoidea). Bangladesh J. Zool. 13(2):89-90.
List 12 spp. in 3 fam.

**1985b.** Biology of a mealybug, *Rastrococcus spinosus* (Robinson) (Pseudococcidae: Coccoidea). Chittagong Univ. Studies Part II: Science 9(1):35-42.
Habitat & distribution; morphology of adults & nymphal instars; duration of nymphal instars; natural enemies.

**Chu, J. C. 1981.** Studies on the morphology, life cycle and control of tea lac insects (*Tachardina theae* Green et Mann). Acta Phytophylactica Sinica 8(3):187-192. (In Chinese, English summary).
Investigations carried out during 1978-1979 in Zhejiang Province, China.

**Cid Ortiz, J. R. del**, *see* Aurelio Flores, M., Sanchez de Leon, A., & Cid Ortiz, J. R. del.

**Cilliers, C. J. 1978a.** Australian bug, *Icerya purchasi* Maskell. *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. 391:85-87.
Hosts & distribution; economic importance; life & seasonal history; biological and chemical control.

**1978b.** Wax scales on citrus. *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Services Sci. Bul. 391:105-108.
*Gascardia brevicauda* & *destructor*; hosts & distribution; economic importance; life - & seasonal history; biological control.

**1978c.** Circular purple scale *Chrysomphalus aonidum* (L.) (=*Chrysomphalus ficus* Ashm.). *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. 391:119-122.
Economic importance; life & seasonal history; natural enemies; control.

**Cilliers, C. J. & Bedford, E. C. G. 1978.** Citrus mealybugs. *In* "Citrus Pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. 391:89-97.
Discuss 7 spp.; economic importance; damage; hosts & distribution; life & seasonal history.

**Cisneros, V. F. H.**, *see* Marin, L. R., & Cisneros, V. F. H.

**Claps, L.**, *see* Teran, A. L., & Claps, L.

**Clavijo, A. S. 1977.** Escamas (Homoptera: Coccoidea) en plantas de viveros en la zona de Maracay, Estado Aragua, Venezuela. Rev. Fac. Agron. (Maracay) 9(2):113-122. (English summary).
Lists 23 coccoid spp. in 4 fam.; hosts; sanitary recommendations for nurseries.

**Clay, H.**, *see* Tippins, H. H., Clay, H., & Barry, R. M.

**Cobby, B. S.**, *see* Moran, V. C., & Cobby, B. S.

**Cockerell, T. D. A. 1896p.** Entomology. Southwest Farm and Orchard (Las Cruces, N. Mex.) 3:5-6.
Describes *Pulvinaria amygdali* n. sp.

**Cocoa Research Institute, Ghana. 1978.** Annual report for 1975-76. 250 pp.
*Planococcoides njalensis*; *Ferrisia virgata*; *Planococcus citri*; cacao swollen shoot virus.

**1984.** Capsid studies (In Annu. Rep.). p. 57-62.

*Pseudococcus* sp.

**Coetzee, H.**, *see* Annecke, D. P., Burger, W. A., & Coetzee, H.

**Cohen, M.**, *see* Berlinger, M. J., Dahan, R., Ben-Dov, Y., & Cohen, M.

**Coleman, V. R.**, *see* Oetting, R. D., Coleman, V. R., Stacey, A. L., & Tippins, H. H.

**Coles, R. B. & Talbot, P. H. B. 1976.** *Septobasidium clelandii* and its conidial state *Harpographium corynelioides*. Kew Bul. 31(3):481-488.
*S. clelandii* parasitizes females of *Callococcus leptospermi*; *S. burtii* infects the nymphs of *Aspidiotus osbornii*.

**Collins, L. & Scott, J. K. 1982.** Interactions of ants, predators and the scale insect, *Pulvinariella mesembryanthemi*, on *Carpobrotus edulis*, an exotic plant naturalized in western Australia. Austral. Entomol. Magazine 8(5):73-78.
Host specific; biology; ants; predator; mortality.

**Collis, P. G. 1979.** Treatment for beech bark disease. Quart. J. Forestry 63(1):40-47.
*Cryptococcus fagi*.

**Commonwealth Institute of Entomology. 1977.** Distribution maps of pests. Ser. A (Agricultural) Nos. 365-371.
*Sacharicoccus sacchari*; *Pinnaspis aspidistrae*.

**1978.** Distribution maps of pests. Ser. A (Agricultural) Nos. 379-384 (16, 64 & 215 revised).
*Planococcus kenyae*.

**1979.** Distribution maps of pests. Ser. A (Agricultural) Nos. 391-397 (180 & 236 revised).
*Cryptococcus fagisuga*; *Parthenolecanium corni*; *persicae*.

**1980.** Distribution maps of pests. Ser. A (Agricultural) Nos. 404-410 (120 revised).
*Pseudococcus maritimus*.

**1981a.** Distribution maps of pests. Ser. A (Agricultural) No. 418:1.
*Pseudaonidia trilobitiformis*.

**1981b.** Distribution maps of pests. Ser. A (Agricultural) No. 419:1.
*Selenaspidus articulatus*.

**1981c.** Distribution maps of pests. Ser. A (Agricultural) Nos. 424-430 (171 & 227 revised).
*Coccus pseudomagnoliarum*.

**1983a.** Distribution maps of pests. Ser. A (Agricultural) Nos. 445-450 (83, 99 & 212 revised).
*Nipaecoccus viridis*.

**1983b.** Distribution maps of pests. Ser. A (Agricultural) Nos. 451-457 (231 & 431 revised).
*Asterodiaspis variolosa*.

**1984.** Distribution maps of pests. Ser. A (Agricultural) Nos. 464-467 (44, 171, 199, 202 & 450 revised).
*Phenacoccus manihoti*.

**1985.** Distribution maps of pests. Ser. A (Agricultural) Nos. 468-472 (189 revised).

*Aulacaspis madiunensis.*

**Cone, W. W.**, *see* Grimes, E. W., & Cone, W. W.

**Conn, C.**, *see* Cameron, D. W., Conn, C., & Feutrill, G. I.

**Copland, M. J. W. 1983.** Temperature constraints in the control of mealybug and scale insects. SROP Bul. 6(3):142-145.
*Planococcus citri*, *Saissetia coffeae* & *oleae*; natural enemies; relationship between temperature & biology studied.

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Description of all stages male & female; natural enemies; biology & morphology of most important natural enemies.

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Illustrates advantages of computer utilization in determinations, starting with morphological aspects, using system of perforated cards; example with diaspidids.

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Record of 37 spp.; hosts.

**Corseuil, E. & Silva, T. L. da. 1971.** The tribe Diaspidini at Rio Grande do Sul. Arq. Mus. Nac. (Rio de Janeiro) 54:109-112. (In Portuguese).
List 18 spp. in 11 gen.; hosts; syns.

**Costa, M. S.**, *see* Silva, A. B., Magalhaes, B. P., & Costa, M. S.

**Costa Lima, A. da. 1922.** Systematic catalog of insects living on plants in Brazil and an entomological bibliography of Brazil. Arch. Escola Superior Agric. Med. Vet., Nictheroy 6(1/2):121-276. (In Portuguese).
Distribution & host records of 178 coccoid spp.; bibliography.

**Costilla, M. A., Osores, V. M., & Basco, H. J. 1970.** Biología y daño de la cochinilla roja Australiana (*Aonidiella aurantii* Mask.) bajo las condiciones de Tucumán. Rev. Ind. Agric. Tucumán 47(1):57-65.
Ecology.

**Couch, J. N. 1930.** The biological relationship between *Septobasidium retiforme* (B & C.) Pat. and *Aspidiotus osborni* New. and Ckll. Quart. J. Microscopic Sci. 74(n.s.):38-437.
Life history of both spp.

**Covassi, M. 1975.** New records on the chorology of *Cryptococcus fagisuga* Lndgr. in Italy and Corsica (Homoptera, Cryptococcidae). Redia 55:396-397.
Lists several localities in the Italian Alps & Apennines; new records in Corsica & Sicily are southern limits in Europe.

**Cox, J. M. 1977a.** Survey of mealybug species (Homoptera: Pseudococcidae) in Auckland orchards and vineyards. New Zeal. J. Agric. Res. 20(2):259-261.
Predominant mealybugs: *Pseudococcus calceolariae*, *obscurus* & *longispinus*; hosts.

**1977b.** Status of New Zealand records of *Pseudococcus comstocki* and *P. maritimus* (Homoptera: Pseudococcidae). New Zeal. J. Zool. 4(2):165-166.
Earlier records of these spp. were misidentifications of *P. calceolariae* & *obscurus*.

**1978.** Revision of the *Rhizoecus* species (Homoptera: Pseudococcidae) known from New Zealand. New Zeal. J. Zool. 5:623-638.
Description & key of adult females of *Rhizoecus*; *R. olivieri* n. sp.; n. record; n. syns.; hosts & distribution.

**1981.** Identification of *Planococcus citri* (Homoptera: Pseudococcidae) and the description of a new species. Syst. Entomol. 6(1):47-53.
*P. pacificus* n. sp.; key to spp. discussed; *P. citricus* is a new syn. of *P. citri*.

**1983.** An experimental study of morphological variation in mealybugs (Homoptera: Coccoidea: Pseudococcidae). Syst. Entomol. 8(4):361-382.
Examined the effects of temperature, relative humidity & host plants on the morphology of adult females; used *Planococcus citri*, *ficus* & *pacificus*.

**1984.** Relationships of the Phenacoleachiidae (Homoptera: Coccoidea). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, August 1983). p. 339-341.
Author concludes that Phenacoleachiidae & Pseudococcidae may be sister groups & their relationships with the remaining groups of scale insects will only be determined when the homologies of the characters are better understood; mentions 2 coccoid spp.

*See* Archibald, R. D., Cox, J. M., & Deitz, L. L.; Williams, D. J., Cox, J. M., & Yaseen, M.

**Cox, J. M. & Freeston, A. C. 1985.** Identification of mealybugs of the genus *Planococcus* (Homoptera: Pseudococcidae) occurring on cacao throughout the world. J. Nat. Hist. 19:719-728.
Keys & illustrations for spp. of *Planococcus* on cacao.

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Detailed study; used *Ferrisia virgata*, *Phenacoccus manihoti* & *Planococcus citri*; observation on trilocular, quinquelocular and multilocular pores, tubular ducts, anal ring, cerarii, honeydew droplet & ostiole exudates, ovisacs & male cocoons; comparison of wax produced by different family of mealybugs & scale insects; possible functions of filamentous wax in mealybugs.

**Cox, J. M. & Williams, D. J. 1981.** An account of cassava mealybugs (Hemiptera: Pseudococcidae) with a description of a new species. Bul. Entomol. Res. 71(2):247-258.
*Phenacoccus manihoti*; history; biology; natural enemies; key; *P. herreni* n. sp.; *P. surinamensis* redescribed.

**Creelman, I. S. (ed.) 1970.** Summary of important insect infestations, occurrences, and damage in agricultural areas of Canada in 1970. Canad. Agric. Insect Pest Rev. 48:1-45.
Lists 7 coccoid spp.

**Crestana, M. de S. & Prates, H. S. 1982.** Preliminary note: Occurrence of *Icerya brasiliensis* Hempel, 1900 (Homoptera, Margarodidae) on ornamental plants. Proc. Annu. Meeting (29th Congr.) Amer. Soc. Hort. Sci., Trop. Region. 25:217. (In Portuguese).
Host; distribution; natural enemies; chemical control recommendation.

**Crocker, R. L., Simpson, B. J., & Hamon, A. B. 1982.** Brown soft scale, *Coccus hesperidum*, and European fruit lecanium, *Parthenolecanium corni* (Homoptera: Coccidae), attack native *Sophora* under cultivation. Proc. South. Nurserymen's Assoc. Res. Conf., 27th Annu. Rep. 313 pp. (p. 128-129).
Distribution; biological notes; hosts.

**Croft, B. A. & Knight, A. L. 1983.** Evaluation of the PETE phenology modeling system for integrated pest management of deciduous tree fruit species. Bul. Entomol. Soc. Amer. 29(3):37-42.
Predictive extension timing estimator (PETE) was applied to *Quadraspidiotus perniciosus*; discuss benefits in using PETE models.

**Crossley, M. J.**, *see* Banks, H. J., Cameron, D. W., & Crossley, M. J.; Cameron, D. W., Crossley, M. J., Feutrill, G. I., & Griffiths, P. G.

**Crozier, L. R. 1981.** Beech honeydew: forest produce. New Zeal. J. Forestry 26(2):200-209.
*Ultracoelostoma assimile*; life cycle; host & distribution; sooty molds; natural enemies; composition of beech honeydew.

**Cruz, C. de A. da**, *see* Vasconcellos, H. de O., Cruz, C. de A. da, & Oliveira, A. M. de.

**Cruz, C. de A. da & Oliveira, A. M. de. 1979.** Occurrence of *Orthezia praelonga* on pineapple. Com. Tec. - Empresa Pesquisa Agropecu. Estado Rio de Janeiro 10(8):2. (In Portuguese).
Other hosts; distribution; control recommendations.

**Currado, I.**, *see* Olmi, M., Currado, I., & Sampo, A.

**Cyprus Agricultural Research Institute (CARI) 1975.** Annual report for 1974. Cyprus Min. Agric. & Nat. Resources (Nicosia). 95 pp.
Reports *Aonidiella aurantii* & *Planococcus citri* as citrus pests.

**1977.** Sub-tropical and plantation crops. Annual report for 1976. Cyprus Min. Agric. & Nat. Resources (Nicosia). 111 pp.
*Pseudococcus citri* & *Aonidiella aurantii*.

**1978.** Citrus. Annual report for 1977. Cyprus Min. Agric. & Nat. Resources (Nicosia). 106 pp.
*Planococcus citri*; *Aonidiella aurantii*.

**1980.** Annual report for 1979. Cyprus Min. Agric. & Nat. Resources (Nicosia). 95 pp.
Biological control of *Aonidiella aurantii*; biology of *Planococcus citri*; chemical control of *Saissetia oleae*.

**1981.** Annual report for 1980. Cyprus Min. Agric. & Nat. Resources (Nicosia) 82 pp. (p. 34-36).
*Planococcus citri* (resistance to insecticide & association with Caros moth); *Aonidiella aurantii* (biological control); *Saissetia oleae* (effects of chemical treatment).

**1984.** Annual report. Bioecology of olive black scale *Saissetia oleae* (Olivier). Cyprus Min. Agric. & Nat. Resources (Nicosia). 36 pp.
Life history; parasites; biological control.

**Czarnecky, D.**, *see* Delattre, M., Giannotti, J., & Czarnecky, D.

**Dahan, R.**, *see* Berlinger, M. J., Dahan, R., Ben-Dov, Y., & Cohen, M.

**Dahlsten, D. L.**, *see* Luck, R. F., & Dahlsten, D. L.; McClure, M. S., Dahlsten, D. L., DeBarr, G. L., & Hedden, R. L.

**Dai, H. G.**, *see* Hu, Y. Y., Dai, H. G., Du, X. T., & Li, A. L.; Hu, Y. Y., Dai, H. G., & Hu, S. C.

**Dale, P. S. 1981.** Greedy scale biology, damage and control on Kiwi fruit. Horticulture Produce & Practice, New Zeal. Min. Agric. Fisheries, AGLINK HPP 32: 2 pp.
*Hemiberlesia rapax*; description; host & distribution.

**Dale, P. S., Hayes, J. C., & Johannesson, J. 1976.** New records of plant pests in New Zealand. New Zeal. J. Agric. Res. 19(2):265-269.
*Coccus elongatus* on *Cyperus papyrus*; new hosts recorded for 3 coccoid spp.

**Daniels, I. E.**, *see* Ray, C. H., Jr., Williams, M. L., & Daniels, I. E.

**Danks, H. V. 1981.** Arctic arthropods. A review of systematics and ecology with particular reference to the North American fauna. Biol. Survey Project, Entomol. Soc. Canada. 608 pp.
Mentions 7 coccoid spp. in 6 gen.

**Danzig, E. M. 1970.** Synonymy of some polymorphous species of coccids (Homoptera, Coccoidea). Zool. Zhur. 49:1015-1024. (In Russian, English summary).
A number of coccoid spp. differ in characters subject to individual or seasonal variations; seasonal forms were described as independent spp.; 10 n. syns.

**1971a.** New and little-known species of mealy-bugs (Homoptera, Coccoidea, Pseudococcidae) from the Far East of USSR. Entomol. Obozr. 50(2):366-391. (In Russian). Entomol. Rev. 50(2):207-220. (In English).
*Inopicoccus* n. gen.; description of 17 n. spp. & 2 little known spp.; key to the spp. of *Heliococcus* given; gen. *Euripersia* revised & *Phenacoccopsis* placed into the synonymy with it; 4 n. syns. of *Euripersia* spp.

**1971b.** Three new species of coccids (Homoptera, Coccoidea) from the Far East. Zool. Zhur. 50:1414-1417. (In Russian, English summary).
*Endernia* n. gen.; *E. despoliata*, *Cryptococcus integricornis* & *Vittacoccus ordinatus* n. spp.; description; hosts; distribution.

**1971c.** Intraspecific variability and questions concerning the classification of coccids (Homoptera, Coccoidea). Akad. Nauk SSR, Zool. Inst. Thesis Dok. p. 15-16. (In Russian).
Taxonomic notes concerning spp. represented by different forms in different geographical areas.

**1972a.** Insects and ticks. *In* "Pests of Forest." Akad. Nauk SSR Zool. Inst. 1:(coccoids 189-221). (In Russian).
Mentions 185 spp. in 8 fam.; world-wide compilation of distribution of each sp.

**1972b.** New and little-known species of the scale-insects (Homoptera, Coccoidea) from Siberia and the Far East of the USSR. Akad. Nauk SSR Zool. Inst. Trudy 52:261-275. (In Russian).
Studied 9 spp. in 3 fam.; 5 n. spp.; description; illustrations; hosts & distribution.

**1972c.** Contribution to the fauna of the white flies and scale insects (Homoptera: Aleyrodoidea, Coccoidea) of Mongolia. Insects of Mongolia 1:325-348.
Reports 44 spp. in 7 fam.; 9 n. spp.; *Penthococcus* n. gen.; description; illustrations; hosts & distribution.

**1972d.** Contribution to the knowledge of the scale insects fauna (Homoptera, Coccoidea) of Afghanistan. Entomol. Obozr. 51(3):581-584. (In Russian). Entomol. Rev. 51(3):350-352. (In English).
Lists 35 spp. in 5 fam.; hosts; distribution; first report on the coccoid fauna of Afghanistan.

**1974a.** Contribution to the fauna of the scale insects (Homoptera, Coccoidea) of Mongolia. Insects of Mongolia 2:67-71. (In Russian).
Lists 27 coccoid spp. in 21 gen.; new records; n. comb.; n. syn.; hosts & distribution.

**1974b.** A new peculiar species of mealybug (Coccoidea, Pseudococcidae) from the lower Amu Darya Flow. Zool. Zhur. 53(2):290-292. (In Russian, English summary).
*Glycycnyza* n. gen.; *G. turangicola* n. sp.; description; biology; host; distribution; parasite.

**1975a.** Species of mealy-bugs (Homoptera, Coccoidea, Pseudococcidae) new for Mongolia. Insects of Mongolia 3:48-55. (In Russian).
*Longicoccus* n. gen.; 4 n. spp.; 2 n. combs.; new records for 7 spp.; hosts & distribution.

**1975b.** New species of the genus *Acanthococcus* Sign. (Homoptera, Coccoidea, Eriococcidae) from the Far East of USSR. Entomol. Obozr. 54(1):62-81. (In Russian). Entomol. Rev. 54(1):42-56. (In English).
Gen. *Rhizococcus* synonymized with *Acanthococcus*; describes 8 n. spp., 1 ssp. & 3 little known spp. of *Acanthococcus*; key to 16 Far East spp.; hosts & distribution.

**1975c.** Three new species of soft scales (Homoptera, Coccoidea, Coccidae) from southern Siberia and the Far East. Zool. Zhur. 54(1):137-138. (In Russian, English summary).
*Luzulaspis kurilensis*, *Exaeretopus orientalis* & *Vittacoccus interruptus*; description; hosts & distribution.

**1975d.** Review of the cottony grass scales of the genus *Eriopeltis* Sign. (Homoptera, Coccoidea, Coccidae) of the Palaearctic. Entomol. Obozr. 54(4):808-813. (In Russian). Entomol. Rev. 54(4):69-72. (In English).
5 spp. distinguished; key to Palaearctic spp.; 12 n. syns.; hosts & distribution.

**1976.** Two new species of the armored scale insects of the genus *Chionaspis* (Homoptera, Coccoidea, Diaspididae) from the south of the Maritime Province. *In* "Plant Feeding Pests of the Far East." Akad. Nauk SSSR, Zool. Inst. Trudy 62:3-5. (In Russian).
*C. discadenatus* & *acutus*.

**1977a.** On the nomenclature and distribution of some injurious scale insects (Homoptera, Coccoidea). Entomol. Obozr. 56(1):99-102. (In Russian). Entomol. Rev. 56(1):73-75. (In English).
Distinguishing characters between *Planococcus ficus* & *citri*; *Eulecanium tiliae*; n. syns.; *Aspidiotus nerii*.

**1977b.** Contributions to the scale insect fauna of north and east Mongolia (Homoptera, Coccoidea). Insects of Mongolia 5:196-202. (In Russian).
Lists 30 coccoid spp. in 5 fam.; hosts & distribution; *Heterococcus dasiphorae* n. sp.; new records for 14 spp.

**1977c.** An ecological and geographical review of the scale insects (Homoptera, Coccoidea) of the south of the Far East. *In* "Insect Fauna of the Far East." Akad. Nauk SSSR, Zool. Inst. Trudy 70:37-60. (In Russian).
Discusses 158 coccoid spp. south of Maritime territory, Sakhalin, Kunashir; relations with other faunas & food plant ranges explored & analyzed.

**1978a.** Scale insect fauna of south Sakhalin and Kunashir. *In* "New Data on the Insects of Sakhalin and Kuril Islands." Akad. Nauk SSSR, Trudy Biol.-Pochvennogo Inst. (n.s.) 50(153):3-23. (In Russian).
Includes 69 coccoid spp. in 8 fam.; hosts & distribution; biology for some; n. combs.; n. syns.

**1978b.** Fauna of scale insects. *In* "Ecological and Faunistic Investigations of the Insect Pests of Yakut." Akad. Nauk SSSR Sibirsk. Otd. Yakut Filial Inst. Biol. (1978). p. 71-78. (In Russian).
Lists 44 coccoid spp. in 5 fam.; hosts.

**1978c.** New species of mealybugs (Homoptera, Coccoidea) from Siberia and the Far East. *In* "New Species of Animals." Akad. Nauk SSSR, Zool. Inst. Trudy 61:124-132. (In Russian).
*Puto vaccinii*, *tubulifer* & *orientalis*, *Phenacoccus discadenatus*, *Spilococcus herbaceus* n. spp.; key to *Puto* spp.

**1978d.** Ecologic-geographic survey of coccoids of the southern Far East of USSR. *In* "Morphology, systematics and evolution of scale insects." Akad. Nauk SSSR Zool. Inst. Sbornik Nauchn. Rabot. p. 14-16. (In Russian).
A comparison of studied fauna with that of other geographical areas.

**1979a.** A new distinct genus of eriococcid (Homoptera, Coccoidea, Eriococcidae) from European USSR. *In* "New Species of Insects." Akad. Nauk SSSR, Trudy Vses. Entomol. Obsh. 61:46-47. (In Russian).
*Gregoporia* n. gen.; *G. distincta* n. sp.

**1980a.** Species of scale insects (Homoptera, Coccinea) new for Mongolia. Insects of Mongolia 7:31-38. (In Russian).
First record for 5 coccoid spp.; 4 n. spp.; hosts & distribution.

**1980b.** The nomenclature and synonymy of several species of scale insects and white flies (Homoptera: Coccinea, Aleyrodinea). Entomol. Obozr. 59(3):594-596. (In Russian). Entomol. Rev. 59(3):73-74. (In English).
*Xylococcus quercicola* n. sp.; the name of *Parthenolecanium rufulum* is restored as valid; taxonomic notes about *Lecanium wistariae* & *Parthenolecanium corni*.

**1980c.** Coccoids of the Far East USSR (Homoptera, Coccinea) with a phylogenetic analysis of the coccoid fauna of the world. Publ. Nauka, Leningrad. 367 pp. (In Russian).
Comparative morphology, evolution & classification of the world fauna; includes 158 spp. in 8 fam.; keys to fam., gen. & spp.; hosts & distribution; biology; n. syns.

**1982.** *Lepidosaphes ulmi* (Linnaeus, 1758) Homoptera, Coccinea, Diaspididae. *In* "Provisional Atlas of the Insects of the European Part of USSR," edited by Gorodkov, K. B. Izdat. Nauka Leningrad, Map 127, p. 5. (In Russian).
Distribution map.

**1983.** New and little known species of scale insects (Homoptera, Coccinea) of the fauna of the USSR. Entomol. Obozr. 62(3):514-523. (In Russian). Entomol. Rev. 62(3):68-78. (In English).
Describes 8 n. spp. in 3 fam.; n. syns.; notes on 3 other spp.

**1984a.** Most important aspects in phylogeny of scale insects (Homoptera, Coccinea). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 318-320.
Review of several systems of organs in females & males as the basis of phylogeny.

**1984b.** New data on the scale insects (Homoptera, Coccinea) of Mongolia. Insects of Mongolia 9:33-34. (In Russian).
Lists 14 spp. with host & distribution.

**1985.** Contribution to the scale insect fauna of Teberda State Reserve. (Homoptera: Coccinea). Entomol. Obozr. 64:110-123. (In Russian). Entomol. Rev. 64:145-158. (In English).
Reports 67 spp.; 7 n. spp.; 16 new records for the Caucasus.

*See* Kerzhner, I. M., & Danzig, E. M.; Kozár, F., & Danzig, E. M.

**Danzig, E. M. & Ivanova, S. G. 1976.** New species of the genus *Balanococcus* Williams (Homoptera, Coccoidea, Pseudococcidae). Entomol. Obozr. 55(1):76-77. (In Russian). Entomol. Rev. 55(1):53. (In English).
*B. orientalis* on *Carex* from Far East USSR.

**Danzig, E. M. & Kerzhner, I. M. 1981a.** Comments on the proposal on *Dactylopius* and *Pseudococcus*, with additional proposal to use the plenary powers for suppression of *Coccus adonidum* Linnaeus, 1767 and *Pediculus coffeae* Linnaeus, 1767 and for validation of *Dactylopius longispinus* Targioni-Tozzetti, 1867 (Insecta: Homoptera) Z.N.(S.) 2091 (See vol. 31, pp. 146-153). Bul. Zool. Nomenclature 38(2):79-82.
Detailed nomenclatural discussion.

**1981b.** *Coccus* Linnaeus, 1758 and *Parthenolecanium* Sulc, 1908 (Insecta, Homoptera, Coccidae): Proposed designation of type species under the plenary powers Z.N.(S.) 2125. Bul. Zool. Nomenclature 38(2):147-152.
Propose *Coccus hesperidum*, *tiliae* & *Lecanium corni* as type spp. of *Coccus*, *Eulecanium* & *Parthenolecanium*, respectively; place *Lecanium* in junior syn. with *Coccus*; suppress name *Coccus coryli* L.

**1984.** *Leucaspis* Signoret, 1869 (Insecta, Homoptera, Diaspididae): Proposed conservation by the suppression of *Leucaspis* Burmeister, 1835 (Insecta, Hymenoptera, Leucospidae) Z.N.(S.) 2448. Bul. Zool. Nomenclature 41(2):101-104.
Also propose to place the name *pini* Hartig, the family group name Leucaspidinae on the official list.

**Danzig, E. M. & Kozár, F. 1973.** A new species of soft scales, *Physokermes inopinatus*, sp. n. (Homoptera, Coccoidea) from Hungary. Entomol. Obozr. 52(4):832-834. (In Russian). Entomol. Rev. 52(4):532-533. (In English).
Description; illustration; host; distribution.

**1974.** Contributions to the coccoid fauna of Hungary. Folia Entomol. Hungarica (n.s.) 27(2):9-11. (In Hungarian, English summary).
Study of 11 cocciods; 6 new to Hungary; supplementary biological & morphological data; hosts & distribution.

**Danzig, E. M. & Shtundyuk, A. V. 1975.** Comstock's mealybug in the south of the Maritime Province. Zashch. Rast. 2:28. (In Russian).
First record of *Pseudococcus comstocki* in the Far East of the USSR.

**Danzig, E. M. & Sugonyaev, E. S. 1982.** *Parthenolecanium corni* (Bouché, 1844) Homoptera, Coccinea, Coccidae. *In* "Provisional Atlas of the Insects of the European Part of the USSR," edited by Gorodkov, K. B. Izdat. Nauka Leningrad, Map 126, p. 4. (In Russian).
Distribution map.

**Dardenne, B. 1980.** Cochenille et pollution de grands dangers, menacent les fôrets de haut Normandie. Bul. Liaison Assoc. Entomol. d'Evreux 6:10-13.
*Cryptococcus fagi*.

**Darwish, E. T.**, *see* Abdel-Fattah, M. I., El-Minshawy, A. M., & Darwish, E. T.

**Das, D. C.**, *see* Ali, M. E., Das, D. C., & Khan, M. I. H.; Ali, M. E., Das, D. C., Khan, M. I. H., & Ahmed, K.

**Das, S. C. 1976.** Survey of scale insects in Darjeeling. Two & Bud 23(1):12-13.
Altitudinal distribution; new records for *Andaspis dasi*, *Abgrallaspis pictor* & *Chloropulvinaria floccifera*.

**1978.** Cataloguing coccoids. Two & Bud 25(1):43-44.
Habitat & distribution of 44 coccoid spp. in 3 fam. & 29 gen.

**D'Ascoli, A. 1971.** The armored scale insects of Venezuela (Homoptera: Coccoidea: Diaspididae). Ph.D. Diss., Va. Polytech. Inst. & State Univ. 250 pp.
A taxonomic survey including keys, figures & descriptions for 49 spp.; food plants; distribution; 27 spp. reported first time from Venezuela.

**Das Gupta, J. M. & Mehra, B. P. 1970.** New record of host-plants of the lac insect, *Kerria lacca* (Kerr). Indian Forester 96(5):408-409.
Mentions 3 new hosts, 2 for Kusmi strain & 1 for Rangeeni strain from Bihar & West Bengal.

**Da Silva, R. P.**, *see* Vernalha, M. M., Gabardo, J. C., & Da Silva, R. P.; Vernalha, M. M., Rocha, M. A. L. da, Gabardo, J. C., & Da Silva, R. P.

**Datta, A. R.**, *see* Chatterji, A., & Datta, A. R.

**David, H. 1981.** Recent advances in sugarcane entomology in India. *In* "Recent Advances in Entomology in India," edited by Ananthakrishnan, T. N. Entomol. Res. Inst., Loyola Coll. Madras, India. 161 pp. (p. 37-47).
*Melanaspis glomerata*; distribution; natural enemies; control recommendations.

**Davidson, J. A. 1970a.** A new *Melanaspis* from Jamaica on bromeliad (Homoptera: Diaspididae). Proc. Entomol. Soc. Wash. 72:33-36.
*Melanaspis jamaicensis* n. sp.; hosts; taxonomic notes.

**1970b.** A new *Crenulaspidiotus* from Arizona (Homoptera: Diaspididae). Proc. Entomol. Soc. Wash. 72:500-503.
*Crenulaspidiotus mini* n. sp. described from *Prosopis*.

**1972.** A redescription of *Hemigymnaspis eugeniae* (Lindinger) (Homoptera: Diaspididae). Proc. Entomol. Soc. Wash. 74:316-320.
Adult female illustrated for the first time; sp. transferred from *Melanaspis* to *Hemigymnaspis*; a lectotype is designated for *H. eugeniae*.

**1975.** An invalid lectotype designation for *Greenoidea phyllanthi* (Green) is discussed and corrected. Proc. Entomol. Soc. Wash. 77(1):82.

*See* Gerson, U., & Davidson, J. A.; Gill, S. A., Miller, D. R., & Davidson, J. A.; Gimpel, F. W., Jr., Miller, D. R., & Davidson, J. A.; Knipscher, R. G., Miller, D. R., & Davidson, J. A.; Kosztarab, M.,

Miller, D. R., & Davidson, J. A.; Miller, D. R., & Davidson, J. A.; Miller, D. R., Davidson, J. A., & Stoetzel, M. B.; Stoetzel, M. B., & Davidson, J. A.

**Davidson, J. A. & Miller, D. R. 1977.** A taxonomic study of *Hemigymnaspis* (Lindinger) (Homoptera: Diaspididae) including descriptions of four new species. Proc. Entomol. Soc. Wash. 79(4):499-517.
*H. brayi*, *jessopae*, *orchidicola* & *pimentae*.

**Davidson, J. A., Miller, D. R., & Nakahara, S. 1983.** The white peach scale, *Pseudaulacaspis pentagona* (Targioni-Tozzetti) (Homoptera: Diaspididae): Evidence that current concepts include two species. Proc. Entomol. Soc. Wash. 85(4):753-761.
Synonyms & combs.; differentiating morphology & field characters; host & distribution; life history; comparison between *P. pentagona* & *prunicola*.

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Detailed study; investigated 26 coccoid spp. in 18 gen.

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Analyzed data of 28 diaspidid spp. (or morphology of males).

*See* Boratynski, K., & Davies, R. G.

**Davies, R. G. & Boratynski, K. L. 1979.** Character selection in relation to the numerical taxonomy of some male Diaspididae (Homoptera: Coccoidea). Biol. J. Linnean Soc. 12(2):95-165.
Quantitative comparison of the classifications of 24 spp. in 18 gen.; multivariate analysis; principal components & coordinates; taxonomic character weighting.

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Obituary; list of publications.

**Davis, M. R.**, *see* Hart, W. G., Ingle, S. J., & Davis, M. R.

**Dawood, M. Z.**, *see* Abul-Nasr, S., Swailem, S., & Dawood, M. Z.

**Dean, H. A.**, *see* Schuster, M. F., & Dean, H. A.

**Dean, H. A. & Hart, W. G. 1972.** *Saissetia miranda* (Homoptera: Coccidae), a potential pest of citrus in Texas. Ann. Entomol. Soc. Amer. 65(2):478-481.
Hosts; characters to separate from related spp.; common names proposed; distribution.

**Dean, H. A., Hart, W. G., & Ingle, S. 1971.** Citrus mealybug, a potential problem on Texas grapefruit. J. Rio Grande Valley Hort. Soc. 25:46-53.
*Planococcus citri*; parasites; predators; chemical control.

**Dean, H. A. & Schuster, M. F. 1970.** A pit-making scale, *Asterolecanium pustulans* (Cockerell), on Rio Grande Valley ornamentals. J. Rio Grande Valley Hort. Soc. 24:158-163.
Hosts & distribution; damage; natural enemies; control recommendations.

**Dean, J. P. 1979.** Pheromone aids red scale control. Agric. Res. 27(7):8-11.
*Aonidiella aurantii*; used sticky trap baited with virgin females or synthetic pheromone.

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**De Barr, G. L.**, *see* McClure, M. S., Dahlsten, D. L., De Barr, G. L., & Hedden, R. L.

**De Bold, K. J.**, *see* Stoetzel, M. B., Nakahara, S., Miller, D. R., & De Bold, K. J.; Stoetzel, M. B., Nakahara, S., Miller D. R., De Bold, K. J., & Miller, J. F.

**Decourt, N., Malphettes, C. B., Perrin, R., & Caron, D. 1980.** La pollution soufrée limite-t-elle le développement de la maladie de l'écorce du hêtre? (*Cryptococcus fagi Nectria coccinea*) Ann. Sci. For. 37(2):135-145. (English summary).
Beech bark disease decreased with increased pollution level; development of *C. fagi* & *N. coccinea* was also modified in a complex manner.

**Deeble, R.**, *see* Wainhouse, D., & Deeble, R.

**Deepak Singh, M. B.**, *see* Chacko, M. J., Deepak Singh, M. B., & Rao, L. V. A.; Chacko, M. J., Rao, L. V. A., & Deepak Singh, M. B.; Ramanarayan, E. P., Ramachandran, M., & Deepak Singh, M. B.

**Deighton, P. J.**, *see* Hosking, J. R., & Deighton, P. J.

**Deirne, B. P.**, *see* Rubin, A. Y., & Deirne, B. P.

**Deitz, L. L. 1979a.** Two new species of *Colobopyga* (Homoptera: Halimococcidae) from the Australian region. New Zeal. J. Zool. 6:453-457.
*C. hedyscepes* & *australiensis*; description of adult & second instar females; key to world spp.

**1979b.** Records of *Carulaspis juniperi* (Homoptera: Diaspididae) in New Zealand. New Zeal. J. Zool. 6:459-460.
Hosts & distribution; natural enemy; earlier records of *C. visci* considered to be misidentification of *C. juniperi*.

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Lists 45 coccoid spp. in 10 fam.

*See* Archibald, R. D., Cox, J. M., & Deitz, L. L.; Walker, A. K., & Deitz, L. L.

**Deitz, L. L., Hall, G., & Tocker, M. F. 1979.** Hemiptera in the DSIR collection. Entomol. Soc. New Zeal. Newsletter. The Weta 2(2):17-20.
List over 17,000 coccoidean specimens in 14 fam. in the Dept. Sci. Ind. Res. collection.

**Deitz, L. L. & Tocker, M. F. 1980.** W. M. Maskell's Homoptera: Species-group names and type-material. New Zeal. Dept. Sci. Ind. Res. Inf. Ser. No. 146:76 pp.
A list of 293 coccoid spp. in 9 fam.; up-to-date taxonomic positions; new combs.; new syn.; lectotype designation for 28 spp.

**Dekle, G. W. 1974.** Key to greenhouse soft scale insects (Coccidae: Homoptera). Florida Dept. Agric. Consumer Serv. Div. Plant Industry Entomol. Cir. No. 144:1.
Key to 9 spp.; hosts.

**1976.** Florida armored scale insects. *In* "Arthropods of Florida and neighboring land areas." Florida Dept. Agric. Consumer Serv. Div. Plant Industry 3:345 pp.

Revised & updated edition of 1965 publication by author.

**Dekle, G. W. & Kuitert, L. C. 1975.** Camellia mining scale, *Duplaspidiotus claviger* (Cockerell) (Diaspididae: Homoptera). Florida Dept. Agric. Consumer Serv. Div. Plant Industry Entomol. Cir. No. 152:1-4.
Description; hosts & distribution; economic importance; control.

**De Klerk, C. A. 1980.** Biology of *Margarodes vredendalensis* De Klerk (Coccoidea: Margarodidae) in South Africa. South African J. Enology & Viticulture 1(1):47-58.
Detailed study.

**1983.** Two new species of *Margarodes* (Homoptera, Coccoidea, Margarodidae) from South Africa. Phytophylactica 15(3):85-94.
*M. uptingtonensis* & *vredendaensis.*

**1985.** Occurrence of South African species of *Margarodes* Guilding (Homoptera: Coccoidea: Margarodidae) with special reference to vine infesting species. Phytophylactica 17:215-216.
Ten spp. presently known, 5 of which found on vine roots.

**De Klerk, C. A, Ben-Dov, Y., & Giliomee, J. H. 1982a.** Redescriptions of four vine infesting species of *Margarodes* Guilding (Homoptera: Coccoidea: Margarodidae) from South Africa. Phytophylactica 14(2):61-76.
*M. capensis*, *greeni*, *prieskaensis* & *trimeni*; n. comb.

**1982b.** Redescriptions of three *Margarodes* Guilding species (Homoptera: Coccoidea: Margarodidae) found on grasses in South Africa. Phytophylactica 14(2):77-83.
*M. newsteadi*, *peringueyi* & *ruber.*

**1983.** General morphology of South African species of *Margarodes* (Homoptera, Coccoidea, Margarodidae) with keys to nymphs and adult females. Phytophylactica 15(4):133-144.
Description of nymphs, cyst stage & adult females; key.

**De Klerk, C. A., Giliomee, J. H., & Ben-Dov, Y. 1980.** Biology of *Margarodes capensis* Giard (Homoptera: Coccoidea: Margarodidae) under laboratory and controlled conditions in South Africa. Phytophylactica 12:147-156.
Discuss various aspects; report effect of temperature, humidity, soil moisture on oviposition, incubation of eggs & other aspects of its biology.

**1982.** Biology of *Margarodes capensis* Giard (Homoptera: Coccoidea: Margarodidae) under field conditions in South Africa. Phytophylactica 14:85-93.
Phenology; time of occurrence of cyst, of empty cyst & different stages; mortality of cysts & vertical distribution in the soil.

**Delage-Darchen, B., Matile-Ferrero, D., & Balachowsky, A. S. 1972.** Sur un cas aberrant de symbiose Cochenilles x Fourmis. Compt. Rend. Acad. Sci. Paris, Ser. D. 275:2359-2361.
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**Delages, H. 1978.** La lutte contre la cochenille devastatrice des pins Maritimes. Phytoma 30(297):19-23.
*Matsucoccus feytaudi*; description; host & distribution; biology; damage; secondary pests.

**De Laroussilhe, F. 1980.** Le manguier. Publ. G. P. Maisonneuve & Larose. 312 pp. (p. 252-255).

Discusses damage, biological & chemical control of 4 coccoid spp.

**Delattre, R. 1973.** Compte rendu technique d'une mission au Dahomey. Inst. Recherce Cotton et Textiles Exotiques. 7 pp. (Mimeographed).
*Margarodes vitium*; general description; biology; insect-plant relation; host.

**Delattre, M., Giannotti, J., & Czarnecky, D. 1974.** Maladies du cotonnier et de la vigne liées au sol et associées a des cochenilles endogées. Présence de mycoplasmes et étude comparative des souches in vitro. Compt. Rend. Seances, Acad. Sci. Paris, Ser. D. 279(4):315-318.
*Sphaeraspis vitis* on *Gossypium hirsutum*.

**Delavault, R.**, *see* Royer, M., & Delavault, R.

**Del Bene, G. 1984.** Observations on the biology of *Dynaspidiotus britannicus* (Newstead) (Homoptera: Diaspididae) and their natural enemies in Toscana. Redia 67:323-336. (In Italian, English summary).
Two generations on *Ruscus racemosus*; ovoviviparous; second instars overwinter; four chalcid parasites observed.

**Delgado, P. M. 1966.** *Eurhizococcus brasiliensis* (Hempel, 1922) (Homoptera: Margarodidae): nueva plaga del cultivo del te en el Peru. Rev. Peru. Entomol. 9(1):126-129. (English summary).
Hosts & distribution; morphology & biology; control recommendations.

**Deloach, C. J.**, *see* Foster, D. E., Ueckert, D. N., & Deloach, C. J.

**De Lotto, G. 1970a.** Four new genera of Pseudococcidae (Homoptera: Coccoidea). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 28:245-256.
*Albertinia*, type sp. *A. apiculata* n. sp.; *Conicosoma*, type sp. *C. gracile* n. sp.; *Diversicrus*, type sp. *D. longulum* n. sp.; *Oxyacanthus*, type sp. *O. incohatus* n. sp.

**1970b.** On the status of two genera of soft scales (Homoptera: Coccoidea: Coccidae). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 28:257-261.
*Calypticus* & *Saissetia*; identity of the type spp. of these gen. discussed.

**1970c.** The soft scales (Homoptera: Coccidae) of South Africa, II. J. Entomol. Soc. South. Africa 33:143-156.
Description of 2 n. spp., 5 spp. redescribed; hosts; n. comb.; taxonomic notes.

**1971a.** On some genera and species of wax scales (Homoptera: Coccidae). J. Nat. Hist. 5:133-153.
Reviewed the status and composition of 8 gen., *Waxiella* n. gen., *Ceroplastes insulanus* n. sp.; n. comb.; identity, points of interest discussed on several wax & soft scales.

**1971b.** The authorship of the Mediterranean black scale (Homoptera: Coccidae). J. Entomol. (B) 40:149-150.
Reference to the original description should be amended as: *Coccus oleae* Olivier.

**1971c.** A preliminary note on the black scales (Homoptera, Coccidae) of North and Central America. Bul. Entomol. Res. 61:325-326.
Differentiating characters of 3 spp. given; hosts; distribution; note forms of *Saissetia oleae* occurring in California.

**1973a.** Does the Bermuda grass mealybug *Chorizococcus rostellum* (Lobdell, 1930) (Homoptera: Coccoidea: Pseudococcidae) occur in Italy? Entomologica (Bari) 9:35-36.

Identity of a mealybug collected on Bermuda grass in Bari, Italy, discussed; sp. is referable to *C. rostellum* known only from North America.

**1973b.** A new soft scale from citrus (Homoptera: Coccoidea: Coccidae). Bol. Portici Lab Entomol. Agr. "Filippo Silvestri" (1972-1973) 30:291-293.
Descripiton, host, distribution for *Coccus aegaeus* n. sp.

**1974a.** On two genera of mealybugs (Homoptera: Coccoidea: Pseudococcidae). J. Entomol. Soc. South. Africa 37(1):109-115.
The composition of *Hypogeococcus* & *Phenacoccus* discussed, based on a few spp. described or recorded from S. Africa; key to spp. in *Phenacoccus*; *P. proximus* n. sp.; n. combs.; hosts; distribution.

**1974b.** On the status and identity of the cochineal insects (Homoptera: Coccoidea: Dactylopiidae). J. Entomol. Soc. South. Africa 37(1):167-193.
Discusses 9 spp. of which 4 spp. are new; list & key to spp.; description; illustrations; affinities; hosts; distribution.

**1974c.** New species of *Filippia* Targioni-Tozzetti, 1868 (Homoptera: Coccoidea: Coccidae) from South Africa. J. Entomol. South. Africa 37(2):207-214.
*F. gemina*, *polychaeta*, *stenochaeta* & *strigosa* n. spp.; description; key; hosts & distribution; status of *Lichtensia asparagi* & *peringueyi* briefly discussed.

**1974d.** *Coccus sativus* Lancry, 1791, *Coccus mexicanus* Lamarck, 1801, and *Coccus silvestris* Lancry 1791 (Insecta, Homoptera): Proposed suppression under the plenary powers. Z.N.(S.) 2057. Bul. Zool. Nomenclature 31(3):154-155.
Taxonomic discussion.

**1975a.** Two new genera of soft scales from Africa (Homoptera: Coccoidea: Coccidae). J. Entomol. Soc. South. Africa 38(1):61-63.
*Avricus* & *Trijuba* n. gen.; description; key to spp. of *Avricus*.

**1975b.** New species of *Paracoccus* Ezzat & McConnell, 1956 (Homoptera: Coccoidea: Pseudococcidae) from southern Africa. J. Entomol. Soc. South. Africa 38(1):65-73.
*P. claudus*, *larinus*, *latebrosus* & *perperus* n. spp.; description; key to spp. from South & Southwest Africa; hosts & distribution.

**1975c.** Notes on the vine mealybug (Homoptera: Coccoidea: Pseudococcidae). J. Entomol. Soc. South. Africa 38(2):125-130.
Nomenclatural status & glandular structures of the derm of *Planococcus ficus*.

**1976.** On the black scales of southern Europe (Homoptera: Coccoidea: Coccidae). J. Entomol. Soc. South. Africa 39(1):147-149.
*Saissetia miranda*, *oleae* & *privigna*; hosts; distribution; distinguishing characters; areas of origin.

**1977.** On some African mealybugs (Homoptera: Coccoidea: Pseudococcidae). J. Entomol. Soc. South. Africa 40(1):13-36.
Genus *Allococcus* amended & reviewed; key to spp.; characters & composition of 7 other gen. discussed; 4 n. spp.; 1 n. syn.; 6 n. combs.

**1978.** The soft scales (Homoptera: Coccidae) of South Africa, III. J. Entomol. Soc. South. Africa 41(1):135-147.

Diagnoses & figures for *Ceronema mobile*, *Coccus viridis* & *Gascardia tachardiaformis*; taxonomic notes for *Ceroplastes rusci*, *fumidus* & *Cryptinglisia lounsburyi*; 1 n. comb.; 1 n. sp.; 1 n. syn.; key to some spp.

**1979a.** On two podal features in mealybugs (Homoptera: Pseudococcidae). J. Entomol. Soc. South. Africa 42(1):11-15.
Detailed study of the trochanteral sensoria & basicoxal setae.

**1979b.** The soft scales (Homoptera: Coccidae) of South Africa, IV. J. Entomol. Soc. South. Africa 42(2):245-256.
Gen. *Pulvinaria* & *Pulvinariella* reviewed; *Mesembryna* n. gen.; 4 n. spp.; 1 n. comb.; key to South African spp. of *Pulvinaria*.

**Delrio, G., Ortu, S., & Prota, R. 1982.** Plant-feeding insects recently introduced into citrus cultures of Sardinia. Studi Sassaresi 28:57-64. (In Italian, English summary).
*Pseudococcus calceolariae* & *longispinus*; list also 12 formerly reported coccoid spp.

**Delucchi, V. 1975.** The most important citrus pests. Tech. Monograph, Ciba-Geigy Ltd., Basle, Switzerland 4:24-27.
Biology & short description of 22 coccoid spp. in 3 fam.

**Demolin, G.**, *see* Schvester, D., & Demolin, G.

**Denmark, H. A. 1980.** Bureau of Entomology summary. *In* 33rd biennial report, July 1, 1978 - June 30, 1980, Florida Dept. Agric. Consumer Serv. Div. Plant Ind. 212 pp. (p. 31-34).
First record of *Rhizoecus hibisci*, *Dysmicoccus neobrevipes* & *Pseudaonidia trilobitiformis*.

**Denninger, C. 1976.** A cochenille du rosier. Amis Roses 328(4):28-31.
*Aulacaspis rosae*; life cycle; control.

**Denno, R. F.**, *see* Miller, D. R., & Denno, R. F.; Raupp, M. J., & Denno, R. F.

**Deobagkar, D. N., Muralidharan, K., Devare, S. G., Kalghatgi, K. K., & Chandra, H. S. 1982.** The mealybug chromosome system I: Unusual methylated bases and dinucleotides in DNA of a *Planococcus* species. J. Biosciences (Bangalore) 4(4):513-526.
*P. citri*; chromosome imprinting; chromosome inactivation; diffuse centromere; DNA methylation.

**De Reggi, M.**, *see* Gharib, B., Girardie, A., & De Reggi, M.

**Dergunova, Z. R.**, *see* Saakyan-Baranova, A. A., & Dergunova, Z. R.

**Dethier, M. 1980.** Hemipteres des pelouses Alpines au park national Suisse. Rev. Suisse Zool. 87(4):975-990. (German & English summaries).
*Arctorthezia cataphracta*; *Eriococcus* spp.; *Pseudococcus* spp.

**Deutscher, D. J.**, *see* Cameron, D. W., Deutscher, D. J., Feutrill, G. I., & Griffiths, P. G.

**Dev, S.**, *see* Singh, A. N., Mhaskar, V. V., & Dev, S.

**Devare, S. G.**, *see* Deobagkar, D. N., Muralidharan, K., Devare, S. G., Kalghatgi, K. K., & Chandra, S.

**Devilbiss, E. D.**, *see* Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Foster, H. S., Plimmer, J. R., & Devilbiss, E. D.

**De Villiers, J. F. 1978.** Citrus mussel scale *Cornuaspis beckii* (Newm.) (=*Lepidosaphes beckii* (Newm.)) *In* "Citrus pests in the Republic of South Africa." Repub. South Africa, Dept. Agric. Tech. Serv. Sci. Bul. 391:123-127.
Hosts & distribution; economic importance; life & seasonal history; natural enemies; control.

**Dhawan, A. K. & Joginder Singh, S. A. S. 1980.** *Maconellicoccus* sp. attacking arboreum cotton in Punjab. Sci. & Cult. 46(7):258.
First record of *Maconellicoccus* on cotton in Punjab; damage.

**Diaz-Sanchez, J.**, *see* Martinez, Z., & Diaz-Sanchez, J.

**Dimroth, O. von & Scheurer, W. 1913.** Über den Farbstoff des *Kermes*. Justus Liebig Ann. Chemie 399:43-61.
Chemistry of *Kermes* dye.

**Dinabandhoo, C. L. & Bhalla, O. P. 1981.** Bionomics of the San Jose scale, *Quadraspidiotus perniciosus* (Hemiptera: Homoptera: Diaspididae) infesting temperate fruits. J. Entomol. Res. (New Delhi) 4(1):63-67.
Seasonal history.

**Ditsworth, T. M.**, *see* Beley, J. R., Ditsworth, T. M., Butt, S. M., & Johnson, C. D.

**Ditsworth, T. M., Butt, S. M., Beley, J. R., Johnson, C. D., & Balda, R. P. 1982.** Arthropods, plants and transmission lines in Arizona: community dynamics during secondary succcession in a pinyon-juniper woodland. Southwest Nat. 27(2):167-182.
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**Djafaripour, M. 1976.** Wanderungs, Probe und Weitenwechsel verhalten bei der Wirtswahl von zwei Aphiden Arten, *Acyrthosiphon pisum* (Harr.) und *Megoura viciae* (Buckt.) und einer coccide *Saissetia oleae* (Bern.). Bonn Univ. Agric. Fac. (Diss.) No. 31:121 pp.

**Doi, K. 1971.** Ceroalbolinic acid, a pigment of an insect *Ceroplastes rubens* Mask. (Hem., Hom., Coccidae). Sci. Rep. Hirosaka Univ. 18(2):37-39.
A pigment isolated from the female of *C. rubens* was identified as ceroalbolinic acid, known as a pigment also in *C. albolineatus*.

**Dolva, J. M. & Scott, J. K. 1982.** The association between the mealybug *Pseudococcus macrozamiae*, ants and the cycad *Macrozamia reidlei* in a fire prone environment. J. Roy. Soc. West. Austral. 65(2):33-36.
Authors conclude that mealybug & plants responded favorably to increased fire frequency; ants were incidental in this association.

**Donaldson, D. R.**, *see* Moore, W. S., Koehler, C. S., Joos, J. L., Donaldson, D. R., Cassidy, D. V., & Gill, R. J.

**Donaldson, D. R., Moore, W. S., Koehler, C. S., & Joos, J. L. 1978.** Scales threaten iceplant in Bay area. Calif. Agric. 32(10):4,7.
*Pulvinaria mesembryanthemi*; *Pulvinaria* sp.; biology, natural enemies, control; distribution.

**Donia, A.**, *see* El-Minshawy, A. M., El-Sawaf, S. K., Hammad, S. M., & Donia, A.

**Donkin, R. A. 1977a.** Spanish red - an ethnogeographical study of cochineal and the *Opuntia* cactus. Trans. Amer. Philosophical Soc. 67(5):1-84.
Detailed study with extensive bibliography and appendices on the dye-producing scales.

**1977b.** The insect dyes of western and west-central Asia. Anthropos 72(5/6):847-880.
Detailed history of Armenian red (*Porphyrophora hameli*), Kermes (*Kermococcus vermilis*), Polish cochineal (*Margarodes polonicus*), lac (*Lakshadia* spp.) & American cochineal (*Dactylopius coccus*); very extensive bibliography.

**Donley, D. E.**, *see* Burns, D. P., & Donley, D. E.

**Doolittle, R. E.**, *see* Heath, R. R., Doolittle, R. E., Sonnet, P. E., & Tumlinson, G. H.; Heath, R. R., McLaughlin, J. R., Tumlinson, J. H., Ashley, T. R., & Doolittle, R. E.

**Dove, H. & Williams, J. R. 1971.** Pests of groundnuts and their control. Rev. Agric. et Sucrière de l'Île Maurice 50(3/4):235-240.
*Dysmicoccus brevipes* a principal pest damaging underground parts of plants.

**Dreishpoun, Y.**, *see* Podoler, H., Dreishpoun, Y., & Rosen, D.

**Du, X. T.**, *see* Hu, Y. Y., Dai, H. G., Du, X. T., & Li, A. L.

**Dubitzki, E.**, *see* Gerson, U., Mescheloff, E., & Dubitzki, E.

**Duelli, P. 1979.** An insect retina without microvilli in the male scale insect *Eriococcus* sp. (Eriococcidae, Homoptera). Cell Tissue Res. 187(3):417-428.
Detailed study; no compound eyes but an arrangement of 3 pairs of ocelli.

**1985.** A new functional interpretation of the visual system of male scale insects (Coccida, Homoptera). Experientia 41(8):1036.
The eyes are arranged in a horizontal ring around the head in males of *Eriococcus* & this is interpreted to serve as to stabilize the flight position.

**Dunkelblum, E.**, *see* Wolk, J. L., Goldschmidt, Z., Dunkelblum, E., & Ben-Dov, Y.

**Dunkelblum, E., Sternlicht, M., Bar-Zakkai, I., & Goldschmidt, Z. 1983.** Capture of citrus mealybug (*Planococcus citri*) males with synthetic pheromone-baited traps. Phytoparasitica 11(2):117-141. (p. 135).

**Dupree, M.**, *see* Tippins, H. H., & Dupree, M.

**Duran, M. 1971.** The investigations on ground pearls (*Margarodes* (*Porphyrophora*) *tritici* Bod.) a grain pest in central Anatolia. Bitki Koruma Bul., Suppl. 1, p. 1-80. (In Turkish, English summary).
Morphology; biology; bioecology; hosts.

**1976.** The cereal pest, *Margarodes tritici*. Wheat pest report, Centro Scientific Programme (Ankara, Turkey, 1976) No. 22:88 pp.
Description of all stages; biology; damage; control; economic importance.

**Durán M., L. 1972.** Problemas de la entomología agrícola en Chile austral. Inst. Defensa Plantas, Univ. Austral Chile. p. 45-46.

*Lepidosaphes ulmi*.

**Du Toit, G. D. G. 1975.** Notes on the biology and behaviour of *Sphaeraspis prieskaensis* Jak. (Hemiptera: Coccoidea) a pest on grape vine roots. Proc. 1st Congr. Entomol. Soc. South Africa (Stellenbosch, 1974). p. 255-257.
Life history with special reference to mating behavior.

**Dzhashi, V. S. 1971.** Tea plant pests in the Soviet subtropics. Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 2:325-326.
*Chloropulvinaria floccifera*, *Ceroplastes japonica*, *Aspidiotus cyanophylli* & *destructor*; natural enemies.

**Dziedzicka, A. 1970.** Materials for the study of scale insects (Coccoidea) occurring on Polish territory. Rocznik Nauk. Dyd. WSP. w Krakowie 37:24-27. (In Polish, English & Russian summaries).
List of 14 coccids new to Lower Silesia & Sudety Mountains.

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**1984a.** The variability of paragenital glands in the female *Aulacaspis rosae* Bouché (Homoptera, Coccoidea, Diaspididae). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 346-348.
Analysis & tables for the number of paragenital glands in groups & the relation between number of females & number of paragenital glands.

**1984b.** Prof. Dr. Zbigniew Kawecki (1908-1981). Obituary. The Scale 10(1):42-44.

**Dziedzicka, A. & Koteja, J. 1971.** A revision of the species of the genus *Rhizococcus* Signoret (Homoptera, Coccoidea) occurring in Poland. Acta Zool. Cracoviensia 16:557-579. (Polish & Russian summaries).
*Rhizococcus palustris* n. sp. described & illustrated; the variability of some morphological details in *R. insignis*, *pseudinsignis*, & *herbaceus* are discussed; key to 7 spp. occurring in Poland.

**1985.** *Eriococcus podhalensis* nom. n. for *Eriococcus palustris* (Dziedzicka et Koteja). A footnote in: Kawecki, Z. "Catalogus faunae Poloniae," Part 21, No. 5:31. (In Polish).
*Rhizococcus palustris* Dziedzicka et Koteja, 1971, after transferring to *Eriococcus* Targioni-Tozzetti, became a junior homonym of *Eriococcus palustris* Dodds, 1923.

**Dziedzicka, A. & Marchewczyk, A. 1970.** Studies on the morphology and biology of the bitubercular soft scale (*Palaeolecanium bituberculatum* Targ. Homoptera, Coccoidea). Rocznik Nauk. Dyd. WSP. w Krakowie 37:28-43. (In Polish, English & Russian summaries).
Morphology of different instars; geographical distributions.

**Early, M. P.**, *see* Rogers, P. F., Simbwa-Bunnya, M. N., & Early, M. P.

**Eastop, V. F. 1977.** Diversity of the Sternorrhyncha within major climatic zones. *In* "Diversity of Insect Faunas," edited by Mound, L. A. & Waloff, N. Symp. Roy. Entomol. Soc., London No. 9:204 pp. (p. 71-88)
Aphidoidea, Coccoidea, Psylloidea & Aleyrodoidea; structural, behavioral, genetical & species diversity; geographic distribution; food plant preference.

**1979.** Sternorrhyncha as angiosperm taxonomists. Symbolae. Bot. Upsala 22(4):120-134.
Detailed study; lists 17 coccoid fam. with host plant preferences.

*See* Woodward, T. E., Evans, J. W., & Eastop, V. F.

**Ebeling, W. 1959.** Subtropical fruit pests. Univ. Calif., Div. Agric. Sci. 436 pp.
Lists 135 coccoid spp. as pests of many subtropical fruit trees; description; life history; damage; control; natural enemies for many.

**Ebenebe, A. C. 1977.** *Rhizoecus angustus*, a mealybug on stored yams at Wusasa, northern Nigeria. Samaru Agric. Newsletter 19(2):82-83.

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Might be a polyphenol or melanin-like compound.

**Eckhardt, R. A.**, *see* Klein, A. S., & Eckhardt, R. A.

**Edland, T.**, *see* Williams, D. J., & Edland, T.

**Edmonds, J. S.**, *see* Banks, H. J., Cameron, D. W., Edmonds, J. S., & Raverty, W. D.

**Edmunds, G. F., Jr. 1973.** Ecology of black pineleaf scale (Homoptera: Diaspididae). Environ. Entomol. 2(5):765-777.
Life history of *Nuculaspis californica*; effect on host tree; population variability & population regulation discussed; parasitism; predators.

*See* Alstad, D. N., & Edmunds, G. F., Jr.; Alstad, D. N., Edmunds, G. F., Jr., & Johnson, S. C.

**Edmunds, G. F., Jr. & Alstad, D. N. 1978.** Coevolution in insect herbivores and conifers. Scale insects adapt to intraspecific variation in pine defenses with a differentiated deme on each tree. Science 199(3):941-949.
Detailed study; survival of intertree transfers; intratree transfers.

**1981.** Responses of black pineleaf scales to host plant variability. *In* "Insect Life History Patterns: Habitat and Geographic Variation," edited by Denno, R. F. & Dingle, H. Springer Verlag, New York. 225 pp.
*Nuculaspis californica*.

**1984.** High summer mortality of black pineleaf scale (Homoptera: Diaspididae). Pan-Pacific Entomol. 60(4):267-268.
*Nuculaspis californica*; high mortality occurred as a result of combined high temperature & low relative humidity.

**1985.** Malathion-induced sex ratio changes in black pineleaf scale (Hemiptera: Diaspididae). Ann. Entomol. Soc. Amer. 78(3):403-405.
*Nuculaspis californica*.

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Host & locality; no specific coccoid sp. mentioned.

**Edwards, J. G. 1970.** Giant margarodid scales from Yukatan *Llaveia axin* (Llave). Pan-Pacific Entomol. 46:68.

Hosts; past & present usage; description note; common names.

**Eguagie, W. E. 1975.** Observations on the biology of some armoured scale insects (Homoptera: Diaspididae) on citrus in Ibadan, Nigeria. Bul. Entomol. Soc. Nigeria 3(2):99-107.
*Insulaspis* (*Lepidosaphes*) *gloverii*; *Lepidosaphes beckii*; *Parlatoria pergandii*; description of immature stages & adult females.

**Einhorn, J.**, *see* Bénassy, C., Bianchi, H., & Einhorn, J.

**Einhorn, J., Bianchi, H., & Bénassy, C. 1983.** Effets combinés de deux constituants pheromonaux sur le comportement sexuel des mâles d'une cochenille diaspine *Pseudaulacaspis pentagona* Targ. (Homoptera, Diaspididae). Compt. Rend. Seances Acad. Sci. Ser. III. Sci. Vie 296(18):861-864.
A propionate & the corresponding alcohol both present in the volatiles emitted by the female of *P. pentagona* show effects on males in laboratory bioassays.

**Eisner, T.**, *see* Meinwald, J., Smolanoff, J., Chibnall, A. C., & Eisner, T.

**Eisner, T., Jutro, P., Anesnansley, D. J., & Niedhauk, R. 1972.** Defense against ants in a caterpillar that feeds on ant-guarded scale insects. Ann. Entomol. Soc. Amer. 65(4):987-988.
*Toumeyella* sp.

**Eisner, T., Nowicki, S, Goetz, M., & Meinwald, J. 1980.** Red cochineal dye (carminic acid); its role in nature. Science 208(4447):1039-1042.
*Dactylopius confusus*; host; predator; carminic acid is a potent feeding deterrent for ants.

**El-Ezz, A. B.**, *see* Ezz, A. I., & El-Ezz, A. B.

**El-Homriti, M. & Laraichi, M. 1981.** Note sur la bioecologie de *Saissetia oleae* (Olivier) (Homoptera, Coccoidea, Coccidae) dans la region de Moulay Idriss du Zerhoun. Awamia 57:73-82. (Arabic & Spanish summaries).
Biology; effect of temperature; natural enemy.

**Ellis, H. C., Horton, D. L., Howell, J. O., & Tippins, H. H. 1983a.** Apple insects. *In* "Summary of economic losses from insect damage and cost of control in Georgia, 1981," edited by Suber, E. F., Sheppard, D. C., & Gardner, W. A. Univ. Georgia, Coll. Agric. Expt. Sta. Special Publ. No. 26:4-5.
Losses caused by scale insects (no spp. mentioned) & chemical control cost of them estimated at $335,000.00.

**1983b.** Peach insects. *In* "Summary of Economic Losses from Insect Damage and Cost of Control in Georgia, 1981," edited by Suber, E. F., Sheppard, D. C., & Gardner, W. A. Univ. Georgia, Coll. Agric. Expt. Sta. Special Publ. No. 26:26.
White peach scale, *Pseudaulacaspis pentagona*; estimated cost of control $33,000.00; damage $88,000; total of $121,000.00.

**Ellis, H. C. & Howell, J. O. 1982a.** Apple insects. *In* "Summary of economic losses due to insect damage and cost of control in Georgia, 1980," edited by Suber, E. F., Sheppard, D. C., & Gardner, W. A. Univ. Georgia, Coll. Agric. Expt. Sta. Special Publ. No. 20:3-4.
Losses caused by scale insects (no spp. mentioned) & chemical control cost estimated at $271,000.00.

**1982b.** Peach insects. *In* "Summary of Economic Losses Due to Insect Damage and Cost of Control in Georgia, 1980," edited by Suber, E. F., Sheppard, D. C., & Gardner, W. A. Univ. Georgia, Coll. Agric. Expt. Sta. Special Publ. No. 20:26-27.
Cost of control & damage caused by *Pseudaulacaspis pentagona*.

**El-Minshawy, A. M.**, *see* Abdel-Fattah, M. I., El-Minshawy, A. M., & Darwish, E. T.

**El-Minshawy, A. M., El-Sawaf, S. K., Hammad, S. M., & Donia, A. 1971/72a.** The biology of *Asterolecanium pustulans* Cockerell in Alexandria district (Hemiptera-Homoptera: Asterolecaniidae). Bul. Soc. Entomol. Egypte 55:441-446.
Studied biology on fig & peach trees; 2 generations yearly; seasonal abundance.

**1971/72b.** The biology of *Hemiberlisia lataniae* (Sig.) in Alexandria district (Hemiptera-Homoptera-Diaspididae). Bul. Soc. Entomol. Egypte 55:461-467.
Three overlapping generations; parthenogenetic.

**1974a.** Survey of the scale insects attacking fruit trees in Alexandria district. (Part I: Fam. Diaspididae; subfam. Diaspidinae, tribe Aspidiotini). Alexandria J. Agric. Res. 22(2):223-232. (Arabic summary).
Description of adult females & some nymphs of 5 coccoid spp.; hosts; syns.

**1974b.** Survey of the scale insects attacking fruit trees in Alexandria district. (Part II: Fam. Diaspididae, subfam. Diaspidinae, tribe Diaspidini). Alexandria J. Agric. Res. 22(2):265-273. (Arabic summary).
Morphological characters of adult females of 5 coccoid spp.; description of first instar of some; hosts; syns.

**El-Minshawy, A. M., Karam, H. H., & El-Sawaf, S. K. 1974.** Biological studies on the long-tailed mealybug, *Pseudococcus longispinus* (Targ. "and Tozzetti") (Homoptera: Pseudococcidae). Bul. Soc. Entomol. Egypte 58:385-391.
Description of all stages male & female; hosts.

**1979.** Morphological studies on the immature stages and adult female of *Pseudococcus longispinus* (Targioni-Tozzetti) (Coccoidea, Pseudococcidae). Alexandria J. Agric. Res. 25(3):445-451. (Arabic summary).
Key to immature stages of sp.

**El-Minshawy, A. M. & Moursi, K. 1976.** Biological studies on some soft scale-insects (Hom., Coccidae) attacking guava trees in Egypt. Ztschrt. f. Angew. Entomol. 81(4):363-371.
*Pulvinaria psidii* & *floccifera*, *Coccus elongatus*; hosts; damage.

**El-Minshawy, A. M. & Osman, M. 1973.** The morphology of the male scale insect *Mycetaspis personata* (Comstock) (Coccoidea: Diaspididae). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" (1972-1973) 30:169-173.
Detailed description.

**1974.** Biological and ecological studies on the masked scale insect *Mycetaspis personata* (Comstock) in Alexandria area (Coccoidea: Diaspididae). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 31:152-170.
Taxonomic position; description of different stages; hosts; seasonal abundance; natural enemies.

**El-Nabawi, A.**, *see* Koteja, J., Zak-Ogaza, B., & El-Nabawi, A.

**El-Saadany, G. (El-Saadany, G. B.) & Goma, A. 1974.** Distribution and abundance of *Icerya purchasi* Mask. on *Stercholia diversifolia* in Egypt. Ztschrt f. Angew. Entomol. 77(1):73-77.
Biology.

**El-Saadany, G. B.**, *see* Hosny, M. M., Amin, A. H., & El-Saadany, G. B.

**El-Sawaf, S. K.**, *see* El-Minshawy, A. M., El-Sawaf, S. K., Hammad, S. M., & Donia, A.; El-Minshawy, A. M., Karam, H. H., & El-Sawaf, S. K.

**El-Sherif, A. F.**, *see* Salama, H. S., El-Sherif, A. F., & Megahed, M.

**Eluwa, M. C.**, *see* Iheagwam, E. U., & Eluwa, M. C.

**Emms, L. M. & McClaren, G. F. 1984.** San Jose scale *Quadraspidiotus perniciosus* (Comstock) (Homoptera: Diaspididae) in central Otago. New Zeal. Entomol. 8:81-82.
First record in central Otago; host & distribution.

**Endo, Y.**, *see* Kashino, E., Endo, Y., & Hasumi, S.; Kashumi, E., Nobata, A., Endo, Y., & Hasumi, S.

**English, L. L. 1976.** Îllinois trees and shrubs: their insect enemies. Îllinois Nat. Hist. Survey Cir. 47:88 pp.
Discusses 16 coccoid spp.

**Entwistle, P. F. 1977.** Leafhoppers, white flies, aphids, scale insects etc. *In* "Diseases, Pests and Weeds in Tropical Crops," edited by Kranz, J., Schmutterer, H., & Koch, W. Verlag Paul Parey, Berlin & Hamburg. 666 pp. (p. 346-370).
*Planococcoides njalensis*; host & distribution; economic importance; life cycle; ecology; natural enemies & control for 12 spp.; notes on 13 other spp.

**Entwistle, P. J. & Langworth, J. F. 1963.** The relationships between cacao viruses and their vectors: The feeding behaviour of three mealybug (Homoptera: Pseudococcidae) species. Ann. Appl. Biol. 52:387-391.
Studied *Ferrisiana virgata*, *Phenacoccus madeiriensis* & *Planococcoides njalensis*.

**Erb, H. E.**, *see* Zimmermann, H. G., Erb, H. E., & McFadyen, R. E.

**Erick, K. E. & Hawkes, R. B. 1970.** Additional insects that feed upon tansy ragwort, *Senecio jacobaea*, an introduced weedy plant, in western United States. Ann. Entomol. Soc. Amer. 63(4):1085-1090.
Include note on feeding by *Asterolecanium arabidis*.

**Erkin, E.**, *see* Tuncyürek-Soydanbay, M., & Erkin, E.

**Ervin, R. T., Moffit, L. J., & Meyerdirk, D. E. 1983.** Comstock mealybug (Homoptera: Pseudococcidae): Cost analysis of a biological control program in California. J. Econ. Entomol. 76(3):605-609.
*Pseudococcus comstocki*.

**Esbjerg, P.**, *see* Bejer, B., & Esbjerg, P.

**Esposito, A.**, *see* Tranfaglia, A., & Esposito, A.

**European and Mediterranean Plant Protection Organization (EPPO) (Paris, France). 1979.** Data sheets on quarantine organisms. EPPO List A. 18 pp.
*Pseudococcus comstocki* & *Quadraspidiotus perniciosus.*

**Euw, J. von**, *see* Rothschild, M., Euw, J. von, & Reichstein, T.

**Evans, H. C. & Leston, D. 1971.** A ponerine ant (Hym., Formicidae) associated with Homoptera in cocoa in Ghana. Bul. Entomol. Res. 61(2):357-362.
The ant *Odontomachus haematodus* tends *Stictococcus sjostedti*, but is a predator of the mealybug *Planococcoides njalensis.*

**Evans, J. W.**, *see* Woodward, T. E., Evans, J. W., & Eastop, V. F.

**Ewart, W. H.**, *see* Moreno, D. S., Fargerlund, J., & Ewart, W. H.

**Eyal, O.**, *see* Gerson, U., Halperin, J., Shanouni, Y., & Eyal, O.

**Eyndhoven, G. L. van**, *see* Tammes, P. M. L., & Eyndhoven, G. L. van.

**Eysell, F. 1979.** Wichtige Pflanzenläuse an Ziergehölzen und ihre Bekämpfung. Deutsche Baumschule 31(4):121-123.
General description & biology for Coccidae, Diaspididae, Lecaniidae & Pseudococcidae; mentions 9 coccoid spp.

**Ezumah, H. C. 1981.** Cassava improvement in the programme national, manioc in Zaire: Objectives and achievements up to 1978. *In* "Tropical Root Crops: Research Strategies for the 1980's," edited by Terry, E. R., Oduro, K. A., & Caveness, F. Int. Develop. Res. Centre, Canada. 279 pp. (p. 29-34). Proc. 1st Triennial Root Crops Symp. Int. Soc. Trop. Root Crops - Africa Branch - Sept. 1980, Ibadan, Nigeria.
Tabulated results of screening for resistance the mealybug, *Phenacoccus manihoti*, to mosaic virus, etc.

**Ezumah, H. C. & Knight, A. 1978.** Some notes on the mealybug (*Phenacoccus manihoti* Mat-Ferr.) incidence on manioc (*Manihot esculenta*) in Bas-Zaire. Proc. Int. Workshop on Cassava Mealybug *Phenacoccus manihoti* Mat-Ferr. (Pseudococcidae) (Zaire, 1977). p. 7-14.
Environmental conditions; rainfall; soil nutrient etc; malathion treatment; breeding for resistance.

**Ezz, A. I.**, *see* Ezzat, Y. M., & Ezz, A. I.

**Ezz, A. I. & El-Ezz, A. B. 1961.** *Asterolecanium phoenicus* infesting date palm in Saudi Arabia. Bul. Soc. Entomol. Egypte 45:407-408.

**Ezzat, Y. M. & Ezz, A. I. 1984.** A look into the citri complex through its immature forms (Homoptera, Coccoidea, Pseudococcidae). Proc. 10th Int. Symp. Central European Entomofaunistics (SIECC) (Budapest, Hungary Aug. 1983). p. 384-386.
*Planococcus citri*, *ficus* & *vitis.*

**Ezzat, Y. M. & Fayez, S. S. 1983.** Differential characters separating all developmental forms of the wax scale *Ceroplastes floridensis* Comstock (Coccidae; Homoptera). Bul. Soc. Entomol. Egypte 64:77-87.
Discuss 4 nymphal instars as well as adult female.

**Fabre, J. P. 1980.** Mortalite dans les peuplements de pin Maritime à la suite de l'introduction de *Matsucoccus feytaudi* Duc. en Italie. Ital. Forest. Montag. 35(1):40-42. (Italian summary).
Damage; distribution; natural enemies.

*See* Riom, J., & Fabre, J. P.; Riom, J., Gerbinot, B., Boulbria, A., & Fabre, J. P.; Riom, J., Goillot, C., & Fabre, J. P.

**Fabres, G. 1980.** Analyse structurelle et fonctionelle de la biocoenose d'un Homoptère (*Lepidosaphes beckii*, Hom., Diaspididae) dans deux types d'habitats agrumicoles de la Nouvelle-Calédonie. Office Recherche Scientifique Technique Outre-mer (Orstom), Paris, France. 291 pp. (English summary).
Description; biotic potential & population dynamics; abiotic factors; microclimatic factors; host plant influence; ecological stability; natural enemies.

**1981a.** Premier quantification du phenomene de gradation des populations de *Phenacoccus manihoti* Matile-Ferrero (Hom. Pseudococcidae) en Republique Populaire du Congo. Agronomie 1(6):483-486. (English summary).
Bionomics; abundance; biology; host.

**1981b.** Dynamics of cassava mealybug populations in the People's Republic of Congo. *In* "Tropical Root Crops: Research Strategies for the 1980's," edited by Terry, K. A., Oduro, E. R., & Caveness, F. Int. Develop. Res. Centre, Ottawa, Canada. 279 pp. (p. 84-87), Proc. 1st Triennial Root Crops Symp. Int. Soc. Trop. Root Crops - Africa Branch - Sept. 1980 Ibadan, Nigeria.
*Phenacoccus manihoti*.

**1981c.** Bioecologie de la cochenille du manioc (*Phenacoccus manihoti* Hom. Pseudococcidae) en Republique Populaire du Congo. II. Variations d'abondance et facteurs de regulation. Agron. Trop. 36(4):369-377. (English summary).
Rate of infestation; population density; dispersal; growth of colonies during dry & wet season; natural enemies; timing of chemical or integrated control to coincide with natural control factors.

*See* Nkouka, N., Onore, G., & Fabres, G.

**Fabres, G. & Boussiengue, J. 1981.** Bioecologie de la cochenille du manioc (*Phenacoccus manihoti* Hom. Pseudococcidae) en Republique Populaire du Congo. I. Cycle evolutif et parametres biologiques. Agron. Trop. 36(1):82-89. (English & Spanish summaries).
Duration of developmental stages; female life span; fecundity; intrinsic growth rate; effect of temperature.

**Fabres, G. & Brown, W. L. 1978.** The recent introduction of the pest ant *Wasmannia auropunctata* into New Caledonia. J. Austral. Entomol. Soc. 17(2):139-142.
Coccoid infestation of coffee & citrus could increase through *W. auropunctata*; mention 4 coccoid spp.

**Farahbakhch, G. & Moini, M. 1975.** Olive pests in Iran. Min. Agric. Nat. Resources. (Natl. Agric. Res. Organ.) Plant Pest and Disease Res. Inst. Tehran-Evin. 87 pp. (14 pp. in English, 73 pp. in Persian & English).
*Saissetia oleae*, *Parlatoria oleae*; biology; hosts; natural enemies; chemical control; list of olive pests.

**Fargerlund, J.**, *see* Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Fargerlund, J., & Plimmer, J. R.; Gieselmann, M. J., Moreno, D. S., Fargerlund, J., Tashiro, H., & Roelofs, W. L.; Moreno, D. S., Carman, G. E., Fargerlund, J., & Shaw, J. G.; Moreno, D. S., & Fargerlund, J.; Moreno,

D. S., Fargerlund, J., & Ewart, W. H.; Moreno, D. S., Fargerlund, J., & Shaw, J. G.

**Farkas, K.**, *see* Ördögh, G., & Farkas, K.

**Fayez, S. S.**, *see* Ezzat, Y. M., & Fayez, S. S.

**Fergione, M. B.**, *see* McClure, M. S., & Fergione, M. B.

**Fernandes, I. M. 1972.** Contribution to the knowledge of some Homoptera Coccoidea from Cape Verde Islands. Pt. 2. Garcia de Orta, Ser. Zool. 1(1):11-16. (In Portuguese, English summary).
Discusses 7 coccoid spp.; description; new records; syns.; hosts & distribution; natural enemies.

**1973a.** Contribution to the study of coccoids *Aonidiella tinerfensis* Lndgr., and *Aonidiella aurantii* Mask. Mem. Junta Invest. Ultramar., Ser. 2, No. 58:137-162. (In Portuguese; English, French & Spanish summaries).
Collecting methods; preservation & culture; microscopical preparations; description; biology & habitat; hosts & distribution; natural enemies.

**1973b.** Several scale insects (Homoptera) from the Cape Verde Archipelago, Atlantic Ocean. Mem. Junta Invest. Ultramar., Ser. 2, No. 58:249-269. (In Portuguese; English, French & Spanish summaries).
Description; hosts & distribution; natural enemies; *Hemiberlesia lataniae*; *Lepidosaphes beckii*; *Coccus hesperidum*; *Ceroplastes rusci*; *Icerya purchasi*.

**1974.** Study of some coccoids in S. Tomé. Garcia de Orta, Ser. Zool. 3(1):1-3. (In Portuguese, English summary).
*Abgrallaspis palmae*, *Vinsonia stellifera*; description of adult female; hosts.

**1975.** Homoptera (Coccoidea) of the Cape Verde Archipelago. Garcia de Orta, Ser. Zool. 4(1):41-46. (In Portuguese, English summary).
Lists 13 coccoid spp.; short description; hosts & natural enemies for 7 spp.

**1981-1982.** Contribution to the knowledge of quermofauna of the Azores Archipelago. Garcia de Orta, Ser. Zool. 10(1/2):47-50. (In Portuguese, English summary).
Lists 22 spp. in 9 fam.; hosts.

**Ferran, A.**, *see* Panis, A., Ferran, A., & Torregrossa, J.

**Ferrão, A. P. da F., & Cardoso, H. L. 1972.** List of Angolan pests identified up to 1967. Inst. Invest. Agron. Angola, Ser. Tecnica. No. 32, 49 pp. (In Portuguese).
List 41 coccoid spp. with their hosts; give separate host list with pests.

**Ferrari, R. 1976.** Tests on the survival and fecundity of the apple infestant *Quadraspidiotus perniciosus* Comst. after controlled atmosphere storage. Redia 56:391-400. (In Italian, English summary).
Study to determine the effectiveness of cold storage as a means to control the diffusion of this pest; males more sensitive to cold than females.

**Feutrill, G. I.**, *see* Cameron, D. W., Conn, C., & Feutrill, G. I.; Cameron, D. W., Crossley, M. J., Feutrill, G. I., & Griffiths, P. G.; Cameron, D. W., Deutscher, D. J., Feutrill, G. I., & Griffiths, P. G.; Cameron, D. W., Feutrill, G. I., Griffiths, P. G., & Hodder, D. J.; Cameron, D. W., Feutrill, G. I., Karge, R. L., & Patti, A. F.; Cameron, D. W., Feutrill, G. I., Patti, A. F., Raston, C. L., Raverty, W. D., & White, A. H.; Cameron, D. W., Feutrill, G. I., & Perlmutter, P.

**Fiecchi, A., Galli, M. A. G., & Gariboldi, P. 1981.** Assignment of the beta configuration of the C glycosyl bond in carminic acid. J. Organic Chem. 46(7):1511.
*Dactylopius coccus.*

**Figueirendo, E. R. de, Jr. 1970.** New pest of wine grapes in Sao Paulo. Biologico 36(9):229-234. (In Portuguese).
*Eurhizococcus brasiliensis* reported for the first time in the state of Sao Paulo.

**Figueiredo, R. W. de**, *see* Bastos, J. A. M., Sales, F. M., Gomes, N. G., & Figueiredo, R. W. de.

**Filer, T. H.**, *see* Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P.

**Fink, S. & Braun, H. J. 1980.** Die Bedeutung anatomischer Veränderungen bei der Buchenrindennekrose. Ann. Sci. For. 37(4):333-343. (English & French summaries).
*Cryptococcus fagi*; discuss alteration for the etiology & symptomatology of beech bark disease & make some remark on the problem of slime-flux.

**Firempong, S. 1982a.** A method of rearing the mealybug *Planococcoides njalensis* on cocoa seedlings. Rev. Theobroma (1981) 11(4):229-232.
Reared mealybugs without the presence of their obligatory attendant ants; prevented honeydew from sticking to their bodies, thus eliminating the honeydew as the nutritional source of fungal attack that leads to the extinction of the mealybug colony.

**1982b.** The performance of *Planococcoides njalensis* (Homoptera: Pseudococcidae) on some cocoa cultivars. Ann. Appl. Biol. Suppl. 100:100-101.
Resistance of cultivars; survival of *P. njalensis.*

**Fisher, D. B. 1983.** Year-round collection of willow sieve-tube exudate. Planta 159(6):529-533.
Seasonal variation in sieve-tube sap was followed by collecting exudate from broken stylets of *Quadraspidiotus ostreaeformis.*

**Fisher, D. B. & Frame, J. M. 1984.** A guide to the use of the exuding-stylet technique in phloem physiology. Planta 161(5):385-393.
The use of exuding stylets holds considerable promise for the investigation of sieve-tube physiology; attempted to establish exuding stylet for *Planococcus citri*, *Coccus hesperidum*, & *Quadraspidiotus ostreaeformis.*

**Flaherty, D. L.**, *see* Rice, R. E., Flaherty, D. L., & Jones, R. A.

**Fluckiger, W., Braun, S., & Fluckiger-Keller, H. 1984.** Untersuchungen über Waldschaden in der Nordwest-Schweiz. Schweiz. Ztschrt. Forstwesen 135(5):389-444.
Detailed study; *Cryptococcus fagisuga.*

**Fluckiger-Keller, H.**, *see* Fluckiger, W., Braun, S., & Fluckiger-Keller, H.

**Fogarasi, E. U. & Kozár, F. 1977.** Scale insects damaging ornamental plants in Hungary. Növényvédelem 13(9):389-392. (In Hungarian, English, German & Russian summaries).
List 9 spp., 4 spp. new for Hungary; short descriptions & hosts; key for diaspidid spp.

**Foldi, I. 1973.** Étude de la chambre filtrante de *Planococcus citri* (Insecta, Homoptera). Histochimie et ultrastructure. Ztschrt. f. Zellforschung 143:549-568.

The digestive tract of the coccoids is characterized by the presence of a "filter chamber"; cytological characters in the filter chamber of *Planococcus citri*.

**1978.** Ultrastructure des glandes tégumentaires dorsales, sécrétrices de la "laque" chez la femelle de *Coccus hesperidum* (Homoptera: Coccidae). Int. J. Insect Morph. Embryol. 7(2):155-163. (English summary).
Detailed study.

**1981a.** *Margarodesia*, n. gen., cochenille Afro-tropicale nuisible au palmier à huile (Homoptera, Coccoidea, Margarodidae). Ann. Soc. Entomol. France (n.s.) 17(3):331-335. (English summary).
*M. desmieri* n. sp.

**1981b.** Ultrastructure of the wax-gland system in subterranean scale insects (Homoptera, Coccoidea, Margarodidae). J. Morph. 168(2):159-170.
Used 6 coccoid spp. belonging to the genus *Porphyrophora*, *Sphaeraspis*, & *Eurhizococcus*; discusses integumentary, stigmatic & peristigmatic glands.

**1982.** Étude structurale et expérimentale de la formation du bouclier chez les cochenilles diaspines (Hom., Coccoidea Diaspididae). Ann. Soc. Entomol. France (n.s.) 18(3):317-330. (English summary).
Detailed study; used *Aonidiella aurantii* & *Lepidosaphes beckii*.

**1983a.** Les glandes tégumentaires des cochenilles - ultrastructure comparée et signification évolutive. Doctoral Thesis, Univ. Pierre & Marie Curie, Paris 224 + 21 pp.
Studied 41 spp. belonging to 18 fam.

**1983b.** Structure et fonctions des glandes tégumentaires de cochenilles Pseudococcines et de leurs sécrétions. Ann. Soc. Entomol. France (n.s.) 19(2):155-166. (English summary).
Wax glands showed 3 types of glandular organizations & functions; cuticular specialization described; 3 basic types of secretion determined.

**1983c.** Ultrastructure comparée des glandes tégumentaires des cochenilles diaspines (Homoptera: Diaspididae). Int. J. Insect Morph. Embryol. 12(5/6):339-354. (English summary).
Describes structure, function & secretion.

**1984a.** The value of wax-gland system in systematics and phylogenetics of the scale insects. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 342-345.
Characters & evolution of wax-glands; mentions 4 coccoid spp.

**1984b.** Association of ants with the scale insect *Kermes*. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 349.
*K. robur* & *ilicis*.

**1984c.** Une cochenille nouvelle nuisible à la canne à sucre en Haute-Volta, *Margarodes cadeti*, n. sp. (Homoptera, Coccoidea, Margarodidae). Ann. Soc. Entomol. France (n.s.) 20(3):261-265.
Description of adult female; taxonomic remarks.

*See* Pesson, P., & Foldi, I.; Waku, Y., & Foldi, I.

**Foldi, I. & Cassier, P. 1985.** Ultrastructure comparée des glandes tégumentaires de treize familles de cochenilles (Homoptera: Coccoidea). Int. J. Insect Morph. Embryol. 14(1):33-50. (English summary).
Detailed study; used 15 coccoid spp.

**Foldi, I. & Pearce, M. J. 1985.** Fine structure of wax glands, wax morphology and function in the female scale insect, *Pulvinaria regalis* Canard (Hemiptera: Coccidae). Int. J. Insect Morph. Embryol. 14(5):259-271.
Detailed study; discuss wax glands associated with spiracles & stigmatic furrows, with sites of reproduction & with excretory site; other sites of wax occurrence.

**Foldi, I. & Pesson, P. 1978.** Étude ultrastructurale de la spermiogenèse chez une cochenille *Aonidiella aurantii* Mask. (Homoptera, Coccoidea, Diaspididae). Ann. Sci. Nat. Zool. Biol. Animale 20(4):321-337. (English summary).
Detailed account of differentiation & formation of bundles of spermatozoa.

**Folk, Gy.**, *see* Martinovich, V., & Folk, Gy.

**Folkina, M. Y. 1980.** The California scale *Quadraspidiotus perniciosus* (Comst.) (Homoptera, Diaspididae) in the south of the Chimkent region. Akad. Nauk Kazakhs. SSR Trudy Inst. Zool. 39:24-31.
Distribution; damage; biology; ecology; control; hosts.

**Fonseca, J. P. da. 1972.** A new genus of Pulvinariini (Hom. Coccoidea) from Brazil. Sao Paulo Inst. Biol. Arq. 39:195-199. (In Portuguese).
*Anopulvinaria* n. gen.; *A. cephalocarinata* n. sp.; description; illustrations; host; distribution.

**1973.** Contribution to the knowledge of coccoids from Brazil (Homoptera-Coccoidea). Sao Paulo Inst. Biol. Arq. 40(3):247-261. (In Portuguese, English summary).
*Parakermes* n. gen.; 5 n. spp.; *Pulvinaria eryngii* new name for *P. minuta*; description; hosts; distribution.

**1975.** Three new species of coccoids from Brazil (Homoptera-Coccoidea). Sao Paulo Inst. Biol. Arq. 42:79-84. (In Portuguese, English summary).
*Lecanium paradeformosum*, *Tachardiella nigra*, *Pseudoparlatoria constricta*.

**1978.** A coccoid of the genus *Parlatoria* attacking citrus, now introduced to Brazil. Biologico 44(12):287-291. (In Portuguese).
*P. ziziphus*; first record.

**1979.** A new species of the genus *Protortonia*, from Brazil (Homoptera-Coccoidea: Margarodidae). Sao Paulo Inst. Biol. Arq. 46(1/2):7-10. (In Portuguese, English summary).
*P. navesi*.

**Food and Agriculture Organization. 1976.** New records. Quart. Newsletter, FAO Plant Prot. Commission Southeast Asia & Pacific Region 19(1):6-8.
*Lopholeucaspis cockerelli* & *Chrysomphalus dictyospermi* attacking *Pinus caribaea* var. *caribaea* & *P. caribaea* var. *hondurensis* in Fiji.

**1977.** New records. Quart. Newsletter, FAO Plant Prot. Commission 20(2):4-7.
*Palmicultor* sp., *Pseudococcus citriculus* & *Dysmicoccus* sp. on coconut in Sri Lanka.

**1980.** New pest introductions or discovery. Quart. Rep., FAO Caribbean Plant Prot. Commission 9(3):4.
*Pseudococcus* sp. on citrus & mango in Haiti.

**Forcina, A.**, *see* Pucci, C., Salmistraro, D., Forcina, A., & Montanari, G.

**Ford, R. P.**, *see* Anderson, J. F., Ford, R. P., Kegg, J. D., & Risley, J. H.

**Forestry Commission, United Kingdom. 1978.** Report on forest research for the year ended March 1978. London, U.K. Her Majesty's Stationery Office. 85 pp.
*Cryptococcus fagisuga*.

**1979.** Report on forest research for the year ended March 1979. London, U.K. Her Majesty's Stationery Office. 82 pp.
*Cryptococcus fagisuga*.

**1980.** Report on forest research for the year ended March, 1980. Forestry Commission, U.K. Her Majesty's Stationery Office. 88 pp.
*Cryptococcus fagisuga*.

**1981.** Report on forest research for the year ended March, 1981. Forestry Commission, U.K. Her Majesty's Stationery Office. 97 pp.
*Cryptococcus fagisuga*; susceptible clones supported development of nymphs; on resistant trees there was 100% mortality of nymphs.

**1983.** Report on forest research for the year ended March, 1983. Forestry Commission, London, Her Majesty's Stationery Office. 89 pp.
*Cryptococcus fagisuga*; population ecology; crawler survival; settling site; population size.

**1984.** Report on forest research for the year ended March, 1984. Forestry Commission, London, Her Majesty's Stationery Office. 92 pp.
*Pulvinaria regalis*, *Cryptococcus fagisuga*.

**Fornasieri, J. L.**, *see* Gravena, S., & Fornasieri, J. L.

**Fossel, A. 1972.** Die Populationsdichte einiger Honigtauerzeuger und ihre Abhängigkeit. Waldhygiene 9(5/8):185-191.
*Physokermes piceae* & *hemicryphus* producing honeydew on *Picea abies* & *Abies alba*; population density related to amount of tending by ants.

**Foster, D. E., Ueckert, D. N., & Deloach, C. J. 1981.** Insects associated with broom snakeweed (*Xanthocephalum sarothrae*) and threadleaf snakeweed (*Xanthocephalum microcephala*) in west Texas and eastern New Mexico. J. Range Management. 34(6):446-454.
List 9 coccoid spp.

**Foster, H. S.**, *see* Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Foster, H. S., Plimmer, J. R., & Devilbiss, E. D.

**Foua-Bi, K. 1982.** Effet des piqûres d'*Aspidiella hartii* Ckll. (Homoptère, Coccidae) sur la levée, le développement de l'appareil végétatif, et la productivité de l'igname. *In* "Yams - Ignames," edited by Miege & Lyonga. Clarendon Press, Oxford. p. 265-273. (English summary). (Not seen).

**Frame, J. M.**, *see* Fisher, D. B., & Frame, J. M.

**Franco, E.**, *see* Bénassy, C., & Franco, E.

**Frankie, G. W.**, *see* Washburn, J. O., & Frankie, G. W.; Washburn, J. O., Frankie, G. W., Hagen, K. S., & Koehler, C. S.

**Franz, J. M.**, *see* Hagen, K. S., & Franz, J. M.

**Freeston, A. C.**, *see* Cox, J. M., & Freeston, A. C.

**Fregoni, M. 1977.** La viticoltura in Sud Africa. Vignevini 4(4):25-27. (English summary).
*Margarodes* spp. causes root rot of grapevines.

**Freitas, A. de. 1972.** A black scale (*Saissetia oleae* (Oliv.)) on olives. Bio-ecology and influence of the control treatments. Agron. Lusitana (1971) 33(1/4):349-390. (In Portuguese, English summary).
Detailed study; biology; life history; chemical control.; parasites.

**1975.** The bio-ecological behaviour of the San Jose scale (*Quadraspidiotus perniciosus* (Comst.)) in continental Portugal. II. Natural mortality and parasitism on apple. Agron. Lusitana 36(3):235-285. (In Portuguese, English summary).
Detailed study; results compiled in several tables; natural enemies.

**Fu, W. J.**, *see* Qi, Y. T., Fu, W. J., Xu, S. F., & Wang, M. Z.

**Fujita, K.**, *see* Kusumi, T., Kinoshita, T., Fujita, K., & Kakisawa, H.

**Furness, G. O. 1976.** The dispersal, age-structure and natural enemies of the long-tailed mealybug, *Pseudococcus longispinus* (Targioni-Tozzetti), in relation to sampling and control. Austral. J. Zool. 24(2):237-247.
Counting procedure; estimation; statistical analysis; biology.

**Furniss, M. M. & Barr, W. F. 1975.** Insects affecting important native shrubs of the northwestern United States. U.S. Dept. Agric. Forest Serv. General Tech. Rep. INT-19. 64 pp.
Description, life cycle, hosts & distribution, damage & natural enemies for *Lecanium cerasifex*, *Lepidosaphes ulmi* & *Orthezia artemisiae*.

**Furth, D. G., Ben-Dov, Y., & Gerson, U. 1983.** A new species of *Peliococcus* (Homoptera: Pseudococcidae) from the Judean Desert. Israel J. Entomol. 17:105-108.
*P. deserticola*.

**Furuhashi, K. 1974.** Developmental difference of arrowhead scale (*Unaspis yanonensis* Kuwana) after infestation on Satsuma mandarin and Natsudaidai. Shizuoka Prefect. Citrus Expt. Sta. Bul. (Konagoe Shimizu City, Japan) 11:68-73.
*U. yanonesis* has 2 strains.

*See* Nishino, M., & Furuhashi, K.

**Gabardo, J. C.**, *see* Vernalha, M. M., Gabardo, J. C., & Da Silva, R. P.; Vernalha, M. M., Gabardo, J. C., & Rocha, M. A. L. da.; Vernalha, M. M., Rocha, M. A. L. da, Gabardo, J. C., & Da Silva, R. P.

**Gabriel, B. F.**, *see* Tabibullah, M., & Gabriel, B. F.

**Gabriel, D. 1982.** Survey of the occurrence of the scale insect *Antonina graminis* (Maskell, 1897) (Homoptera: Pseudococcidae) and of its parasites in areas of pasture in the State of Sao Paulo. I. Municipalities of Piracicaba and Sao Pedro. Biologico 48(8):195-200. (In Portuguese, English summary).
Found *A. graminis* on 9 of 10 pastures surveyed.

**1983.** Survey of the occurrence of the scale insect *Antonina graminis* (Maskell, 1897) (Homoptera: Pseudococcidae) and of its parasites in areas of pasture in Sao Paulo State. II. Municipalities of Aracatuba Coroados, Capela do Alto, Aracoiaba da Serra, Votorantim, Salto de Pirapora, Cravinhos, Pedregulho, Restinga, Batatais and Assis. Biologico 49(3):53-64. (In Portuguese, English summary).
Hosts; natural enemies.

**Gabriel, D., Vecchio, M. C. del, Muniz, J. P., & Ramiro, Z. A. 1982.** Occurrence of *Anagyrus pseudococci* parasitising the scale insect *Antonina graminis* in Caconde, Sao Paulo. Biologico 48(6):157-159. (In Portuguese, English summary).
Lists 5 other coccoid spp. as hosts.

**Gaedike, H. 1971.** Katalog der in den Sammlungen des ehemaligen Deutschen Entomologischen Institutes aufbewahrten Typen. VI. (Homoptera, exklusive Aphidina). Beitr. Entomol. 21(3/6): 315-339.
Includes 58 spp. of Coccoidea; hosts; type data.

**Gagné, R. J. & Stein, J. D. 1982.** *Diadiplosis koebelei* Koebele (Diptera: Cecidomyiidae) a rediscovered predator of scale insects. Entomol. Soc. Wash. Memoirs 10:65-69.
*Nipaecoccus vastator.*

**Gál, T.**, *see* Bürges, G., & Gál, T.

**Galfayan, K. K. 1979.** Experiments of Saak Tsakharar on obtaining a dye from the Ararat Cochineal. Istoriya Estestvozn. i. Tekhn. v. Armenii, Erevan 7:116-129. (In Russian).
*Porphyrophora hamelii.*

**Gallardo-Covas, F. 1983.** Mangoes (*Mangifera indica* L.) susceptibility to *Aulacaspis tubercularis* Newstead (Homoptera: Diaspididae) in Puerto Rico. J. Agric. Univ. Puerto Rico 67(2):179.
Heavy infestation in 1981; lists most susceptible varieties.

**Galli, M. A. G.**, *see* Fiecchi, A., Galli, M. A. G., & Gariboldi, P.

**Galstian, R. A.**, *see* Sevumian, A. A., Sarkisian, S. M., Sarkisov, R. N., & Galstian, R. A.

**Gambia, Ministry of Agriculture & Natural Resources Crop Protection Services. 1981.** Annual Report (1979). 51 pp.
*Phenacoccus manihoti.*

**Gamo, Y.**, *see* Ohgushi, R., Nishino, T., Tazoe, S., & Gamo, Y.

**Gamou, N. 1975.** Factors affecting the mortality of the arrow-head scale, *Unaspis yanonensis* Kuwana. Proc. Kyushu Assoc. Plant Prot. 21:32-34. (In Japanese).

**Gandilian, P. A.**, *see* Sevumian, A. A., Sarkisov, R. N., & Gandilian, P. A.

**Ganesh, D.**, *see* Char, M. B. S., Nagendran, C. R., & Ganesh, D.

**Ganguly, G. 1979.** Biogenesis of lac dye of the Indian lac insect, *Kerria lacca* Kerr. J. Zool. Soc. India 31(1/2):9-14.
Author concludes that pigment production of *K. lacca* depends on presence of symbiotic micrococci & glucose in body fluid.

**Ganguly, G. & Varshney, R. K. 1974.** Hexagonal cell of lac insect. J. Bombay Nat. Hist. Soc. 70(2):405-406.
Discuss occurrence in several spp.

**Gao, R. X. & Quyang, Z. 1981.** A preliminary investigation on parasitic fungi on citrus pests. Weishengwuxue Tongbao 8(2):57-58. (In Chinese).
List 6 coccoid spp. attacked by fungi.

**Garber, I.**, *see* Amin, A. H., Garber, I., & Abo-Setta, M. M.

**Garcia, S. J. G.**, *see* Mallea, A. R., Macola, G. S., Garcia, S. J. G., Bahamondes, L. A., & Suarez, J. H.; Mallea, A. R., Macola, G. S., Garcia, S. J. G., & Lanati, S. J.

**Garcia-Tuduri, J.**, *see* Medina-Gaud, S., & Garcia-Tuduri, J.

**Garg, D. C. & Chaudhary, J. P. 1979.** Insect pests of sugarcane in Punjab and their control. Indian Sugar 28(10):697-701.
*Saccharicoccus sacchari*.

**Gariboldi, P.**, *see* Fiecchi, A., Galli, M. A. G., & Gariboldi, P.

**Garijo, C.**, *see* Moreno, R., & Garijo, C.

**Garrett, W. T. 1973.** Biosystematics of the oystershell scale, *Lepidosaphes ulmi* (L.) (Homoptera, Diaspididae) in Maryland, Ph.D. Diss. Ann Arbor, Mich. Univ. Microfilms cat. 79722671 (Diss. No. 73-9-700). 108 pp.

*See* Talerico, R. L., McComb, C. W., & Garrett, W. T.

**Garrido, C. B. 1982.** Estación distribución de *Saissetia oleae* (Homoptera: Coccidae) en Uruguay. Univ. Repub. Fac. Agron. Rev. Tec. (Montevideo) No. 52:111-118.
Host; distribution; biological control.

**Gaston, L. K.**, *see* Rotundo, G., Gaston, L. K., & Shorey, H. H.

**Gatina, E. S. 1973.** Plum in the flood plain of the Dnester Selekt. i Sortoizuch. Plod. i Yagod. Kul'tur. Kishinev, Moldavian SSR. p. 121-192. (In Russian).
*Aspidiotus perniciosus*; some varieties resistant, some suffer slight damage from *A. perniciosus*.

**Gausman, H. W. & Hart, W. G. 1974.** Reflectance of four levels of sooty mold deposits produced from the honeydew of three insect species. J. Rio Grande Valley Hort. Soc. 28:131-136.
*Coccus hesperidum* & *Planococcus citri*; charts showing sooty mold levels.

**Gelovani, L. V.**, *see* Hadzibejli, Z. K., & Gelovani, L. V.

**Geoffrion, R. 1976.** La cochenille rouge du poirier (pear scale). Arboriculture Fruitiere 265:23-31.
*Epidiaspis leperii*; morphology, biology, distribution, damage & control.

**Georgala, M. B.**, *see* Annecke, D. P., & Georgala, M. B.; Bedford, E. C. G., & Georgala, M. B.

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Lists 46 coccoid spp. in 3 fam., hosts; natural enemies of some.

**Gerbinot, B.**, *see* Riom, J., & Gerbinot, B.; Riom, J., Gerbinot, B., Boulbria, A., & Fabre, J. P.

**Gerini, V. 1977.** Contribution to the knowledge of the principal insects present on citrus in Cyprus. Riv. Agric. Subtrop. & Trop. 71(7/12):147-159. (In Italian, English summary).
*Pseudococcus citri*, *Aonidiella aurantii* & *Ceroplastes rusci*; external morphology; biology; control.

**Gerling, D.**, *see* Beardsley, J. W., Jr., Su, T. H., McEwen, F. L., & Gerling, D.

**Germeck, E. B.**, *see* Rezende, J. A. M., Rossetto, C. J., & Germeck, E. B.

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**1975.** A soft scale as an urban pest. Israel J. Entomol. 10:25-28.
*Protopulvinaria mangiferae*; host; damage.

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Distinguishing characters; hosts; population dynamics & phenology.

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*Leucaspis pusilla*, *loewi* & *knemion*.

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Studies on 4 plants.

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**Giannotti, J.**, *see* Delattre, M., Giannotti, J., & Czarnecky, D.

**Gieselmann, M. J.**, *see* Roelofs, W. L., Gieselmann, M. J., Cardé, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J.

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*P. delottoi*; description of adult female, first, second, & third instars; key; hosts & distribution.

**1982a.** Photo recognition key to the whiteflies and scale insect families of California. Calif. Dept. Food & Agric., Environ. Monitoring & Pest Management, Scale & Whitefly Key No. 1:4 pp.
Color photos & short general description of coccoid spp. in 14 families.

**1982b.** Color-photo and host keys to the mealybugs of California. Calif. Dept. Food & Agric., Environ. Monitoring & Pest Management, Scale & Whitefly Key No. 3:6 pp.
Illustrations & notes for 31 coccoid spp. in 19 gen.

**1982c.** Color-photo and host keys to the soft scales of California. Calif. Dept. Food & Agric., Environ. Monitoring & Pest Management, Scale & Whitefly Key No. 4:8 pp.
Illustrations & notes for 34 coccoid spp. in 12 gen.

**1982d.** Color-photo and host keys to the armored scales of California. Calif. Dept. Food & Agric., Environ. Monitoring & Pest Management, Scale & Whitefly Key No. 5:8 pp.
Illustrations & notes for 49 coccoid spp. in 29 gen.

*See* Miller, D. R., Gill, R. J., & Williams, D. J.; Moore, W. S., Koehler, C. S., Joos, J. L., Donaldson, D. R., Cassidy, D. V., & Gill, R. J.; Nakahara, S., & Gill, R. J.

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Detailed study; key to spp. & 3 similar spp. in North America; redescription of 8 spp.; list of names used in gen. *Coccus*.

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Study of *Antonina graminis*; distribution; hosts; biology; description; damage.

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**Gleim, K. H. 1977.** Die Honigtauerzeuger (Lachniden und Lecanien). Allgemeine Deutsche Imkerzeitung 5:140-142.
*Eulecanium rufulum & corni*, *Physokermes piceae & hemicryphus*; general description & biology; hosts.

**1981.** Die Napfschildlause. Imkerfreund 36(6):196-200.
*Physokermes piceae & hemicryphus*; *Eulecanium rufulum & corni*; life history; honeydew producers; relation to apiculture.

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**Gollner-Scheiding, U.**, *see* Köhler, G., & Gollner-Scheiding, U.

**Goma, A.**, *see* El-Saadany, G., & Goma, A.

**Gomes, N. G.**, *see* Bastos, J. A. M., Sales, F. M., Gomes, N. G., & Figueiredo, R. W. de.

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Relation of population between branches & leaves; natural enemies; isolated entomopathogenic fungi from *C. viridis*.

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*Dysmicoccus brevipes* on Eastern Island.

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Description of all stages; syns.; host & distribution; ecological & economic importance; phenology; natural enemies.

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**1983b.** El chanchito blanco de la uva de mesa. Rev. Fruticola 4(1):3-7.
*Pseudococcus maritimus*; morphology; damage; life cycle; control.

*See* Beardsley, J. W., Jr., & Gonzalez, R. H.; Miller, D. R., & Gonzalez, R. H.

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**Gothilf, S.**, *see* Peleg, B. A., & Gothilf, S.

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*Eupulvinaria hydrangeae*; damage; biology; control.

**Grana, S. F.**, *see* Aguilera, A. P., & Grana, S. F.

**Granara de Willink, M. C. 1978.** Contribución al estudió de las cochinillas harinosas (Homoptera: Pseudococcidae) en citricos de la Provincia de Tucuman. III. Jornadas Fitosanitarias Argentinas 1:125-160. (English summary).
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*H. pungens*; key to spp.

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*Lepidosaphes beckii*, *Pinnaspis aspidistrae*, *Chrysomphalus aonidum*.

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Abundance; crop loss; natural enemies.

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Discusses 4 spp. of coccoids.

**Greenberg, S.**, *see* Blumberg, D., Swirski, E., & Greenberg, S.

**Greve, J. E. van S. & Ismay, J. W. (eds.) 1983.** Crop insect survey of Papua, New Guinea from July 1st, 1969 to December 31st, 1978. Papua - New Guinea Agric. J. 32(1/4):120 pp.
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**Griffiths, P. G.**, *see* Cameron, D. W., Crossley, M. J., Feutrill, G. I., & Griffiths, P. G.; Cameron, D. W., Deutscher, D. J., Feutrill, G. I., & Griffiths, P. G.; Cameron, D. W., Feutrill, G. I., Griffiths, P. G., & Hodder, D. J.

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*Matsucoccus resinosae.*

**Grimes, E. W. & Cone, W. W. 1985.** Life history, sex attraction, mating, and natural enemies of the grape mealybug, *Pseudococcus maritimus* (Homoptera: Pseudococcidae). Ann. Entomol. Soc. Amer. 78(4):554-558.
Detailed study.

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Lists 7 coccid spp.

**1973.** Pests of sugarcane northeast Brazil. Min. Ind. Com., Inst. Acúcar & Alcool, Div. Admin., Serv. Document. 622 pp. (coccoids on p. 223-242). (In Portuguese).
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**Gullan, P. J. 1978.** Male insects and galls of the genus *Cylindrococcus* Maskell (Homoptera: Coccoidea). J. Austral. Entomol. Soc. 17(1):53-61.
Description of adult male & gall of *C. spiniferus*; affinities to *Apiomorpha* & *Opisthoscelis.*

**1979.** The wax-exuding, cuticular pores of *Apiomorpha* Rübsaamen (Homoptera: Coccoidea): a light microscopy and scanning electron microscopy study. Austral. Entomol. Mag. 6(1):3-9.
Description; discussion & comparison between appearance of pores of 6 *Apiomorpha* spp.

**1983.** Spiracular structure of adult females of *Apiomorpha* Rübsaamen (Hemiptera: Coccoidea: Eriococcidae). J. Austral. Entomol. Soc. 22(1):25-29.
Detailed study; compared spiracle types of 36 spp. in table.

**1984a.** A revision of the gall-forming coccoid genus *Apiomorpha* Rübsaamen (Homoptera: Eriococcidae: Apiomorphinae). J. Austral. Zool. Suppl. Ser. No. 97:203 pp.
Recognizes 38 spp.; description of adult females, gall of females & where available gall of males; 4 n. spp., 2 n. sspp.; keys to spp. based on adult females & galls of females; host & distribution; spp. divided into 14 species groups; different tables; n. syns.

**1984b.** A revision of the gall-forming coccoid genus *Cylindrococcus* Maskell (Homoptera: Eriococcidae). J. Austral. Zool. 32(5):677-690.
Redescription of gen., adult females & galls of *C. casuarinae* & *spiniferus*; n. syns.

**1984c.** Taxonomy and biology of Australian gall-forming Coccoidea. Proc. 10th Int. Symp. of Central European Entomofaunistics (SIEEC) (Budapest, Hungary, August 1983). p. 381-383.
Discusses 14 gen. in 4 fam.; table of gen. & host plants.

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Hosts & distribution in Calif.; climatic effect on population; natural enemies.

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**Gunn, B. H. 1977.** Artificial dispersal of the cochineal insect, *Dactylopius austrinus* De Lotto, in infestation of jointed cactus, *Opuntia aurantiaca* Lindley. Proc. 2nd Natl. Weed Conf. South Africa. p. 287-295.

Evaluated potential of method for improving effectiveness of cochineal insect against *O. aurantiaca*.

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**Guo, C. T.**, *see* Su, Z. A., Zhai, Q. H., Liang, Z. Q., & Guo, C. T.

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Description; biology; damage; control.

**Gura, N. A.**, *see* Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, E., Gura, N. A., & Knyazatova, V. J.

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**Habib, A., Salama, H. S., & Amin, A. H. 1969.** The biology of the plum scale, *Parlatoria oleae* (Colvée) (Coccoidea: Diaspididae). Bul. Soc. Entomol. Egypte 53:283-297.
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Study of *Ceroplastes floridensis*, *Aonidiella aurantii*, *Parlatoria oleae*, *Chrysomphalus ficus* & *Lepidosaphes beckii*.

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Tested resistance of 13 varieties of citrus.

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Host & distribution; seasonal peak.

**1972.** Reactions of the adult female of the soft scale *Kilifia acuminata* to some physical factors in laboratory experiments (Homoptera: Coccoidea: Coccidae). J. Zool. London 166(4):481-492.
Study of insect orientation toward these factors.

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**1960b.** Notes on scale insects (Coccoidea) of grape in Georgia. Akad. Nauk Gruzinskoi SSR Inst. Zashch. Rast. Trudy 13:46-62. (In Georgian, Russian summary). (Not seen).

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*Neotrionymus ibericus*, *Exaeretopus stipae* & *Luzulaspis agropyri* n. spp.; 4 other coccoids reported.

**1963a.** A new species of armored and some soft scales (Homoptera, Coccoidea) of the Georgian Fauna. Akad. Nauk Gruzinskoi SSR Inst. Zashch. Rast. Trudy 14:421-437. (In Russian).
*Chionaspis caucasioni* n. sp. & 3 other coccids reported.

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**1965.** Ecology of scale insect subtribe - Lepidosaphidini, Georgian Fauna. Akad. Nauk Gruzinskoi SSR Inst. Zashch. Rast. Trudy 17:4-19. (In Russian).
Discusses 11 spp. in 5 gen.

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*E. sericeum*, *nocium*, *transcaucasicum*, *ibericum* & *caraganae.*; hosts.

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Description of adult male, female, & first stage nymphs.

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Description of *Exaeretopus stipae*, *Luzulaspis agropyri*, *Eriopeltis araxis* & *Scythia stipae*; morphological characters at all stages given for first time for *E. araxis*

**1977.** Biology, morphology and tropical forms of some species of the tribe *Pulvinariini* (Homoptera, Coccoidea) in Georgia. Entomol. Obozr. 56(3):546-550. (In Russian). Entomol. Rev. 56(3):39-41. (In English).
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**1983.** The coccids (Homoptera, Coccoidea) of the subtropical zone of the Georgian SSR. Akad Nauk Gruzinskoi SSR "Metsniereba" Tbilisi. 296 pp. (In Russian).
Describes 65 gen. in 7 fam.; notes on 213 spp.; host & distribution; spp. grouped in 4 categories by morphological features.

**Hadzibejli, Z. K. & Gelovani, L. V. 1983.** The importance of intraspecific variability for the determination of scale insects. Fauna i Ecologiya Bespozv. Zhivontn. Gruzii. p. 178-195. (In Russian).
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Studies on pear trees near Alexandria; temperature, wind, light intensity & foliage density as main features.

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Duration of developmental stages; egg production; describe methods of artificial feeding.

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Hosts & distribution; seasonal incidence.

**Hagen, K. S.**, *see* Washburn, J. O., Frankie, G. W., Hagen, K. S., & Koehler, C. S.

**Hagen, K. S. & Franz, J. M. 1973.** A history of biological control. *In* "History of Entomology." Annu. Rev. Inc., Palo Alto, Calif. p. 433-476.
Mention 15 coccoid spp.

**Hagen, K. S. & Tassen, R. L. 1981.** Ecology and biological control of ice plant scales, *Pulvinariella mesembryanthemi* and *Pulvinaria delottoi* in California. Calif. Univ. Berkeley, State Dept. Trans. Sacramento, Fed. Highway Admin. 89 pp.
Detailed study.

**Haggis, M. J.**, *see* Popov, G. B., Wood, T. G., & Haggis, M. J.

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Hosts in Hawaii; 26 new host record; distribution; description of stages.

**1970.** Behavior, distribution, and population dynamics of cottony-cushion scale *Icerya purchasi*, in *Desmodium* fields in Hawaii. Ann. Entomol. Soc. Amer. 63(4):1040-1047.
Seasonal abundance; predators; parasites; hosts.

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Mealybugs observed on rice fields attacked by chinch bugs.

**Haley, M. J. & Baker, L. (eds.) 1982.** Integrated pest management for walnuts. Univ. Calif. Berkely Agric. Sci. Publ. 3270:96 pp.
Short description; seasonal development, damage, prevention, monitoring, & control for 7 coccoid spp.

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**Halmágyi, L. 1974.** On the scale insects of spruce trees (*Physokermes* spp.). Növényvédelem 10(10):454-458. (In Hungarian, English, German & Russian summaries).
*Physokermes piceae* & *hemicryphus*; morphology, systematics & biology; hosts; natural enemies; damage.

**Halperin, J.**, *see* Gerson, U., Halperin, J., Shanouni, Y., & Eyal, O.

**Halstead, A. J. 1982.** Foodplants of *Pulvinaria regalis* Canard (Hem. Coccidae) in England. Proc. & Trans. British Entomol. & Nat. Hist. Soc. 15(1/2):46.
Hosts; biology; injury level.

**Halteren, P. van 1970.** Notes on the biology of the scale insect *Aulacaspis mangiferae* Newst. (Diaspididae, Hemiptera) on mango. Ghana J. Agric. Sci. 3(2):83-85.
Bionomics.

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*R. floridanus* n. sp., *Morrisonella spinipes*, & *Ripersiella simplex* assigned to *Rhizoecus*; first report for *R. simplex* in U.S.; key to 8 Florida spp.; hosts & distribution.

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*R. deboerae*, *plantaginis* & *puhiensis* n. spp.; *R. preprocerus* & *rumicis* redescribed; gen. *Ripersiella* synonymized with *Rhizoecus*; key; n. comb.

**1976.** A revision of the new world mealybugs of the genus *Rhizoecus* (Homoptera: Pseudococcidae). U.S. Dept. Agric. Tech. Bul. 1522:88 pp.
Detailed study of 52 spp.; 13 n. spp.; n. combs.; key; hosts & distribution; economic importance; distinguishing characters.

**1977a.** A review of *Pseudorhizoecus* Green, with a description of a related new genus (Homoptera: Pseudococcidae). J. Wash. Acad. Sci. 67(1):38-41.
*Capitisetella* n. gen.; *C. migrans* n. comb.

**1977b.** Notes on the species of *Neorhizoecus* Hambleton, a synonym of *Rhizoecus* Künckel D'Herculais (Homoptera: Pseudococcidae). Proc. Entomol. Soc. Wash. 79(3):367-376.
Notes & diagnostic characters of 5 spp. of *Rhizoecus*; n. combs.; hosts & distribution.

**1978.** Three new Neotropical *Rhizoecus* (Homoptera: Pseudococcidae). Proc. Entomol. Soc. Wash. 80(2):156-163.
*R. divaricatus*, *olmuensis* & *variabilis* n. spp.; revised key; hosts & distribution; first record in Nicaragua.

**1979a.** New information on the *Rhizoecus* of Florida including descriptions of four new species. Florida Entomol. 62(2):140-149.

*R. keysensis*, *ladoniae*, *pseudocacticans* & *spicatus* n. spp.; *R. palestineae* redescribed; revised key to Florida spp.; first records.

**1979b.** *Rhizoecus* mealybugs of Texas, with description of a new species (Homoptera: Pseudococcidae). Proc. Entomol. Soc. Wash. 81(4):650-652.
*R. brevirostris* n. sp.; notes on 6 other *Rhizoecus* spp.; first records for Texas & U.S.

**1979c.** The status of *Rhizoecus amorphophalli* Betram, a little known oriental mealybug (Homoptera: Pseudococcidae). J. Wash. Acad. Sci. 69(2):62-64.
Redescription of adult female; hosts & distribution; *R. advenus* synonymized with *R. amorphophalli*.

**Hamdy, M. K.**, *see* Salama, H. S., & Hamdy, M. K.

**Hammad, S. M.**, *see* El-Minshawy, A. M., El-Sawaf, S. K., Hammad, S. M., & Donia, A.

**Hamon, A. B. 1978.** *Opuntiaspis carinata* (Cockerell) (Homoptera: Coccoidea: Diaspididae). Florida Dept. Agric. & Consumer Serv. Div. Plant Industry Entomol. Cir. No. 196:1 p.
Short description; first record in U.S.; economic importance; hosts & distribution; control.

**1980a.** *Opuntiaspis philococcus* (Cockerell) (Homoptera: Coccoidea: Diaspididae). Florida Dept. Agric. & Consumer Serv. Div. Plant Industry Entomol. Cir. No. 214:2 pp.
Short description; first recorded in Florida; survey & detection; hosts & distribution; economic importance.

**1980b.** *Rhizoecus mexicanus* (Hambleton) (Homoptera: Pseudococcidae). *In* "33rd Biennial Report July 1, 1978 - June 30, 1980." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 212 pp. (p. 37-38).
New state record on *Mammillaria beucocentra* & *Zygocactus teuncatus* at Seffner & Middleburg, Fla.

**1980c.** *Rhizoecus hibisci* Kawai & Takagi (Homoptera: Pseudococcidae). *In* "33rd Biennial Report July 1, 1978 - June 30, 1980." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 212 pp. (p. 38).
New Western Hemisphere record on *Cryptanthus* sp. at Gotha, Fla.

**1980d.** *Cerococcus kalmiae* Ferris (Homoptera: Cerococcidae). *In* "33rd Biennial Report July 1, 1978 - June 30, 1980." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 212 pp. (p. 38).
New state record on *Myrica cerifera* at Port St. Lucie, Fla.

**1980e.** *Pseudaonidia trilobitiformis* (Green) (Homoptera: Diaspididae). *In* "33rd Biennial Report July 1, 1978 - June 30, 1980." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 212 pp. (p. 38-39).
New Continental U.S. record on *Ixora* hedge at Miami Springs, Fla.; other hosts & distribution.

**1980f.** *Dysmicoccus neobrevipes* Beardsley (Homoptera: Pseudococcidae). *In* "33rd Biennial Report July 1, 1978 - June 30, 1980." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 212 pp. (p. 39).
New Continental U.S. record on *Furcraea* sp. in Miami, Fla.; eradicated from original site with insecticides; damage.

**1980g.** *Kermes kosztarabi* Baer (Homoptera: Kermesidae). *In* "33rd Biennial Report July 1, 1978 - June 30, 1980." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 212 pp. (p. 39-40).

Host; damage; taxonomic note; distribution.

**1981.** Plumose scale, *Morganella longispina* (Morgan) (Homoptera: Coccoidea: Diaspididae). Florida Dept. Agric. & Consumer Serv. Div. Plant Industry Entomol. Cir. No. 226:2 pp.
Short description; survey & detection; hosts & distribution; economic importance; control.

**1982.** *Rhizoecus arabicus* Hambleton, a root mealybug in Florida (Homoptera: Coccoidea: Pseudococcidae). Florida Dept. Agric. & Consumer Serv. Div. Plant Industry Entomol. Cir. No. 238:2 pp.
First record in North America; description; host & distribution; survey & detection; economic importance; control.

**1983a.** *Morganella longispina* (Morgan) (Homoptera: Coccoidea: Diaspididae). *In* "34th Biennial Report July 1, 1980 - June 30, 1982." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 253 pp. (p. 45).
Hosts & distribution.

**1983b.** *Philephedra* sp. (Homoptera: Coccoidea: Coccidae). *In* "34th Biennial Report July 1, 1980 - June 30, 1982." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 253 pp. (p. 46).
Host & distribution.

**1983c.** *Chionaspis kosztarabi* Takagi (Homoptera: Coccoidea: Diaspididae). *In* "34th Biennial Report July 1, 1980 - June 30, 1982." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 253 pp. (p. 46).
New record for Florida; host & distribution; economic importance.

**1983d.** *Rhizoecus arabicus* Hambleton (Homoptera: Coccoidea: Pseudococcidae). *In* "34th Biennial Report July 1, 1980 - June 30, 1982." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 253 pp. (p. 47).
New North American record; host & distribution; economic importance.

**1984.** A cactus mealybug, *Hypogeococcus festerianus* (Lizer Y Trelles), in Florida (Homoptera: Coccoidea: Pseudococcidae). Florida Dept. Agric. & Consumer Serv. Div. Plant Industry Entomol. Cir. No. 263:2 pp.
Description; host & distribution; economic importance; survey & detection; first record for Florida & U.S.; probable biological control agent of cacti.

**1985a.** *Oceanaspidiotus araucariae* (Adachi and Fullaway) (Homoptera: Coccoidea: Diaspididae). Florida Dept. Agric. & Consumer Serv. Div. Plant Industry Entomol. Cir. No. 276:2 pp.
Description; survey & detection; host & distribution; economic importance; control; first record for Florida.

**1985b.** *Rhizoecus gracilis* (McKenzie) (Homoptera: Coccoidea: Pseudococcidae). *In* "35th Biennial Report July 1, 1982 - June 30, 1984." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry. 186 pp. (p. 33).
Host & distribution.

*See* Crocker, R. L., Simpson, B. J., & Hamon, A. B.

**Hamon, A. B. & Kosztarab, M. 1979.** Morphology and systematics of the first instars of the genus *Cerococcus* (Homoptera: Coccoidea: Cerococcidae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 146:122 pp.
Taxonomy & distribution; key to gen. of Cerococcidae & spp. of *Cerococcus*; description of 31 spp.; notes on 4 Cerococcidae lectotypes.

**Hamon, A. B., Lambdin, P. L., & Kosztarab, M. 1975.** Eggs and wax secretion of *Kermes kingi*. Ann. Entomol. Soc. Amer. 68(6):1077-1078.
Location of eggs & wax filaments; measurements & average no. of eggs.

**1976.** Life history and morphology of *Kermes kingi* in Virginia (Homoptera: Coccoidea: Kermesidae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 111:1-31.
Description of first, second, third instars, adult female, second instar male, prepupa & pupa; hosts; natural enemies; economic importance.

**Hamon, A. B. & Williams, M. L. 1984.** The soft scale insects of Florida (Homoptera: Coccoidea: Coccidae). *In* "Arthropods of Florida and Neighboring Land Areas." Florida Dept. Agric. & Consumer Serv. Div. Plant Industry 11:194 pp.
Classification of Coccidae; key to gen. & spp.; description, biology, host & distribution, economic importance & natural enemies of 49 spp. in 17 gen.; indices to hosts; common & scientific names.

**Hanford, L. 1974.** The African scale insect genus *Udinia* De Lotto (Coccidae). Trans. Roy. Entomol. Soc. London 126(1):1-40.
*Udinia* redefined; 5 n. spp.; n. combs.; n. syns.; description; key; hosts & distribution.

**Haque, M. S. 1975a.** Non-resinous secretion of the lac insect *Kerria lacca* (Homoptera, Coccoidea). J. Zool. London 176(1):1-25.
Found 20 non-resinous secretions, 14 of which present in both males & females.

**1975b.** Cells secreting non-resinous substances in the female lac insect *Kerria lacca* (Homoptera, Coccoidea). J. Zool. London 176(1):27-38.
Histology of non-resinous substances.

**1975c.** Total glycogen during development of *Kerria lacca* (Kerr) (Homoptera: Coccoidea). Canad. J. Zool. 53(3):290-292.
Glycogen present in males & females; reached maximum in early pupal stage of males then declines sharply; gradually increased to adult stage in females.

**Harayana, Y. & Nagami, Y. 1975.** Ecology and control of *Comstockiaspis macroporana*, the insect pest of chestnut trees. Shokubutsu Boeki 29(1):2-6. (In Japanese).
Natural enemies.

**Hare, J. D.**, *see* McClure, M. S., & Hare, J. D.

**Hariri, G. 1972a.** The economic insects of Syria and neighbouring countries. Univ. Aleppo, Aleppo, Syria. 465 pp. (In Arabic, English summary).
Discusses 21 coccoid spp.; natural enemies (p. 127-140).

**1972b.** The economic insects. Laboratory and field part. Univ. Aleppo, Aleppo, Syria. 138 pp. (In Arabic).
Discusses 10 coccoid spp. (p. 45-49).

**Harlan, D. P., Hart, W. G., Ingle, S. J., & Meyerdirk, D. E. 1977.** Citrus mealybug: populations in the Lower Rio Grande Valley of Texas. J. Rio Grande Valley Hort. Soc. 31:33-36.
*Planococcus citri*; describe different methods to investigate infestation.

**Harpaz, I.**, *see* Ben-Dov, Y., & Harpaz, I.; Rosen, D., Harpaz, I., & Samish, M.

**Harris, K. F. 1983.** Sternorrhynchous vectors of plant viruses: Virus vector interactions and transmission mechanisms. Advances in Virus Res. 28:113-140.
Pseudococcoidae discussed as vectors of plant viruses.

**Harris, W. F. & Robison, W. G., Jr. 1973.** Dislocation in microtubular bundles within spermatozoa of the coccid insect *Neosteingelia texana* and evidence for slip. Nature 246(5434):513-515.
Compared with *Pseudococcus obscurus* sperm.

**Harrison, K. A. 1972.** A rare *Septobasidium* on scale insects on *Cornus* found in Michigan. Michigan Botanist 11:74-77.
Notes on relative of *Septobasidium carestianum* with colony of *Chionaspis corni*; host: *Cornus stolonifera*.

**Hart, W. G.**, *see* Dean, H. A., & Hart, W. G.; Dean, H. A., Hart, W. G., & Ingle, S.; Gausman, H. W., & Hart, W. G.; Harlan, D. P., Hart, W. G., Ingle, S. J., & Meyerdirk, D. E.; Meyerdirk, D. E., Chandler, L. D., Summy, K. R., & Hart, W. G.

**Hart, W. G., Ingle, S. J., & Davis, M. R. 1977.** Remote sensing of insect populations attacking citrus. Proc. Int. Soc. Citriculture Symp. (Orlando, Fla. 1977) 2:485-487.
*Coccus hesperidum*, *Planococcus citri*, & *Ceroplastes cirripediformis*; used color infrared photography.

**Hartley, A. H., Walter, G. H., & Morrison, J. F. 1983.** The ultrastructure of wax-secreting glands of the cochineal insect *Dactylopius opuntiae* (Dactylopiidae: Coccoidea: Homoptera). Proc. Electron Microscopy Soc. South. Africa 13:97-98.
Preliminary study of wax strands & wax secreting glands to compare *D. opuntiae* with *D. austrinus*; wax filaments secreted by setae illustrated & described.

**Hasan, S. 1978.** Biology of the root coccid, *Neomargarodes chondrillae* (Hem.: Margarodidae), living on *Chondrilla juncea* and related plants. Entomophaga 23(1):25-30.
Taxonomy; hosts & distribution; first record for some hosts.

**Hashimoto, A. 1982.** Composition of the wax secreted by a scale insect, *Drosicha corpulenta* Kuwana (Homoptera: Margarodidae). Appl. Entomol. Zool. 17(4):453-459.
Wax comprised of 18% hydrocarbon & 82% wax esters; used scanning electron microscope.

**Hashimoto, A. & Hirotani, A. 1970.** The host plants of *Ceroplastes pseudoceriferus* Green in Sakai-shi. Japanese J. Appl. Entomol. Zool. 14(4):214-216. (In Japanese, English summary).
List 118 host plants.

**Hashimoto, A., Ichimoto, I., & Kitaoka, S. 1980.** Occurrence of diglycerol tetradodecanoate tetradecanedioate in scale insect, *Phenacoccus pergandei* Cockerell (Hemiptera: Pseudococcidae). Appl. Entomol. Zool. 15(1):66-72.
Isolated new bimolecular type dicarboxilic acid; host.

**Hashimoto, A. & Kitaoka, S. 1971.** Scanning electron microscopic observation of the waxy substances secreted by some scale insects. Japanese J. Appl. Entomol. Zool. 15(2):76-86. (In Japanese, English summary).
Studied significance in taxonomy of shape & fine structure of waxy substances secreted by various spp.; description & photos.

**1974.** Optically active acetotriglycerides from the lipids of a scale insect, *Icerya purchasi* Maskell (Hemiptera: Margarodidae). Japanese J. Appl. Entomol. Zool. 18(3):121-125. (In Japanese, English summary).

Found in acetotriglycerides besides acetic, long-chain fatty acids, also stearic, oleic & linoleic acids in the 2-position.

**1979.** Incorporation of uniformly labeled carbon-14 acetate into the lipids of scale insect *Icerya purchasi* Maskell (Hemiptera: Margarodidae). Japanese J. Appl. Entomol. Zool. 23(4):230-234. (In Japanese, English summary).
Detailed study.

**1982.** Composition of the wax secreted by a scale insect, *Drosicha corpulenta* Kuwana (Homoptera: Margarodidae). Appl. Entomol. Zool. 17(4):453-459.
Used scanning electron microscope; insect body has numerous waxy threads mostly in coil form; composition of wax lipids; no lipids previously examined on spp. of *Drosicha*.

**Hashimoto, A. & Ueda, M. 1983.** Coil form wax on the egg surface of *Drosicha corpulenta* Kuwana (Homoptera: Margarodidae). Appl. Entomol. Zool. 20:92-93.
Observed wax threads & wax producing pores on ventral surface under scanning electron microscope.

**Hasumi, S.**, *see* Kashino, E., Endo, Y., & Hasumi, S.; Kashino, E., Nobata, A., Endo, Y., & Hasumi, S.

**Hata, Y.**, *see* Naya, Y., Yoshihara, K., Iwashita, T., Komura, H., Nakanishi, K., & Hata, Y.

**Hattman, S.**, *see* Scarbrough, K., Hattman, S., & Nur, U.

**Hawash, M.**, *see* Salama, H. S., Amin, A. H., & Hawash, M.

**Hawkes, R. B.**, *see* Erick, K. E., & Hawkes, R. B.

**Hayakawa, J.**, *see* Yamada, S., Noda, N., Hayakawa, J., Mikami, E., & Uno, K.

**Hayes, J. C.**, *see* Dale, P. S., Hayes, J. C., & Johannesson, J.

**Hazan, A.**, *see* Gerson, U., & Hazan, A.

**Healy, A. & Smithers, C. 1971.** Australian insects in colour. Publ. Charles E. Tuttle Co., Rutland, Vermont & Tokyo, Japan. 112 pp. (coccoids on p. 40-42).
Characteristics & biology of 16 orders & 40 fam.; color photo of Australian spp.; 4 coccoid spp. mentioned.

**Heath, R. R., Doolittle, R. E., Sonnet, P. E., & Tumlinson, J. H. 1980.** Sex pheromone of the white peach scale: highly stereoselective synthesis of the stereoisomers of pentagonol propionate. J. Organic Chem. 45(14): 2910-2912.
*Pseudaulacaspis pentagona*; detailed study.

**Heath, R. R., McLaughlin, J. R., Tumlinson, J. H., Ashley, T. R., & Doolittle, R. E. 1979.** Identification of the white peach scale sex pheromone. An illustration of microtechniques. J. Chem. Ecol. 5(6):941-953.
*Pseudaulacaspis pentagona*; pheromone collection & bioessay; isolation; synthesis.

**Hedden, R. L.**, *see* McClure, M. S., Dahlsten, D. L., DeBarr, G. L., & Hedden, R. L.

**Hegazi, E. M.**, *see* Moursi, K. S., & Hegazi, E. M.

**Heidel, W. 1975.** Zur wirtschaftlichen Bedeutung, Lebensweise, Populationsdynamik und Bekämpfung von Schildläusen (Coccina) in Zitrusanlagen der Republik Kuba. Thesis, Karl Marx Univ., Leipzig. 199 pp. (Not seen).

**1980.** Zum Auftreten, zur Lebensweise und Bekämpfung der Schildläuse im Zitrusanbau Kubas. *In* "Wirtschaftlich wichtige Schädlinge, Krankheiten und Unkräuter sowie ihre Bekämpfung im Zitrusanbau Kubas," edited by Fankhänel, H. Inst. Trop. Landwirtschaft, Karl Marx Univ., Leipzig. p. 56-139.
List, key, distribution & abundance of scale insects on citrus in Cuba; biology & ecology of 10 spp., especially *Selenaspidus articulatus*, *Unaspis citri*, *Parlatoria zizyphi* & *Lepidosaphes beckii*.

**Heidel, W. & Köhler, G. 1979.** *Toumeyella cubensis* sp. n. (Hemiptera: Coccinea-Coccidae) - eine Schildlaus in kubanischen Zitruskulturen. Zool. Anz. 202(1/2):132-144. (English summary).
Description of first & second stage, adult male & female; hosts, phenology & distribution in Cuba.

**Heie, O. E. 1981.** Morphology and phylogeny of some Mesozoic aphids (Insecta, Hemiptera). Entomol. Scand. Suppl. 15:401-415.
*Triassoaphis*, *Crosaphis*; *Canadaphidoidea* n. status; author states that *Crosaphis* is a coccoid not an aphid (*C. anomala* Evans, 1971).

**Heikkenen, H. J.**, *see* Knight, F. B., & Heikkenen, H. J.

**Helson, G. A. H. 1952.** Insect pests affecting horticultural crops and plants in New Zealand. Dept. Agric. Div. Hort. Wellington, New Zealand. 32 pp.
Listing of pest coccoids, also their hosts.

**Henrick, C. A.**, *see* Roelofs, W. L., Gieselmann, M. J., Cardé, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J.

**Henrick, C. A., Carney, R. L., & Anderson, R. J. 1982.** Some aspects of the synthesis of insect sex pheromones. Amer. Chem. Soc. Symp. Series 190:27-60.
*Aonidiella aurantii*, *Quadraspidiotus perniciosus*; discuss some practical aspects of larger scale synthesis of insect sex pheromones with emphasis on type of compounds that are of potential use in agriculture.

**Herren, H. R. & Bennett, F. D. 1984.** Cassava pests, their spread and control. *In* "Advancing Agricultural Production in Africa," edited by Hawksworth, D. L. Proc. Cab's 1st Sci. Conf. (Arusha, Tanzania, February 1984), Publ. Farnham Roy., Slough, U.K.; Commonwealth Agric. Bureaux, p. 110-114.
*Phenacoccus manihoti*; review of origin; damage & distribution in Africa; control.

**Herring, J. L. 1980.** A review of the cactus bugs of the genus *Chelinides* with the description of a new species (Hemiptera: Coreidae). Proc. Entomol. Soc. Wash. 82(2):237-251.
*Dactylopius opuntiae*.

**Herting, B. & Simmonds, F. J. 1972.** A catalogue of parasites and predators of terrestrial arthropods. Farnham Roy., U.K.; CAB 210 pp.
List 452 coccoid spp. with natural enemies; several indices.

**Hewitt, G. M.**, *see* Blackman, R. L., Hewitt, G. M., & Ashburner, M.

**Hilburn, D. J. & Weidhaas, J. A., Jr. 1984.** Scale insects. Va. Polytech. Inst. & State Univ. Insect Identification Lab. Factsheet No. 13:4 pp.
Mention 33 scale insects; description; life cycle; hosts.

**Hill, M. G. 1980.** Wind dispersal of the coccid *Icerya seychellarum* (Margarodidae: Homoptera) on Aldabra Atoll. J. Animal Ecol. 49(3):939-957.
Multiple regression of daily dispersal; aerial density & dispersal; sticky impact traps; crawler survival; colonization.

*See* Newbery, D. M., Hill, M. G., & Waterman, P. G.

**Hill, M. G. & Blackmore, P. J. M. 1980.** Interactions between ants and the coccid *Icerya seychellarum* on Aldabra Atoll. Oecologia (Berl.) 45(3):360-365.
Ant: *Camponotus maculatus*; selection of coccoid; reduction of predator; biological control.

**Hill, M. G. & Newbery, D. M. 1980.** The distribution and abundance of the coccid *Icerya seychellarum* (Westw.) on Aldabra Atoll. Ecol. Entomol. 5(2):115-122.
Hosts; infestation; possible cause of decline of infestation.

**1982.** An analysis of the origins and affinities of the coccid Fauna (Coccoidea: Homoptera) of Western Indian Ocean islands, with special reference to Aldabra Atoll. J. Biogeogr. 9(3):223-229.
Ecology; community structure; diversity of sp.; host & distribution; plant specificity.

**Hill, W. B.**, *see* Burts, E. C., Hill, W. B., & Retan, A. H.

**Hill, W. B. & Burts, E. C. 1982.** Grape mealybug (Homoptera: Pseudococcidae) on pear in North-Central Washington. J. Econ. Entomol. 75(3):501-503.
*Pseudococcus maritimus*; laboratory & field observations; life cycle; chemical control; natural enemies.

**Hirata, K.**, *see* Ogiwara, T., Nozawa, T., Hirata, K., Amakawa, E., Oishi, M., & Seki, H.

**Hirosaki, S.**, *see* Korenaga, R., Hirosaki, S., & Shiyomi, M.; Korenaga, R., Shiyomi, M., Hirosaki, S., Nakamura, K., Ito, S., Kimura, Y., & Uemura, M.; Shiyomi, M., & Hirosaki, S.

**Hirotani, A.**, *see* Hashimoto, A., & Hirotani, A.

**Hodder, D. J.**, *see* Cameron, D. W., Feutrill, G. I., Griffiths, P. G., & Hodder, D. J.

**Hodgson, C. J. 1970a.** Status of *Pulvinaria vayssierei* Castel-Branco (Homoptera: Coccoidea). J. Entomol. Soc. South. Africa 33:279-283.
Taxonomic notes; n. comb.; n. syn.; description of adult female & first instar.

**1970b.** A new species of *Coccus* (Homoptera: Coccoidea) from Malawi. Entomol. Monthly Mag. 106:35-37.
*Coccus nyika*.

**1971.** The species assigned to the genus *Ceroplastodes* (Homoptera: Coccoidea) in the Ethiopian Region. J. Entomol., Ser.B Taxonomy 40(1):49-61.
Redescribes adult female for 5 spp.; key to spp.; redescribes nymph of *C. bituberculatus*.

**1973a.** A new name to replace *Mashona* Hodgson, 1967 (Hem., Coccoidea). Entomol. Monthly Mag. 109:63.
*Eumashona* replaced *Mashona* Hodgson, 1967, which was preoccupied by *Mashona* Pate, 1944.

**1973b.** A revision of the *Lecanodiaspis* Targioni-Tozzetti (Homoptera: Coccoidea) of the Ethiopian Region. Bul. Bul. British Mus. (Nat. Hist.) Entomol. 27:413-452.
Redescribes 10 spp. of *Lecanodiaspis*; *L. dorsospinosa*, *erica* & *zygophylli* n. spp.; *L. mimosae* var. *brachystegiae* Hall raised to specific rank; key & interrelationships to the spp. given; hosts & distribution; covered adult females from Africa south of Sahara; Malagasy Subregion excluded.

**Hoelsher, C. E. 1967.** Wind dispersal of brown soft scale crawlers, *Coccus hesperidum* (Homoptera: Coccidae) and Texas citrus mites, *Eutetranychus banksi* (Acarina: Tetranychidae) from Texas citrus. Ann. Entomol. Soc. Amer. 60(3): 673-678.
Transported by wind a minimum of 179 feet.

**Hoffmann, R. W. & Kennett, C. E. 1985.** Tracking CRS (California red scale) development by degree-days. Calif. Agric. 39(9/10):19-20.
*Aonidiella aurantii*; field test; phenology; duration of developmental stages & total developmental time; accumulated degree-days between peaks in relative densities.

**Hogberg, H. E.**, *see* Baeckström, P., Bjorkling, F., Hogberg, H. E., & Norin, T.

**Hogue, C. L. & Miller, S. E. 1981.** Entomofauna of Cocos Island, Costa Rica. Atoll Res. Bul. (Smithsonian Institution, Washington, D.C.) No. 250:29+4 pp.
*Coccus hesperidum*; first record.

**Holm, E. & Wessels, D. 1974.** Catalogue of types in the National Collection of Insects (NCI), Pretoria. Repub. South Africa Dept. Agric. Tech. Serv. Tech. Comm. No. 122:32 pp.
List 257 coccoid spp. in 8 fam.

**Hong, G. J.**, *see* Ou, B. R., Hong, G. J., Yang, X. C., & Wang, Y. D.

**Horn, K. F.**, *see* Baker, J. R., & Horn, K. F.

**Horning, D. S., Jr. & Barr. W. F. 1970.** Insects of Craters of the Moon National Monument Idaho. Idaho Univ. Coll. Agric. Misc. Ser. 8:118 pp.
First comprehensive entomological investigation; 15 coccoid spp. listed in 4 fam.; hosts.

**Hornok, L. & Kozár, F. 1984.** Fungi associated with a scale insect, *Quadraspidiotus ostreaeformis* (Curtis, 1843) (Homoptera, Coccoidea: Diaspididae). Acta Phytopathol. Acad. Sci. Hungaricae 19(1/2):9-11.
*Fusarium larvarum* n. record for Central Europe & Hungary; mention 2 other fungi.

**Horton, D. L.**, *see* Ellis, H. C., Horton, D. L., Howell, J. O., & Tippins, H. H.

**Horváth, J.**, *see* Kozár, F., Tzalev, M., Viktorin, R. A., & Horváth, J.

**Hosking, J. R. (Hosking, J.) 1984.** The effect of temperature on the population growth potential of *Dactylopius austrinus* De Lotto (Homoptera: Dactylopiidae), on *Opuntia aurantiaca* Lindley. J. Austral. Entomol. Soc. 23:133-139.
Development, reproduction & population growth statistics described for constant temperatures; relevance to control of *O. aurantiaca* & breeding of *D. austrinus* for field release discussed.

*See* Auld, B. A., Hosking, J., & McFadyen, R. E.

**Hosking, J. R. & Deighton, P. J. 1979.** The distribution and control of *Opuntia aurantica* in New South Wales. Proc. 7th Asian-Pacific Weed Sci. Soc. Conf. (Sydney, Australia, 1979). 487 pp. (p. 195-200).

*Dactylopius austrinus* & *ceylonicus* & *Diplacaspis echinocacti*; *O. aurantica* is a major pest in New South Wales & a minor pest in Queensland.

**Hosny, M. M., Amin, A. H., & El-Saadany, G. B. 1972.** The damage threshold of the red scale, *Aonidiella aurantii* (Maskell) infesting mandarin trees in Egypt. Ztschrt. f. Angew. Entomol. 71(3):286-296. (German summary).

Threshhold lies at 0.24 live females per leaf in June.

**Houk, E. J. & Griffiths, G. W. 1980.** Intracellular symbiotes of the Homoptera. Annu. Rev. Entomol. 25:161:187.

*Icerya purchasi*, *Pseudococcus citri* & *maritimus*; symbiote morphology & histochemistry shown in table.

**Houston, D. R. 1975.** Beech bark disease: The aftermath forests are structured for a new outbreak. J. Forestry 73(10):660-663.

*Cryptococcus fagi*, *Xylococculus betulae*.

**1982.** A technique to artificially infest beech bark with the beech scale, *Cryptococcus fagisuga* (Lindinger). Northeastern Forest Expt. Sta. (Broomall, Pa.) Report FSRP-NE-507, NEFES/83-18:12 pp.

Describes technique using covers of polyurethane foam to initiate or enhance development of local infestation of beech scale.

**Houston, D. R., Parker, E. J., & Lonsdale, D. 1979.** Beech bark disease patterns of spread and development of the initiating agent *Cryptococcus fagisuga*. Canad. J. Forest Res. 9(3):336-344.

Detailed study; positive & negative association of *C. fagisuga*; dispersal; host.

**Hovasse, R. 1930.** *Marchalina hellenica* (Gennadius). Bul. Biol. France & Belgique 64:389-449. (Not seen).

**Howard, F. W.**, *see* Miller, D. R., & Howard, F. W.

**Howard, F. W. & Oliver, A. D. 1985.** Armored scale insects (Homoptera: Diaspididae) of Louisiana. Louisiana Agric. Expt. Sta. Bul. 767:125 pp.

Describe and illustrate 85 spp.; keys to gen. & spp.; host index.

**Howcroft, N. H. S.**, *see* Merrifield, L. E., & Howcroft, N. H. S.

**Howell, J. O. 1972.** A new species of *Aclerda* from Spanish moss in Georgia (Homoptera: Coccoidea: Aclerdidae). Ann. Entomol. Soc. Amer. 65:1261-1264.

*Aclerda tillandsiae*; revised key; affinities; it usually attacks moss behind leaf sheath.

**1973.** The immature stages of *Aclerda tillandsiae* (Homoptera: Coccoidea: Aclerdidae). Ann. Entomol. Soc. Amer. 66:1335-1342.

Three immature female stages & second stage male described & illustrated; McConnell's key (1953) modified to separate first stage nymph from other *Aclerda* spp.

**1974.** A new species of *Haliaspis* from Florida on *Spartina spartinae* (Homoptera: Coccoidea: Diaspididae). Ann. Entomol. Soc. Amer. 67(1):40-42.

*Haliaspis peninsularis*; affinities; revised key to spp. of *Haliaspis*.

**1975a.** *Newsteadia trisegmentalis* (Homoptera: Coccoidea: Ortheziidae): a new species of scale insect from Georgia. Ann. Entomol. Soc. Amer. 68(1):163-166.
Description & illustration; revised key to distinguish it from related spp.

**1975b.** Descriptions of some immature stages in two *Diaspis* species (Homoptera: Coccoidea: Diaspididae). Ann. Entomol. Soc. Amer. 68(3):409-416.
*D. echinocacti* & *bromeliae*; first & second stage male; first stage female; hosts & distribution; taxonomic notes.

**1976.** The adult male of *Aclerda tillandsiae*: Morphology and systematic significance. Ann. Entomol. Soc. Amer. 69(5):885-888.
Gives relationships for family Aclerdidae.

**1977.** Description of the first instars of the North American species in the genus *Fiorinia* (Homoptera: Coccoidea: Diaspididae). Ann. Entomol. Soc. Amer. 70(6):829-836.
Description of both sexes & illustrations of females of 5 spp.; key to spp.; hosts & distribution.

**1978a.** Three new species of armored scales from Mexico and Puerto Rico. Ann. Entomol. Soc. Amer. 71(3):401-407.
*Haliaspis arecibo*, *milleri* & *nakaharai*; description; hosts & distribution; key to spp.

**1978b.** Mealybugs and armored scale insects of the eastern United States. Proc. 23rd Southern Forest Insect Work Conf. p. 52-53. (Not seen).

**1979.** The adult male of *Comstockiella sabalis*: morphology and systematic significance. Ann. Entomol. Soc. Amer. 72(4):556-558.
Description; affinities with fam. Phoenicococcidae especially gen. *Colobopyga*; brief comparison of males.

**1980.** The value of second stage males in armored scale insects (Diaspididae) phyletics. Israel J. Entomol. 14:87-96.
Sexual dimorphism in second instar for major armored scale tribes; characteristics of second instar males used with consistent characteristics in first instars & other life stages can become important part of phylogenetic study.

**1981a.** Utilization of first instars in scale insect systematics. Va. Polytech. Inst. & State Univ. Dept. Entomol. Res. Rep. 82.1 (Occasional Papers):23-27.
First & second instar males exhibit differences not shown in adult females; 9 coccoid spp. mentioned.

**1981b.** Descriptions of first instars in the genera *Quernaspis* and *Neoquernaspis*. Ann. Entomol. Soc. Amer. 74(6):616-622.
Key to separate gen.; key to spp. for each gen.; *Quernaspis insularis*, *quercus* & *quercicola*; *Neoquernaspis nepalensis* & *chiulungensis*.

**1984.** Review of recent studies on the utilization of the immatures in the classification and phylogeny of scale insects. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, August 1983). p. 328-330.
Mentions 4 coccoid spp. to emphasize use of immature stages as basis for description.

*See* Beshear, R. J., Tippins, H. H., & Howell, J. O.; Brewer, B. S., & Howell, J. O.; Ellis, H. C., Horton, D. L., Howell, J. O., & Tippins, H. H.; Ellis, H. C., & Howell, J. O.; Kosztarab, M., & Howell, J. O.; Koteja, J., & Howell, J. O.; Lambdin, P. L., Howell, J. O., & Kosztarab, M.; Takagi, S., & Howell, J. O.; Tippins, H. H., & Howell, J. O.; Tippins, H. H., Howell, J. O., & Beshear, R. J.

**Howell, J. O. & Beshear, R. J. 1975.** *Lapazia obscurus*: a new armored scale insect from Texas (Homoptera: Coccoidea: Diaspididae). Ann. Entomol. Soc. Amer. 68(2):265-268.
Description; host & distribution; key to *Lapazia*; characters to distinguish from *L. obtecta*.

**1981.** An illustrated redescription of *Icerya purchasi*. J. Georgia Entomol. Soc. 16(4):441-444.
Adult hermaphroditic form; hosts; separated from *I. riley*.

**Howell, J. O. & Kosztarab, M. 1972.** Morphology and systematics of the adult females of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 70:248 pp.
Discuss 52 spp., 11 of which are n. spp.; genus divided into 4 species groups; description; key; affinities; hosts & distribution; maps.

**1973.** *Pterococcus*, a new genus of scale insects from Malaya (Homoptera: Coccoidea: Lecanodiaspididae). Ann. Entomol. Soc. Amer. 66:1358-1359.
Included *Lecanodiaspis duriana* in this monotypic genus.

**Howell, J. O., Lambdin, P. L, & Kosztarab, M. 1973.** Morphology and systematics of three species in the Eucalypti group of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 85:31-51.
*Lecanodiaspis dealbatae* & *esperancei* n. spp. described & illustrated; *Prosopophora pasaniae* redescribed & transferred to *Lecanodiaspis*; revised key to Eucalypti group given; hosts & distribution; affinities.

**Howell, J. O. & Miller, D. R. 1976.** A taxonomic study of the mealybug genus *Stemmatomerinx* (Homoptera: Coccoidea: Pseudococcidae). Ann. Entomol. Soc. Amer. 69(2):345-361.
Discuss 5 spp. including 4 n. spp.; description of adult females, second & third instar females of 2 spp., second instar male of 1 sp.; key to spp.; hosts & distribution.

**Howell, J. O. & Takagi, S. 1981a.** *Neoquernaspis*: new genus of armored scales from East Asia. Ann. Entomol. Soc. Amer. 74(5):487-488.
New gen. proposed for East Asian spp. formerly in *Quernaspis*; morphological distinctions; zoogeography.

**1981b.** New scale insect genus from East Asia. Bioscience 31(9):676.
The authors are referring to the article above in which they described *Neoquernaspis*, although they never gave the name here, to avoid creating a nomen nudum.

**Howell, J. O. & Tippins, H. H. 1973.** Immature stages of *Kuwanaspis howardi* (Homoptera: Diaspididae). J. Georgia Entomol. Soc. 8(4):241-244.
Second instar males possess a type of duct previously reported only in spp. of *Fiorinia* & *Pseudaulacaspis*; host & distribution.

**1975a.** A new species of *Clavaspis* (Homoptera: Diaspididae) from pecan. Ann. Entomol. Soc. Amer. 68(2):338-340.
Description & illustrations of *C. crypta*; host & distribution.

**1975b.** Descriptions of the first instars in the genus *Haliaspis* (Homoptera: Diaspididae). Ann. Entomol. Soc. Amer. 68(3):429-433.
*H. asymmetrica*, *distichlii*, *litoralis*, *peninsularis*, *spartinae* & *uniolae*; males illustrated; key to spp. based on first instars.

**1975c.** Descriptions of first and second instars of *Praecocaspis diversa* Ferris (Homoptera: Diaspididae). Ann. Entomol. Soc. Amer. 68(6):1028-1032.
Describe second stage male & female; report sexual dimorphism; sexes identical in first instar.

**1976.** Descriptions of the second-stage males in the genus *Haliaspis* (Homoptera: Diaspididae). Ann. Entomol. Soc. Amer. 69(2):175-180.
Key; distribution map; hosts.

**1977a.** Descriptions of first instars of nominal type-species of eight diaspidid tribes. Ann. Entomol. Soc. Amer. 70(1):119-135.
Key to tribes; notes on sexual dimorphism & taxonomy.

**1977b.** Resurrection of *Cupidaspis* (Homoptera: Coccoidea: Diaspididae) with the description of a new species. Ann. Entomol. Soc. Amer. 70(6):898-900.
*C. beshearae*; key to spp.; comparison of *Cupidaspis* & *Lineaspis*.

**1978.** Morphology and systematics of *Odonaspis minima* n. sp. Ann. Entomol. Soc. Amer. 71(5):762-766.
First instar & adult female & second stage male described; modified key to North American spp.

**1981a.** New genus and species of *Diaspididae* from conifers. Ann. Entomol. Soc. Amer. 74(4):419-421.
*Paracupidaspis* n. gen.; *P. wilkeyi* n. sp.

**1981b.** Some immature stages of two species of *Protodiaspis*. J. Georgia Entomol. Soc. 16(4):414-420.
*P. varus* & *didymus*; taxonomic note.

**1982.** Measurement corrections for *Paracupidaspis wilkeyi* (Homoptera: Diaspididae). J. Georgia Entomol. Soc. 17(4):441
Measurements given for length & width of *P. wilkeyi* in original description is corrected here for half of those given.

**Howell, J. O. & Williams, M. L. 1976.** An annotated key to the families of scale insects (Homoptera: Coccoidea) of America, North of Mexico, based on characteristics of the adult female. Ann. Entomol. Soc. Amer. 69(2):181-189.
16 fam. discussed; hosts & distribution; economic importance.

**Howell, J. O., Williams, M. L., & Kosztarab, M. 1971.** Morphology and systematics of *Cerococcus parrotti* (Hunter) with notes on its biology (Homoptera: Coccoidea: Asterolecaniidae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 64:23 pp.
Describe adult female, first & second instar nymphs, male nymph; adult female & male tests; hosts & distribution; key to adult female of North American spp. of *Cerococcus*.

**Howell, R. S.**, *see* Wainhouse, D., & Howell, R. S.

**Hoyt, S. C.**, *see* Jorgensen, C. D., Rice, R. E., Hoyt, S. C., & Westigard, P. H.; Rice, R. E., & Hoyt, S. C.

**Hoyt, S. C., Westigard, P. H., & Rice, R. E. 1983.** Development of pheromone trapping techniques for male San Jose scale (Homoptera: Diaspididae). Environ. Entomol. 12(2):371-375.

*Quadraspidiotus perniciosus*; studies conducted in Calif., Oregon, & Washington; advantages & disadvantages of different traps; collection of sp. increased as trap height increased into upper tree canopy.

**Hsiao, K. J. 1982.** Forest entomology in China - a general review. Crop Prot. 1(3):359-367. (Not seen).
*Matsucoccus matsumurae* & *massonianae*.

**Hsieh, F. K.**, *see* Hwang, J. S., & Hsieh, F. K.

**Hu, C. S.**, *see* Hu, Y. Y., Dai, H. G., & Hu, C. S.

**Hu, H. L. & Wang, L. Y. 1976.** Studies on the pine bast scale *Matsucoccus massonianae* Y. & H. (1). Acta Entomol. Sinica 19(4):383-392. (In Chinese, English summary).
Biology; hosts; natural enemies; control.

**Hu, J. L. 1982-1983.** A new species and a new record of *Kuwanaspis* (Coccoidea: Diaspididae). Contr. Shanghai Inst. Entomol. 3:213-216. (In Chinese, English summary).
*K. daliensis* n. sp.; *K. bambusicola* n. record; key to spp.

**1984.** Two new species of Diaspididae. Contr. Shanghai Inst. Entomol. 4:215-219. (In Chinese). (Not seen).

**1985.** A new genus and two new species of Diaspididae (Homoptera: Coccoidea). Contr. Shanghai Inst. Entomol. 5:263-266. (In Chinese, English summary).
*Pseudochionaspis* n. gen.; *P. quercus* & *hainanensis* n. spp.

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Record 51 spp. including new records; hosts; biology & descriptive notes; redescription of *Acanthomytilus arii*; economic importance.

**Kawai, S. & Takagi, K. 1971a.** Two subterranean species of the Ortheziidae found in tea gardens in Japan (Coccoidea: Ortheziidae). Appl. Entomol. Zool. 6(3):112-118.
Describe *Newsteadia kanayana* n. sp.; further description of *Nipponorthezia ardisiae* recorded from tea for the first time.

**1971b.** Descriptions of three economically important species of root-feeding mealybugs in Japan (Homoptera: Pseudococcidae). Appl. Entomol. Zool. 6(4):175-182.
*Rhizoecus theae & hibisci* n. spp.; redescription of *R. kondonis*; hosts & distribution.

**Kawecki, Z. 1971.** A note on some European Lecaniidae (Coccoidea) with new additions of the Austrian, British, Italian and Polish fauna. Acad. Polon. Sci. Bul., Ser. Sci. Biol. 19(4):255-260.
Distribution of some spp. of *Lecanium*, including some new localities in Poland & other European countries; notes on *L. persicae* & its subspecies.

**1972.** *Sphaerolecanium prunastri* (Fonsc.) (Homoptera, Coccoidea, Lecaniidae) and the beginning of its outbreak in Poland. Polskie Pismo Entomol. 62:857-863. (In Polish, English summary).
Compares morphology & biology of *S. prunastri* with related spp., especially with *Lecanium corni*.

**1973.** Entomological studies of scale insects (Coccoidea) as one of the fundamental direction of scientific activity of the Department of Zoology SGGW in 1958-1969. Agric. Akad. Warszawa, Dept. Zootech. p. 41-49. (In Polish).
*Porphyrophora polonica*.

**1985.** Scale insects, Coccoidea. Catalogue of Polish Fauna, Polish Acad., Zool. Inst. 21(5):108 pp. (In Polish).
170 spp. listed including 34 indoor spp.; host & distribution.

**Kawecki, Z. & Wernerowna, H. 1975.** Description of map by Daniel Zwicker (1650), an inhabitant of Gdansk, giving the distribution of the scale insect *Porphyrophora polonica* (L.) (Coccoidea) in the region of Polesie, supplemented by two but little known studies from the 17th century. Memorabilia Zoologica 27:61 pp. (In Polish, English & Russian summaries).
Reproductions of original papers & maps; translations, comments. Included papers by G. Segerus (1670) & M. Bernitz (1681).

**Kazemi, M. H. 1985.** *Didesmococcus unifasciatus* (Arch.), a new soft scale in Azerbaidjan of Iran. Entomol. Phytopathol. Appl. 52(2):53-59. (In Persian). (Not seen).

**Kegg, J. D.**, *see* Anderson, J. F., Ford, R. P., Kegg, J. D., & Risley, J. H.

**Kelin Koch, C.**, *see* Schmutterer, H., Pires, A., & Kelin Koch, C.

**Kelleher, J. S. 1984.** Insect and related pests of ornamentals. Canad. Agric. Insect Pest Rev. 62:57-65.
Reports 6 scale insects as pest of ornamentals in Canada.

**Kenmochi, K. & Katayama, O. 1976.** A simple method for identification of cochineal pigment and lac dye under coexistence of synthetic food dyes. Rep. Nat. Food Res. Inst. (Tokyo) 32:128-132. (In Japanese, English summary).
Detailed study; separated cochineal pigment & lac dye & identified from amaranth; amaranth aminoethyl cellulose chromatography.

**Kennedy, A. D.**, *see* Kosztarab, M., & Kennedy, A. D.

**Kennett, C. E.**, *see* Hoffmann, R. W., & Kennett, C. E.; Moreno, D. S., & Kennett, C. E.

**Kerzhner, I. M.**, *see* Danzig, E. M., & Kerzhner, I. M.

**Kerzhner, I. M. & Danzig, E. M. 1982.** Reply ... to Komosinska & Mroczkowski "Comments on the Proposed Suppression of *Lecanium burmeister*, 1835 (Insecta, Homoptera, Coccoidea)" Z.N.(S.) 2125. Bul. Zool. Nomenclature 39(3):160-161.
Authors argue for suppression of the name *Lecanium*.

**Kettner, B. 1977.** Die Fichtenquirschildlaus (Lecanie), eine unserer besten Honigtaulieferantinnen. Garten Kleintierzucht C. Imker 16(11):8-9.
*Physokermes piceae* & *hemicryphus*; short description; biology; ecology; ants.

**Khachatrian, M. G. 1984.** Cytophotometric investigation of contents and concentration of protein sh-groups in the cytoplasm of the oocyte and auxiliary cells during oogenesis of the Ararat cochineal. Biol. Zhur. Armenii 37(11):941-946. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii.*

*See* Magakian, Y. A., Karalova, E. M., & Khachatrian, M. G.

**Khachatrian, M. G., Akopian, L. A., Petrosian, A. V., Karalova, E. M., Makarian, S. R., & Magakian, Y. A. 1979.** The oogenesis of the Ararat cochineal. II. Functional morphology and growth of the oocyte and auxiliary cells and the accumulation dynamics of total protein in them. Tsitologiya 21(4):382-390. (In Russian, English summary).
*Porphyrophora hamelii*; morphological, morphometrical & quantitative cytochemical studies on follicle cellular elements in oogenesis.

**Khachatrian, M. G., Karalova, E. M., & Magakian, Y. A. 1980.** RNA synthesis in the oocyte nucleus during cyto- and trophoplasmatic growth of cochineal. Biol. Zhur. Armenii 33(7):686-690. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii.*

**Khachatrian, M. G., Magakian, Y. A., & Karalova, E. M. 1980.** Content kinetics of main protein histones in the oocyte nucleus of cochineal insects with respect to morpho functional changes of its chromosomal nucleolar apparatus in oogenesis. Biol. Zhur. Armenii 33(8):809-814. (In Russian).
*Porphyrophora hamelii*; used radioautographic & cytophotometric methods during follicular period of ovariole development.

**Khader-Khan, J. D. 1984.** Pineapple mealybug on potato. FAO Plant Prot. Bul. 32(3):113.
*Dysmicoccus brevipes*; new host record.

**Khalilov, B. B. 1971.** Vine Entomofauna in Azerbaidzhan. Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 2:344-345.
*Pseudococcus comstocki*, *Lepidosaphes ulmi*, *Planococcus citri*, *Parthenolecanium corni.*

**Khamala, C. P. M. 1979.** Pests of grain legumes and their control in Kenya. *In* "Pests of Grain Legumes: Ecology and Control," edited by Singh, S. R., Van Emden, H. F., & Taylor, T. A. Int. Symp. on Pests of Grain Legumes (Ibadan, Nigeria, 1976) Acad. Press Inc., London, New York (1978). 454 pp. (p. 179-184).
*Planococcus kenyae.*

**Khan, M. I. H.**, *see* Ali, M. E., Das, D. C., & Khan, M. I. H.; Ali, M. E., Das, D. C., Khan, M. I. H., & Ahmed, K.

**Khan, M. R.**, *see* Quayyoom, M. A., & Khan, M. R.

**Khasimuddin, S.**, *see* Williams, D. J., Blair, B. W., & Khasimuddin, S.

**Khechoian, L. S.**, *see* Sarkisov, R. N., & Khechoian, L. S.; Sarkisov, R. N., Mkrtchian, L. P., & Khechoian, L. S.

**Khoo, S. G. 1974.** Scale insects and mealybugs: their biology and control. Malaysian Nat. J. 27:124-130.
Lists 20 coccid spp.; description; life cycle; hosts; damage; parasites & predators.

**1978.** A new species of *Conchaspis* Cockerell (Homoptera: Conchaspididae) from peninsular Malaysia. Malaysian J. Sci. 5(1):79-83.
*C. vaccinii*.

**Kido, H. 1980.** A succession of insect pests. Calif. Agric. 34(7):25-27.
Mentions grape mealybug *Pseudococcus maritimus*.

**Kim, J. H.**, *see* Paikh, W. H., & Kim, J. H.

**Kimura, Y.**, *see* Korenaga, R., Shiyomi, M., Hirosaki, S., Nakamura, K., Ito, S., Kimura, Y., & Uemura, M.

**Kinoshita, T.**, *see* Kusumi, T., Kinoshita, T., Fujita, K., & Kakisawa, H.

**Kiroglu, H.**, *see* Kozár, F., Konstantinova, G. M., Akman, K., Altay, M., & Kiroglu, H.

**Kitaoka, S.**, *see* Hashimoto, A., Ichimoto, I., & Kitaoka, S.; Hashimoto, A., & Kitaoka, S.

**Kitchin, R. M. 1970.** A radiation analysis of a *Comstockiella* chromosome system: destruction of heterochromatic chromosomes during spermatogenesis in *Parlatoria oleae* (Coccoidea: Diaspididae). Chromosoma (Berlin) 31:165-197.
Detailed study; mentions 5 other coccoid spp.

**1975.** Intracellular destruction of heterochromatin in two species of armored scale insects. Genetica 45(2):227-235.
*Parlatoria proteus* & *ziziphus*.

**Klassen, W.**, *see* Schwartz, P. H., & Klassen, W.

**Klein, A. S. & Eckhardt, R. A. 1976.** The DNA's of the A and B chromosomes of the mealybug, *Pseudococcus obscurus*. Chromosoma (Berlin) 57(4):333-340.

**Kloft, W.**, *see* Kunkel, H., & Kloft, W.

**Knight, A.**, *see* Ezumah, H. C., & Knight, A.

**Knight, A. L.**, *see* Croft, B. A., & Knight, A. L.

**Knight, F. B. & Heikkenen, H. J. 1980.** Chapter 14, Sucking Insects. *In* "Principles of Forest Entomology." McGraw-Hill Book Co., New York, 5th ed. 461 pp. (species on p. 277-289).
Discuss 11 coccoid spp.; description; damage & control in general & for some spp. in particular.

**Knight, R. L. & Alston, F. H. 1974.** Pest resistance in fruit breeding. *In* "Biology in Pest and Disease Control," edited by Jones, D. P. & Solomon, M. E. Blackwell, Oxford. p. 73-86.
*Aspidiotus perniciosus*, *Pseudaulacaspis pentagona*.

**Knipscher, R. G., Miller, D. R., & Davidson, J. A. 1976.** Biosystematics of *Chionaspis nyssae* Comstock (Homoptera: Diaspididae) with evidence supporting leaf and bark dimorphism of the scale. Melanderia 25:30 pp.
Describe all stages of females & males; life history; taxonomic notes; *C. nyssae* compared with *C. americana* & *kosztarabi*.

**Knorr, L. C. & Moin-Shah, S. 1971.** World citrus problems. V. Nepal. FAO Plant Prot. Bul. 19(4): 73-79.
13 cocciod spp. reported, *Aonidiella aurantii* & *Saissetia coffeae* for first time.

**Knyazatova, V. J.**, *see* Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, E., Gura, N. A., & Knyazatova, V. J.

**Koch, W.**, *see* Kranz, J., Schmutterer, H., & Koch, W.

**Kocharyan, N. I.**, *see* Barsegyan, A. M., Ziroyan, A. N., & Kocharyan, N. I.

**Koehler, C. S.**, *see* Barclay, L. W., & Koehler, C. S.; Donaldson, D. R., Moore, W. S., Koehler, C. S., & Joos, J. L.; Kattoulas, M. E., & Koehler, C. S.; Moore, W. S., Koehler, C. S., Joos, J. L., Donaldson, D. R., Cassidy, D. V., & Gill, R. J.; Washburn, J. O., Frankie, G. W., Hagen, K. S., & Koehler, C. S.

**Köhler, G. 1976.** Beitrag zur Kenntnis des Männchens der Grünen Kaffeeschildlaus, *Coccus viridis* (Green) (Hemiptera: Coccinea - Coccidae). Beitr. Entomol. Berlin 26(2):471-477. (English & Russian summaries).
Describes pronymph, nymph & imago; body measurements of adult male; cycle of development; field study.

**1977.** Zur Morphologie, Biologie und Ökologie der Grünen Kaffeeschildlaus, *Coccus viridis* (Green), in Kaffeeanlagen der Republik Kuba, einschliesslich einiger Bemerkungen zu ihrer Bekämpfung. Thesis, Karl Marx Univ., Leipzig. 214 pp.
Detailed description of population dynamics on coffee and its abiotic and biotic influences; morphological variations.

**1978.** Zur Biologie und Autökologie der Grünen Kaffeeschildlaus, *Coccus viridis* (Green) (Hemiptera: Coccinea - Coccidae). Zool. Jahrbuch Syst. Ökol. 105(4):561-572. (English summary).
Detailed description of *C. viridis viridis* & *viridis bisexualis*, the parthenogenetic & bisexual race of *C. viridis*.

**1980.** Los parasitos y epísitos de la guagua verde del cafeto (*Coccus viridis* Green), (Hemiptera, Coccidae) en cafetales de Cuba. Centro Agrícola, La Habana, enero-abril. p. 75-105.
Parasitic fungi & Hymenoptera in relation to population dynamics of coccid.

**1983.** Saisonale Einnischung und Dormanz bei der Nesselröhrenschildlaus, *Orthezia urticae* (L.) (Coccina: Ortheziidae). Zool. Jahrbuch Syst. 110(4):443-454. (English summary).
Detailed study; seasonal fluctuation; population dynamics; ecophysiological investigation.

**1984.** Seasonal adaptation and dormancy in *Orthezia urticae* (L.) (Coccina: Ortheziidae). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 361-363.
Seasonality & population dynamics; adaptive strategy; forms of dormancy.

*See* Heidel, W., & Köhler, G.

**Köhler, G. & Gollner-Scheiding, U. 1984.** A list of the Coccoidea material deposited in the Museum für Naturkunde Berlin (G.D.R.). Part I - Alcohol Material. The Scale 10(1):1-6.
The collection includes species from Germany, Brazil, Tanzania & Papua - New Guinea, with 57 "types or cotypes."

**Köhler, G., Tenckhoff, V., & Motte, G. 1980.** Krankheiten und Schädlinge an Kaffee in Kuba. Inst. Trop. Landwirtschaft Karl Marx Univ. Leipzig. 166 pp.
*Coccus viridis*; life cycle; development; population dynamics; abundance; distribution; natural enemies; chemical & biological control; briefly discuss 9 other coccoid spp.

**Komeili-Birjandi A. 1981a.** Biology and ecology of *Parthenolecanium* spp. (Hem., Coccidae). Entomol. Monthly Mag. 117(1400/1403):47-58.
*P. corni* & *wistariae*.

**1981b.** First record of *Parthenolecanium corni* (Bouché, 1844) (Homoptera: Coccidae) from Iran. J. Entomol. Soc. Iran 6(1/2):1-6(Persian), 1-2(English). (In Persian, English summary).
Describes adult female, first & second instar nymphs; host & distribution; correction to Borchsenius, *P. corni*.

**Komemoto, K. I. 1982.** Spatial distribution of coccoids on shoots of *Miscanthus sinensis*. Nanki-Seibutsu 24(1):26-30. (In Japanese).
*Miscanthiococcus miscanthi*, *Aspidiella phragmites* & others; rate of parasitism; nutrition relationships.

**Komosinska, H. 1974a.** Studies on the morphology of *Mytilaspis conchiformis* forma *conchiformis* (Gmelin) (Homoptera, Coccoidea, Diaspididae). Ann. Zool. (Warszawa) 31(3):343-371. (In Polish, Russian summary).
Detailed morphology; describes all developmental stages; notes on sexual dimorphism of first larval stage in Coccoidea; systematic position of genus *Mytilaspis* Targioni-Tozzetti.

**1974b.** Physiographical and ecological investigations upon armored scale insects (Homoptera, Coccoidea, Diaspididae) of Poland. Zeszyty Nauk Akad. Rolniczej Warszawie, Rozprawy Nauk 43:84 pp. (In Polish, English & Russian summaries).
Discusses 14 diaspidid spp.; ecological research includes frequency, population density & abundance of spp. in 4 types of environments; biology; hosts & distribution.

**1975.** Studies on the biology of *Mytilaspis conchiformis* forma *conchiformis* (Gmelin) (Homoptera, Coccoidea, Diaspididae) in Poland. Ann. Zool. (Warszawa) 33(9):127-148. (In Polish, Russian summary).
Detailed study; life cycle; hosts & distribution; damage; natural enemies.

**1977.** Materials to the knowledge of scale insects (Homoptera, Coccoidea) of the Kampinoski National Park. Sylwan No. 1:21-24. (In Polish, English & Russian summaries).
Lists 10 coccoid spp. with hosts; *Heliococcus bohemicus* new to the Polish fauna.

**1980.** *Trionymus luzensis* sp. n. (Homoptera, Coccoidea, Pseudococcidae) from Poland. Ann. Zool. (Warszawa) 35(19):257-265.
Description of adult female & first nymphal stage; hosts & distribution.

**1981.** Obituary - Zbigniew Kawecki (1908-1981). Wiad. Entomol. (Warszawa-Wroclaw) 2(3/4):141-146. (In Polish).
Summarizes his research which covered the taxonomy, morphology & biology of the gen. *Lecanium*, especially of 8 spp.

**1983.** Kajetan Ludwik Boratynski (1907-1980). Przeg. Zool. 27(1):15-21. (In Polish, English summary).
Obituary; list of publications.

*See* Podsiadlo, E., & Komosinska, H.

**Komosinska, H. & Mroczkowski, M. 1982.** Comments on the proposed suppression of *Lecanium* Burmeister, 1835 (Insecta, Homoptera, Coccoidea) Z.N.(S.) 2125. Bul. Zool. Nomenclature 39(3):158-160.
Authors argue for retaining gen. name *Lecanium* & place *Parthenolecanium*, a junior objective syn. of it; proposal made also for type-species designation.

**Komura, H.**, *see* Naya, Y., Yoshihara, K., Iwashita, T., Komura, H., Nakanishi, K., & Hata, Y.

**Komura, H., Mizukawa, K., & Minakata, H. 1982.** Ceroalbolinic acid, a common body pigment of three *Ceroplastes* scale insects in Japan. Confirmation of structure. Bul. Chem. Soc. Japan 55(9):3053-3054.
*C. ceriferus*, *floridensis* & *rubens*.

**König, E.**, *see* Bogenschutz, H., & König, E.

**Konishi, M. & Ito, Y. 1973.** Early entomology in East Asia. *In* "History of Entomology." Publ. by Annu. Rev. Inc., Palo Alto, Calif. p. 1-20.
Mention *Ericerus pela*, *Laccifer lacca* & *Asterolecanium bambusae*.

**Konopleva, V. F. 1980.** The black-currant mealybug in the Krasnodar Region. Zashch. Rast. No. 11:64. (In Russian).
*Pulvinaria ribesiae* or *P. vitis*; damage.

**Konstantinova, G. M. 1976.** Coccids - pests of apple. Zashch. Rast. 12:49-50. (In Russian).
Lists 34 coccoid spp.

*See* Kozár, F., Jasnosh, V. A., & Konstantinova, G. M.; Kozár, F., & Konstantinova, G. M.; Kozár, F., Konstantinova, G. M., Akman, K., Altay, M., & Kiroglu, H.; Kozarzhevskaya, E. F., & Konstantinova, G. M.

**Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, É., Gura, N. A., & Knyazatova, V. J. 1984.** Scale insects on deciduous fruit trees in eastern parts of USSR. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 350-352.
List prepared by a ten-member "committe" on 22 coccoid spp. in 16 fam.; natural enemies.

**Korchagin, V. N. 1970.** Pests and diseases of currants. Zashch. Rast. No. 2:35-36. (In Russian).
Notes on *Chionaspis salicis*; host records; biology & feeding; study in Moscow Region.

**Korean Society of Plant Protection. 1972.** A list of plant diseases, insect pests, and weeds in Korea. Korean Soc. Plant Prot. 424 pp.
Lists 96 coccoid spp. in 47 gen. with common English & Korean names.

**Korecka, T. 1974.** The haemolymph in *Quadraspidiotus ostreaeformis* (Curt.) (Homoptera, Coccoidea, Aspidiotini). Acta Biol. Cracoviensia Ser. Zool. 17:85-93.
Distinguishes 4 types of haemocytes in haemolymph of *Q. ostreaeformis*; found also oenocytes & fat body cells.

**Korenaga, R. 1983.** The time of hatching and crawling speed of *Unaspis yanonensis* (Homoptera: Coccidae). Japanese J. Appl. Entomol. Zool. 27(4):308-310. (In Japanese).
Tables for relation between temperature & crawling velocity of crawlers; illustrated male & female movement of first generation crawlers.

*See* Okudai, S., Korenaga, R., & Sakagami, Y.; Sakagami, Y., & Korenaga, R.

**Korenaga, R., Hirosaki, S., & Shiyomi, M. 1981.** Models for prediction of the population density of the arrowhead scale, *Unaspis yanonensis* Kuwana on citrus tree, by multiple regression analysis II. Japanese J. Appl. Entomol. Zool. 25(1):17-25.
Multiple regression models were further improved; used 3 types of models; model C offered highest level of predicting population density.

**Korenaga, R. & Okudai, S. 1970.** On the morphology of female reproductive system of the arrowhead scale, *Unaspis yanonensis*, and the migration of the spermatozoa in the female. Bul. Okitsu. Hort. Res. Sta., Ser. B No. 10:163-170. (In Japanese, English summary).

**Korenaga, R. & Sakagami, Y. 1978.** Relationship between body length and number of ovarian eggs of female adult of the arrowhead scale, *Unaspis yanonensis*. I. Difference due to age of host plant, generation and year. Fruit Tree Res. Sta. Bul. Ser. B No. 5:91-98.
Obtained significant correlation coefficients between body length & number of ovarian eggs; regression equation & average number of ovarian eggs shown in table.

**1983.** Prediction of the occurrence of the arrowhead scale, *Unaspis yanonensis* (Kuwana). Proc. Int. Soc. Citriculture (1981) 2:700-704.
Common models constructed with pooled data gave better prediction in local situations, than independent models constructed only with local data.

**Korenaga, R., Shiyomi, M., Hirosaki, S., Nakamura, K., Ito, S., Kimura, Y., & Uemura, M. 1978.** Models for predicting of the population density of the arrowhead scale, *Unaspis yanonensis* Kuwana, on citrus tree by multiple regression. Japanese J. Appl. Entomol. Zool. 22(3):141-151. (In Japanese, English summary).
Studied temperature & monthly precipitation; constructed type 1 & type 2 models & predicted size of summer & autumn generations; type 2 model gave reliable result, type 1 did not, although they fitted their own specific situation well.

**Korobitsin, V. G. 1967.** Contribution to the biology of some soft and armored scales injuring ornamental plants on the South Crimea Coast and measures for their control. *In* "Pests and Diseases of Fruit and Ornamental Plants." Gosud. Ord. Trud. Krasn. Znameni Nikitskogo Bot. Sad., Trudy 39:175-218. (In Russian, English summary).
Description & biology of 4 spp.

**Köster, F. & Stoewesand, H. 1973.** Schildläuse als Honigtaulieferanten für Kolibris und Insekten. Bonn. Zool. Beitr. 24(1/2):15-23. (English summary).
Hummingbirds, insects feeding on honeydew, secreted by nymphs of *Xylococcus* sp.; description of some developmental stages of *Xylococcus*.

**Kosztarab, M. 1969.** The Insects of Virginia: No. 1 -- Part I. Introduction to the series of bulletins on the insects of Virginia, with a literature review. Va. Polytech. Inst. Res. Div. Bul. No. 48:1-21 (Coccoidea on p. 7).
Reviews published studies on coccoids in Virginia.

**1977.** The current state of coccoid systematics. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:1-4.
Progress made; needs & priorities.

**1981.** Recent advances in the study of Coccoidea with special reference to integrated pest management. Acta Phytopathol. Acad. Sci. Hungaricae 16(1/2):151-156.

Host resistance; coccoid "ecotypes"; male trapping & male control; insect growth regulators; spp. identification; mentions 7 coccoid spp. as examples.

**1982a.** Homoptera. *In* "Synopsis and Classification of Living Organisms," edited by Parker, S. P. McGraw-Hill Book Co., New York 2:447-470 (scales on p. 459-470).
Morphological description; biology, hosts & distribution of 22 fam. of Coccoidea; mentions a number of gen. & 4 coccoid spp. as examples.

**1982b.** Observations on *Torvothrips kosztarabi* (Thysanoptera: Phlaeothripidae) inhabiting coccoid galls. Florida Entomologist 65(1):159-164.
*Olliffiella cristicola.*

**1983.** The Fourth International Symposium of Scale Insect Studies (ISSIS-IV). The Scale 9(1):3.
Report on the meeting in Budapest, Hungary, Aug. 16-19, 1983.

**1984a.** A brief report on the four international meetings of scale insect studies. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 315-317.
A historical review; attendance & topics increased with each meeting, except when it was too far (Kyoto) for most coccidologists.

**1984b.** Some recent major contributions in morphological studies of scale insects (Homoptera, Coccoidea). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 334-338.
Taxonomic value of mouth parts; sexual dimorphism in second instars; studies of immature stages & number of multilocular pores; use of scanning electron microscope (SEM); electrophoresis, using double-stain for mounting; projects that need cooperative efforts; neglected areas; mentions 5 coccoid spp.

**1984c.** Summary of the two business meetings and round-table discussion of the Fourth International Symposium of Scale Insects Studies (ISSIS) held in Budapest on August 17 and 19, 1983. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p.416-418.
Formed organizational committee for next meeting; discussed need for species catalogues; agreed to standardize morphological terms; emphasized need for type catalogues; discussed deposition of paratypes.

**1985a.** Information on ISSIS-V. The Scale 11(1):1-2.
Preliminary program for the Fifth International Symposium of Scale Insect Studies in Portici, Italy, June 24-28, 1986.

**1985b.** Notes from Virginia Tech. The Scale 11(1):3.
Current research projects; publications; comments.

*See* Baer, R. G., & Kosztarab, M.; Bullington, S. W., & Kosztarab, M.; Hamon, A. B., & Kosztarab, M.; Hamon, A. B., Lambdin, P. L., & Kosztarab, M.; Howell, J. O., & Kosztarab, M.; Howell, J. O., Lambdin, P. L., & Kosztarab, M.; Howell, J. O., Williams, M. L., & Kosztarab, M.; Kozár, F., & Kosztarab, M.; Kozár, F., Ördögh, G., & Kosztarab, M.; Lambdin, P. L., Howell, J. O., & Kosztarab, M.; Lambdin, P. L., & Kosztarab, M.; Miller, D. R., & Kosztarab, M.; Rhoades, M. H., Kosztarab, M., & Rajotte, E. G.; Russell, L. M., Kosztarab, M., & Kosztarab, M. P.; Williams, M. L., & Kosztarab, M.; Willoughby, P. A., & Kosztarab, M.

**Kosztarab, M. & Howell, J. O. 1978.** *Lecanodiaspis subterranea* n. sp. from Australia (Homoptera: Coccoidea: Lecanodiaspididae). Ann. Entomol. Soc. Amer. 71(1):49-54.
Describe adult female & first instar; affinities; revised key couplets; host & distribution.

**Kosztarab, M. & Kennedy, A. D. 1971.** *Megacoccus tasmaniensis*, a new genus and species of scale insect (Homoptera: Coccoidea: Eriococcidae). Ann. Entomol. Soc. Amer. 64:343-346.
Detailed description & illustration; relationship with other gen.; needs further clarification.

**Kosztarab, M. & Kozár, F. 1978.** Scale insects - Coccoidea. Fauna Hungariae, Akademiąi Kiado, Budapest No. 131, Vol. 17, Part 22. 192 pp. (In Hungarian, English summary).
Study of 209 spp. in 96 gen. & 11 fam.

**Kosztarab, M., Miller, D. R., & Davidson, J. A. (ed.) 1977.** Proceedings of the Symposium "Recent Advances in the Study of Scale Insects." Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:1-102.
See for individual papers given at the symposium: Banks, H. J.; Kosztarab, M.; Miller, D. R.; Nur, U.; Robison, W. G., Jr.; Rosen, D. & De Bach, P.; Tremblay, E. & Williams, M.

**Kosztarab, M. & Rhoades, M. H. 1985.** The Coccoidea slide collection at Virginia Polytechnic Institute and State University, Blacksburg. Part I - Families Aclerdidae through Diaspididae. The Scale 11(1):6-25.
The entire collection includes ca. 21,000 slides with 54,000 specimens.

**Kosztarab, M. & Russell, L. M. 1974.** An annotated list of generic names of the scale insects (Homoptera: Coccoidea). Second supplement. U.S. Dept. Agric. Misc. Publ. 1285:22 pp.
Includes 110 names proposed between Jan. 1, 1964 & Dec. 31, 1972; also 8 gen. names from a 1962 article & 2 names published in 1973 as replacement for preoccupied 1967 names.

**Kosztarab, M. P.**, *see* Russell, L. M., Kosztarab, M., & Kosztarab, M. P.

**Koteja, J. 1970a.** Systematic position of the genus *Vittacoccus* Borchsenius (Homoptera, Coccoidea). Polskie Pismo Entomol. 40:223-231. (Polish summary).
Morphology of adult male; taxonomy discussed; list of characters separating *Eriopeltis*, *Luzulaspis*, *Vittacoccus* & *Psilococcus*; key to gen. of *Eriopeltis* group.

**1970b.** The state of faunistic studies of the scale insects of Poland. Polskie Pismo Entomol. 40:529-534. (In Polish, German summary).
General distributions.

**1971a.** Two new species of *Mirococcus* Borchsenius (Homoptera, Coccoidea, Pseudococcidae). Polskie Pismo Entomol. 41:3-18. (Polish summary).
Generic characters; key to spp.; group characters; *M. festucae* & *psammophilus* n. spp. hosts; habitat & distribution of other spp.; further description; notes.

**1971b.** Notes on the Polish scale insect fauna (Homoptera, Coccoidea). III. Polskie Pismo Entomol. 41:319-326. (In Polish, English summary).
Faunistic study on shore of Baltic Sea; biotope notes; 45 spp. recorded with host; new biological data for some spp.

**1972.** Notes on the Polish scale insect fauna (Homoptera, Coccoidea). IV. Polskie Pismo Entomol. 42:565-571. (Polish summary).
Lists 17 spp. in 4 fam.; n. syn.; new locality records.

**1974a.** On the phylogeny and classification of the scale insects (Homoptera, Coccinea) (discussion based on the morphology of the mouthparts). Acta Zool. Cracoviensia 19(14):267-325. (Polish & Russian summaries).

Recognizes 4 categories higher than fam.: 1.suborder, 2.superfamily, 3.section, 4.family group; taxonomic discussion.

**1974b.** The occurrence of a campaniform sensillum on the tarsus in the Coccinea (Homoptera). Polskie Pismo Entomol. 44:243-252.
Examined over 100 coccoid spp.

**1974c.** Comparative studies on the labium in the Coccinea (Homoptera). Zeszyty Nauk Akad. Rolniczej, Krakow, 89:162 pp. (Polish & Russian summaries).
Detailed study with illustrations; key to superfamilies, fam. & other high categories; lists examined spp.; classification of scale insects based on characters of labium.

**1976.** The salivary pump in the taxonomy of the Coccinea (Homoptera). Acta Zool. Cracoviensia 21(7):263-290. (Polish & Russian summaries).
Description in 33 groups & 5 unplaced gen.

**1978.** An introduction to the revision of the Eriopeltini Sulc (Homoptera, Coccidae), with the establishment of two new genera. Polskie Pismo Entomol. 48:311-327. (Polish summary).
*Hadzibejliaspis* & *Poaspis* n. gen.; key to gen. of Eriopeltini; n. combs.; annotated list of spp. excluded from Eriopeltini.

**1979a.** A revision of the genus *Poaspis* Koteja (Homoptera, Coccidae). Polskie Pismo Entomol. 49(3):451-474.
Genus characterized; *P. cunhii*, *jahandiezi*, *kondarensis* & *kurilensis* redescribed; *P. intermedia*, *lata* & *taurica* briefly discussed; key to spp.

**1979b.** Revision of the genus *Luzulaspis* Cockerell (Homoptera, Coccidae). Polskie Pismo Entomol. 49(4):585-638.
Detailed study; 16 spp. redescribed; key to spp.; n. syns.; new name; table for quantitative characteristics of females; biology.

**1980a.** Campaniform, basiconic, coeloconic, and intersegmental sensilla on the antennae in the Coccinea (Homoptera). Acta Biol. Cracoviensia Ser. Zool. 22(1):73-88.
Detailed study of 68 coccoid spp.

**1980b.** Revision of the genus *Exaeretopus* Newstead (Homoptera, Coccidae). Acta Zool. Cracoviensia 24(7):337-372. (Polish summary).
General characteristics of the gen.; *E. dianthi* n. sp.; redescription of 5 other spp.; key to spp.; mentions 4 unidentified spp.

**1980c.** The genus *Nidularia* Targioni-Tozzetti, 1869 (Homoptera, Coccinea). Ann. Naturhist. Mus. Wien. 83:589-596.
Affinities of the gen.; redescription of *N. pulvinata*.

**1981.** Frequency of honeydew excretion in relation to circadian activity in scale insects (Homoptera, Coccinea). Polskie Pismo Entomol. 51(3):365-376. (Polish summary).
Observed 8 coccoid spp.; used thermograph with photographic film.

**1982.** Man and scale insects. On Dr. K. Boratynski. (1907-1980). Wiad. Entomol. 2(1/2):82-86. (In Polish).
Obituary.

**1983a.** An additional moult in adult female *Acanthococcus greeni* (Newstead), (Homoptera, Coccinea). Acta Biol. Cracoviensia Ser. Zool. 25:59-62.

Morphological changes described; assumed reasons for the extra moult discussed.

**1983b.** Notes on the Polish scale insect fauna (Homoptera, Coccinea). V. Polskie Pismo Entomol. 53(4):673-677. (In Polish, English summary).
Report 48 coccoid spp. in 10 fam. from lower Silesia; hosts; new records.

**1984a.** *Cerococcus cycliger* (Goux) (Homoptera, Coccinea) new to the Polish Fauna. Polskie Pismo Entomol. 54:413-414. (In Polish, English summary).
Found on *Thymus* sp. on Zelejowa Mountain near Kielce.

**1984b.** Apterism in female Coccinea (Homoptera), a reason, or result, of sedentary life behavior. Kosmos 3:315-324. (In Polish).
Author discusses above question in 13 points.

**1984c.** Why the scale insects (Homoptera, Coccinea) are unusual. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 325-327.
Author discusses in 14 points questions on morphology, adaptations & gives his hypothesis.

**1984d.** International symposium on coccidology in Budapest. Wiad. Entomol. 5(1/2):80-82. (In Polish).
Author reports on above symposium.

**1984e.** The Baltic amber Matsucoccidae (Homoptera, Coccinea). Ann. Zool. (Warszawa) 37(19):437-496.
*Matsucoccus larssoni*, *electrinus* & *apterus* n. spp.; key to adult male of *Matsucoccus*; n. comb.; analysis of taxonomic characters; status of *Acreagris crenata* & *Monophlebus irregularis* discussed.

**1985a.** Faunistic investigations on Coccinea (Homoptera) in Poland. Wiad. Entomol. 6(1):11-24. (In Polish).
Distribution; comparing taxonomic units over time; comparing aphids & scale insects.

**1985b.** Scale insects (Homoptera, Coccinea) from Baltic amber. Wiad. Entomol. 6(3/4):195-206. (In Polish).
Historical review; taxonomic problems; discusses males & females of Matsucoccidae.

**1985c.** Essay on the prehistory of the scale insects (Homoptera, Coccinea). Ann. Zool. (Warszawa) 38(15):461-504. (Polish & Russian summaries).
Detailed study of feeding behavior, evolution, apterism, sex differences, morphology, etc. of prehistoric (fossil) & other coccoid spp.

*See* Boratynski, K., Pancer-Koteja, E., & Koteja, J.; Brookes, H. M., & Koteja, J.; Dziedzicka, A., & Koteja, J.

**Koteja, J. & Brookes, H. M. 1981.** *Symonicoccus* gen. n., with five new Australian species (Homoptera, Coccidae). Polskie Pismo Entomol. 51(3):377-392.
Description; affinities; key to spp.; host & distribution; *Signoretia australis* redescribed.

**Koteja, J. & Howell, J. O. 1979.** *Luzulaspis* Cockerell (Homoptera: Coccidae) in North America. Ann. Entomol. Soc. Amer. 72(3):334-342.
*L. americana*, *borealis* & *minima* n. spp.; *L. caricis* redescribed; key to spp.; status of gen. in North America discussed.

**Koteja, J. & Kozár, F. 1979.** *Luzulaspis kosztarabi* sp. n. from Hungary (Homoptera: Coccidae). Acta Zool. Acad. Sci. Hungaricae 25(1/2):121-125.
Description of adult female; host & distribution; biology & ecological notes; affinities.

**Koteja, J. & Liniowska, E. 1974.** On some peculiarities in the Coccinea (Homoptera). Przeg. Zool. 18(3):365-369. (In Polish, English summary).
Found unusual morphological & biological features in the fam. Beesoniidae, different stages of *Trichococcus napiformis* described & illustrated.

**1976.** The clypeolabral shield in the taxonomy of the Coccinea (Homoptera). Polskie Pismo Entomol. 46:653-681. (Polish summary).
General characteristics & evolutionary trends; description of clypeolabral shield in 30 groups + 5 unplaced gen.

**Koteja, J., Liniowska, E., & Lubowiedzka, A. 1976.** On some changes of the cuticule in the female *Saissetia hemisphaerica* Targioni-Tozzetti (Homoptera, Coccinea). Acta Biol. Cracoviensia Ser. Zool. 19:71-77.
Discuss characteristics of cuticule in 8 developmental groups.

**Koteja, J. & Rosciszewska, M. 1970.** Revision of the genus *Parafairmairia* Cockerell (Homoptera, Coccoidea). Polskie Pismo Entomol. 40:233-265. (Polish summary).
Morphology; biology; host & geographic distribution; taxonomic notes; key to spp.; redescriptions.

**Koteja, J. & Zak-Ogaza, B. 1972.** Morphology and taxonomy of the male *Kermes quercus* (L.) (Homoptera, Coccoidea). Acta Zool. Cracoviensia 17:193-215. (Polish & Russian summaries).
Male of *K. quercus* described & illustrated; confirmed Kermesidae as a distinct fam.

**1979.** Five species of Pseudococcidae and Eriococcidae (Homoptera) new to the Polish fauna. Polskie Pismo Entomol. 49(4):671-675.
Hosts & distribution; 2 n. combs.; notes on 4 other coccoid spp.

**1981a.** *Kaweckia* gen. n. in the Eriococcidae (Homoptera, Coccoidea) and notes on related genera. Acta. Zool. Cracoviensia 25(19):501-518.
New combs.; key to spp. in *Kaweckia* & to 3 spp. of *Greenisca*; review of spp.

**1981b.** The life history of *Steingelia gorodetskia* Nassonov (Homoptera, Coccinea). Ann. Zool. (Warszawa) 36(9):171-186.
Ecology, biology, behavior; nymphal instars described.

**1983.** The Coccinea fauna (Homoptera) of the Krakow-Czestochowa Upland. Acta Zool. Cracoviensia 26(14):465-490. (In Polish, English summary).
Host & distribution of 96 spp. in 12 fam. & 58 gen.; zoogeography & ecology of coccoid fauna discussed.

**Koteja, J., Zak-Ogaza, B., & El-Nabawi, A. 1978.** Notes on *Heterococcus* Ferris and four mealybugs (Homoptera, Pseudococcidae) new to the Polish fauna. Polskie Pismo Entomol. 48(4):501-504.
*Heliococcus danzigae* & *slavonicus*, *Coccura comari* & *Peliococcopsis parvicerarius*.

**Kotter, E. 1977.** Citrus pest surveys to guide pest management in the Jordan Valley. Hassadeh 57(10):1805,1807-1815. (In Hebrew, English summary).
*Ceroplastes floridensis* & *rusci*, *Coccus hesperidum*, *Pseudococcus citri*, *Chrysomphalus aonidum*.

**Kourmadas, A. L.**, *see* Argyriou, L. C., & Kourmadas, A. L.

**Kouskolekas, C. A.**, *see* Chiu, C. H., & Kouskolekas, C. A.

**Kovalev, B. G.**, *see* Bichina, T. I., Kovalev, B. G., Smetnik, A. I., & Vaganova, L. D.

**Kozár, F. 1970.** A new scale insect species, *Rhodococcus rosophilus* Borchs. (Homoptera, Coccidae) in our fauna. Folia Entomol. Hungarica 23(11):229-230. (In Hungarian).
Distribution; biology; host; damage; descriptive note.

**1971a.** Recent data on Coccidae (Hom., Coccidae) damaging Gramineae. Folia Entomol. Hungarica 24(11):157-162. (In Hungarian, English summary).
*Eriopeltis agropyri* & *Rhizococcus insignis* new for Hungary; biological notes; description & taxonomy.

**1971b.** New method for observing the males of San José scale, *Quadraspidiotus perniciosus* Comst., from point of view of forecasting. Növényvédelem 7(3):101-105. (In Hungarian, English & Russian summaries).
Sticky traps effectively applied at swarming of males.

**1972a.** Contribution to the study of the scale insect fauna (Homoptera: Coccoidea) of Hungary. Állattani Közlemények 59:181-182. (In Hungarian).
*Physokermes hemicryphus* identified & distinguished from *P. piceae*. Hungarian *Picea* fauna comprises of *Physokermes piceae* & *hemicryphus*, *Dynaspidiotus abietis* & *Paroudablis piceae*; *P. hemicryphus* recorded for first time from Hungary.

**1972b.** The occurrence of an occasional grain crop pest, *Lecanopsis porifera* Borchs. (Homoptera, Coccoidea) in our fauna. Növénytermelés 21(3):281. (In Hungarian).
*L. porifera* reported first time in Hungary attacking rye in 1970; characters given to differentiate this sp. from *L. formicarum*.

**1972c.** New etological observations on *Quadraspidiotus perniciosus* Comst. (Hom., Coccoidea). Folia Entomol. Hungarica 25(6):103-109. (In Hungarian, English summary).
Gives time for crawler emergence as 31-34 days after male swarming.

**1973.** An alfalfa pest new for the Hungarian fauna: *Pseudococcus multivorus* Kir. (Hom. Coccoidea). Növényvédelem 9(12):538-540. (In Hungarian, English & Russian summaries).
Morphology; biology; host & distribution.

**1974.** Mass infestation and damage of the oak scale *Kermes quercus* L. (Homoptera, Coccoidea). Növényvédelem 10(12):534-537. (In Hungarian, English, German & Russian summaries).
Morphology; biology; hosts; parasites.

**1975a.** Coccoids of cultivated fruit trees of Hungary, basis of prognosis and control measures. Pushkin (Leningrad). 24 pp. (In Russian).
A detailed doctoral dissertation abstract.

**1975b.** Evaluation of methods of forecasting the appearance of wanderers and males of *Quadraspidiotus perniciosus* Comst. (Homoptera: Coccoidea). VIII. International Plant Protection Congress, Moscow, Section II. Achievements in Studies of Biology of Harmful Organisms and Development of Forecasting Methods. p. 198-209. (Not seen).

**1976a.** Colonization sites of scale insects on different plant species and varieties. Symp. on "The Host Plant in Relation to Insect Behaviour and Reproduction" (Tihany, Hungary, 1974). p. 15-16.

*Sphaerolecanium prunastri*, *Epidiaspis leperei*, *Parthenolecanium corni*, San Jose scale.

**1976b.** The infestation of orchards in Hungary by scales (Homoptera: Coccoidea). Ann. Inst. Prot. Plantarum Hungarici 14:35-47. (In Hungarian, English & Russian summaries).
Observed damages caused by 21 coccoid spp.

**1978.** Some questions on the population dynamics of the San José scale, *Quadraspidiotus perniciosus* Comstock (Homoptera: Coccoidea). Acta Phytopathol. Acad. Sci. Hungaricae 13(1/2):179-195.
Discusses changes caused by different factors; parasites.

**1979a.** Correlation between scale insect species number and density with the level of agrotechnics in orchards. Proc. 7th Symp. Central European Entomofaunistics (Leningrad, 1977). p. 130-134. (In Russian).
*Quadraspidiotus perniciosus*, *Epidiaspis leperii*.

**1979b.** Comparative studies on density of scale insects in European orchards. Agrártudományi Közlemények 38:135. (In Hungarian).
Species studied: *Parthenolecanium corni*, *Sphaerolecanium prunastri*, *Pseudaulacaspis pentagona* & *Quadraspidiotus perniciosus*.

**1980.** The scale insect fauna (Homoptera: Coccoidea) of the Bakony Mountains and surrounding area. Veszprém Megyei Múzeumok Közleményei 15:65-72. (In Hungarian, German summary).
Lists 78 coccoid spp. in 9 fam.; host & distribution.

**1981a.** Data on the Coccoidea (Homoptera) Fauna of the Hortobágy National Park. Fauna Hortobágy Natl. Park. p. 89-90.
Lists 10 coccoid spp.; hosts & distribution; some notes on ethology.

**1981b.** *Mirococcopsis nagyi* sp. n. and *Luzulaspis rajae* sp. n. from Hungary (Homoptera: Coccoidea). Acta Zool. Acad. Sci. Hungaricae 27(3/4):315-321.
Notes on 9 other coccoid spp. of which 4 are new to Hungarian Fauna.

**1983a.** *Chorizococcus viktorina* sp. n. and *Ferreroaspis* gen. n. in the Hungarian Fauna (Homoptera: Coccoidea, Pseudococcidae and Diaspididae). Folia Entomol. Hungarica 44(1):89-93.
Description; host & distribution; biological notes on *Acanthomytilus hungaricus* which is transferred to *Ferreroaspis*.

**1983b.** New and little known scale-insect species from Yugoslavia (Homoptera: Coccoidea). Acta Zool. Acad. Sci. Hungaricae 29(1/3):139-149.
Lists 52 spp. in 8 fam.; 3 n. spp.; 15 new records; hosts & distribution.

**1984.** Recent records on the scale insects (Homoptera: Coccoidea) Fauna of Hungary. I. Állattani Közlemények 71(1/4):119-132. (In Hungarian).
Host & distribution for 36 coccoid spp. in 3 fam. of which 27 spp. are new for Hungary; taxonomic notes; addition to keys of 8 gen. & several spp.

**1985.** New data to the knowledge of scale insects of Bulgaria, Greece, and Rumania (Homoptera: Coccoidea). Acta Phytopathol. Acad. Sci. Hungaricae 20(1/2):201-205.
Reports 66 spp., 28 new to region studied; hosts.

*See* Danzig, E. M., & Kozár, F.; Fogarasi, E. U., & Kozár, F.; Hornok, L., & Kozár, F.; Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B.,

Benke, Gy., Gummel, E., Gura, N. A., & Knyazatova, V. J.; Kosztarab, M., & Kozár, F.; Koteja, J., & Kozár, F.; Nagy, B., & Kozár, F.; Vinis, G., & Kozár, F.

**Kozár, F. & Danzig, E. M. 1976.** *Atrococcus bejbienkoi* sp. n., and some scale insects new to the Hungarian Fauna (Homoptera: Coccoidea). Acta Zool. Acad. Sci. Hungaricae 22(1/2):65-67.
Description of female; 8 new records; hosts & distribution.

**Kozár, F., Jasnosh, V. A., & Konstantinova, G. M. 1982.** Comparative evaluation of the distribution of scale-insects (Hom. Coccoidea) and their parasites in Georgia (USSR) and in Turkey (Survey of scale insects (Homoptera Coccoidea) infestation in European orchards, No. 6). Ztschrt. f. Angew. Entomol. 93(4):333-338.
Discuss 16 coccoid spp.; hosts; natural enemies.

**Kozár, F. & Konstantinova, G. M. 1981a.** The scale insects (Homoptera: Coccoidea) of deciduous fruit orchards in some European countries (Survey of scale insect (Homoptera: Coccoidea) infestations in European orchards No. 3). Acta Phytopathol. Acad. Sci. Hungaricae 16(1/2):211-222.
Host & distribution for 25 coccoid spp.; area maps.

**1981b.** San José scale in deciduous fruit orchards of some European countries (Survey of scale insect infestations in European orchards No. IV). EPPO Bul. 11(2):127-133.
*Quadraspidiotus perniciosus*; host; distribution maps showing degree of density on different hosts; mention 24 other coccoid spp.

**Kozár, F., Konstantinova, G. M., Akman, K., Altay, M., & Kiroglu, H. 1979.** Distribution and density of scale insects (Homoptera: Coccoidea) on fruit plants in Turkey in 1976 (Survey of scale insect (Homoptera: Coccoidea) infestations in European orchards No. 2). Acta Phytopathol. Acad. Sci. Hungaricae 14(3/4):535-542.
List 16 coccoid spp. in 14 gen.; 4 spp. new to the Turkish fauna.

**Kozár, F. & Kosztarab, M. 1976.** A new mealybug, *Chnaurococcus danzigae* sp. n. from Hungary (Homoptera: Coccoidea, Pseudococcidae). Acta Zool. Acad. Sci. Hungaricae 22(3/4):299-302.
Description of female; host & distribution; key to spp.

**1982.** Coccoidea of Central European forests and their host relationships. Acta Musei Reginaehradecensis S.A. Suppl. (1980). p. 203-211.
Used Jaccard's Coefficient of Similarity to calculate & express relationships of 64 coccoid spp. in 31 gen. & 9 fam.

**Kozár, F. & Matile-Ferrero, D. 1983.** Two new species of armoured scale insects from Hungary (Homoptera, Coccoidea: Diaspididae). Acta Zool. Acad. Sci. Hungaricae 29(4):389-395.
*Acanthomytilus jablonowskii* & *Rhizaspidiotus balachowskyi*.

**Kozár, F., Ördögh, G., & Kosztarab, M. 1977.** New records to the Hungarian scale insect fauna (Homoptera: Coccoidae). Folia Entomol. Hungarica (n.s.) 30(1):69-75. (In Hungarian).
List 78 spp. in 9 fam. with hosts & distribution; 13 spp. new to Hungary.

**Kozár, F. & Szentkirályi, F. 1979.** Statistical analysis of some climatic variables affecting the beginning of San Jose scale (*Quadraspidiotus perniciosus* Comst., Homoptera: Coccoidea) males' swarming. Acta Phytopathol. Acad. Sci. Hungaricae 14(3/4):521-534.
Two-variable regression & multiple linear regression analysis.

**Kozár, F., Tranfaglia, A., & Pellizzari, G. 1984.** New records on the scale insect fauna of Italy. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 41:3-10.

Hosts & distribution for 21 coccoid spp. in 7 fam., all new for Italy; n. comb.

**Kozár, F., Tzalev, M., Viktorin, R. A., & Horváth, J. 1979.** New data to the knowledge of the scale insects of Bulgaria (Homoptera: Coccoidea). Folia Entomol. Hungarica (n.s.) 32(2):129-132.
List 45 coccoid spp. in 8 fam.; 15 spp. new to Bulgaria; first record for *Diaspidiotus osborni* in Europe; hosts & distribution in Bulgaria.

**Kozár, F. & Varjas, L. 1976.** Laboratory experiments with juvenoids on the San José scale, *Quadraspidiotus perniciosus* Comst. Acta Phytopathol. Acad. Sci. Hungaricae 11(3/4):295-303.
Applied 4 juvenile hormone analogues; mortality rate of males & females presented in 4 tables.

**Kozár, F. & Viktorin, R. A. 1978.** Survey of scale insects (Homoptera: Coccoidea) infestations in European orchards. Changes in the scale infestation levels in Hungarian orchards between 1971 and 1976. Acta Phytopathol. Acad. Sci. Hungaricae 13(3/4):391-402.
Discuss 10 coccoid spp.; charts of infestations.

**1980.** Method for forecasting the densities of San Jose scale (*Quadraspidiotus perniciosus* Comstock, Homoptera: Coccoidea). Növényvédelem 16(4):179-184. (In Hungarian, English, German & Russian summaries).
Seven years observation; forecast based on winter mortality; natural enemies; hosts.

**Kozár, F. & Vinis, G. 1980.** Redescription of *Ritsemia pupifera* Lichtenstein, 1879, re-establishment of the genus and erection of the tribe Ritsemini (Homoptera: Coccoidea, Pseudococcidae). Folia Entomol. Hungarica 41(1):97-103.
Redescription of male & female; biology; first record in Hungary.

**Kozár, F. & Walter, J. 1985.** Check-list of the Palaearctic Coccoidea (Homoptera). Folia Entomol. Hungarica 46(2):63-110.
Included in this list are 1938 spp.; 2 new gen., 1 new sp. name and 98 n. combs. proposed.

**Kozarzevskaja, E. F.**, *see* Kozarzhevskaya, E. F.

**Kozarzhevskaya, E. F. 1974.** Scale insects (Coccoidea) and other pests on orchids. Akad. Nauk SSSR Glav. Bot. Sad. Zashch. Rast. Vredit. i Bodez. 2:16-35 (coccoids on p.16-27). (In Russian).
Lists 29 coccoid spp. on domestic orchids in USSR & 54 spp. outside the USSR; hosts & distribution; control.

*See* Vorontsov, A. I., & Kozarzhevskaya, E. F.

**Kozarzhevskaya, E. F. & Konstantinova, G. M. 1972.** Records on pseudo-Californian scale. Akad. Nauk SSSR Glav. Bot. Sad. Zashch. Rast. Vredit. i Bodez. 1:42-46. (In Russian).
*Quadraspidiotus ostreaeformis* compared with *Q. perniciosus*; description; distribution; parasites.

**Kozarzhevskaya, E. F. & Mihajlovic, L. 1983.** Biological data of mulberry scale (*Pseudaulacaspis pentagona* Targ.-Tozz.) and its parasites (Chalcidoidea) in Belgrade. Zast. Bilja 34(1):59-75. (In Serbian, English summary).
Phenology & reproduction; mention 5 other coccoid spp.

**1984.** The fauna of coniferous scale insects (Homoptera: Coccoidea) and their parasites in Yugoslavia. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 405-408.
Discuss 14 coccoid spp. in 3 different areas; 5 spp. new to the Yugoslavian Fauna.

**Kozarzhevskaya, E. F. & Reitzel, J. 1975.** The scale insects (Homoptera: Coccoidea) of Denmark. Statens Forsogsvirksomhed i Plantekultur Beretning 1226:41 pp.
Hosts & distribution, habitat & economic importance of 61 spp. in 5 fam.; 32 spp. new to fauna; key to fam.; distribution of coccoids known from Scandinavia, Finland, Iceland & Greenland.

**1976.** Two coccids (Homoptera: Coccoidea) new for Denmark. Statens Forsogsvirksomhed i Plantekultur, Appendix to 1226:2 pp.
*Chnaurococcus subterraneus*, *Pseudochermes fraxini*.

**1977.** Some soil mealybugs (Homoptera: Pseudococcidae) found in Denmark. (Statens Planteavlforsog) Tidsskrift for Planteavl 81:374-380.
Short description; hosts & distribution for 7 coccoid spp. in 6 gen.; key to gen.

**Kozarzhevskaya, E. F. & Vlainic, A. 1981.** Noxiousness and distribution of scale insects (Homoptera: Coccoidea) in cultural biotops of Belgrade. Sumarstvo 4:13-26. (In Serbian, English & Russian summaries).
Give notes on rate of infestation & economic importance for 30 coccoid spp.

**1982.** Bioecological survey of scale insects (Homoptera: Coccoidea) on cultivated flora in Belgrade. Zast. Bilja 33(2):183-202. (In Serbian, English summary).
List 30 coccoid spp. in 6 fam.; 6 spp. new to Yugoslavia; external morphology; habitat; hosts & locality; full scientific names; English, Russian & Serbian common names.

**Krambias, A. 1977.** Rapport preliminaire sur le pou de Californie (*Aonidiella aurantii*) des citrus a Chypre. Fruits 32(5):351-353. (English summary).
Distribution; natural enemies on citrus in Cyprus.

**Kranz, J., Schmutterer, H., & Koch, W. (eds.) 1977.** Diseases, pests and weeds in tropical crops. Publ. by Paul Parey, Berlin & Hamburg, also by John Wiley & Sons, Chichester, New York, Brisbane, Toronto. 666 pp. (coccoids on p. 346-370).
Chapters written by Entwistle, P. F., Iperti, G., Brooks, R. F., Rosen, D., Salama, H. S., Schmutterer, H., & Williams, J. R.

**Krishnamoorthy Bhat, P.**, *see* Bhat, P. Krishnamoorthy

**Krishnaswami, S.**, *see* Sriharan, T. P., Samson, M. V., & Krishnaswami, S.

**Kriventsov, I. U. I. & Chimak, P. I. A. 1977.** Ecology of soft scale in protected cultivation of horticultural plants. Biul. Gl. Bot. Sada 104:101-105. (In Russian).
*Coccus hesperidum*

**Ksiazkiewicz, M.**, *see* Ksiazkiewicz-Kapralska, M.

**Ksiazkiewicz, M. 1980.** Ultrastructure of the trophic chamber and nutritive cord of *Aspidiotus hederae* (Homoptera, Coccoidea). Cell & Tissue Res. 213(1):149-157.
Detailed study.

**Ksiazkiewicz-Kapralska, M. 1984.** Ultrastructure of the imaginal oenocytes in *Aspidiotus hederae* (Homoptera: Coccoidea). Acta Biol. Cracoviensia Ser. Zool. 26:1-6.
Imaginal oenocytes characterized by abundant rough endoplasmic reticulum; fine structure points to their involvement in protein synthesis; imaginal oenocytes of *A. hederae* engaged in synthesis of vitellogenic proteins.

**Kuhl, G.**, *see* Louis, C., & Kuhl, G.

**Kuhmina, A. V. 1970.** *Ceroplastes rusci* L. *Quadraspidiotus perniciosus* Comst., *Pseudococcus citriculus* Green, *Lopholeucaspis japonica* Ckll. *Unaspis yanonensis* Kuw., *Unaspis citri* Comst. *In* "Handbook of Quarantine and Other Dangerous Pests, Diseases and Weedy Plants," edited by Shutova, N. N. Publ. "Kolos" Moskva. p. 45-46, 52-54, 88-96. (In Russian).
Description; biology; hosts & distribution; natural enemies.

**Kumar, R., Lavigne, R. J., Lloyd, J. E., & Pfadt, R. E. 1976.** Insects of the Central Plains Experiment Range, Pawnee National Grassland. Sci. Monograph 32:74 pp.
List 15 coccid spp. in 5 fam.; hosts.

**Kunincka, G. M. 1970.** *Pseudaulacaspis pentagona* Targ., *Pseudaonidia paeoniae* Ckll. *In* "Handbook of Quarantine and Other Dangerous Pests, Diseases and Weedy Plants." edited by Shutova, N. N. Publ. "Kolos" Moskva. p. 47-51. (In Russian).
Description; biology; hosts & distribution; natural enemies.

**Kunkel, H. & Kloft, W. 1977.** Fortschritte auf dem Gebiet der Honigtau-Forschung. Apidologie 8(4):363-391. (English summary).
List 13 coccoid spp. as honeydew producers; discuss role of filter chambers & saccharoid content of honeydew.

**Kuo, W. I.**, *see* Huang, P. K., Tsai, H. L., Lin, L. F., & Kuo, W. I.

**Kuramoto, R.**, *see* Nishida, T., & Kuramoto, R.

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Ceriferic acid; isolated from wax of *C. ceriferus*.

**Kuznetsov, N. N. 1970.** Four little known species of scales (Homoptera, Diaspidoidea) damaging conifers. Zool. Zhur. 49(11):1644-1655. (In Russian, English summary).
Description; hosts & distribution; damage; biology; some new records; study in Crimea area.

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Reports 46 coccid spp. injuring conifers in USSR; biology; natural enemies; damage; control.

**1976.** A new species of armored scale insects (Homoptera, Coccoidea, Diaspididae) from the Crimea. Entomol. Obozr. 55(1):78. (In Russian). Entomol. Rev. 55(1):54-55. (In English).
*Diaspidiotus danzigae*.

**Laccone, G. 1981.** *Parlatoria oleae* Colv. (Homoptera, Coccidae: Diaspini) on olive tree in Apulia. Biological remarks and control trials. Informatore Fitopatol. 31(1/2):73-76. (In Italian, English summary).
Biology; damage; control; natural enemy.

**Lachance, D. 1983.** Status of beech bark disease in the province of Quebec. U.S. Dept. Agric. Forest Serv. General Tech. Rep. 37:18-20. (French & German summaries).
*Cryptococcus fagisuga*; host; disease survey.

**Lai, P. Y. 1983.** A review of the banana root borer, mealybug, and slug problems. Res. Ext. Ser. Hawaii Inst. Trop. Agric. Human Resources No. 34:32-34.
*Pseudococcus elisae*, *Dysmicoccus alazon*; both first recorded in Hawaii.

**Lal, J.**, *see* Chauhan, N. S., & Lal, J.

**Lamb, K. P. 1974.** Economic entomology in the tropics. Academic Press Inc., London. 149 pp. (coccoids on p. 38-45).
Lists 41 coccoid spp. with hosts & distribution; indicates economic significance of 32 spp.

**Lambdin, P. L. 1977a.** *Asterolecanium notatum* (Homoptera: Coccoidea: Asterolecaniidae): new species of pit scale on bamboo from the Philippine Islands. Ann. Entomol. Soc. Amer. 70(4):625-627.
Description; affinities; revised key couplet; host & distribution.

**1977b.** A revision of the genus *Polea* Green (Homoptera: Coccoidea: Asterolecaniidae). Ann. Entomol. Soc. Amer. 70(6):911-915.
*P. selangorae* n. sp.; redescription of *P. ceylonica*; key to adult females of *Polea*; hosts & distribution.

**1979.** Morphology and systematics of *Asterolecanium vittatum*, a new pit scale species from Australia (Homoptera: Coccoidea: Asterolecaniidae). Ann. Entomol. Soc. Amer. 72(5):669-672.
Description; host & distribution; modified key to spp.

**1980.** Two new species of pit scales on bromeliads from South America (Homoptera: Coccoidea: Asterolecaniidea). Ann. Entomol. Soc. Amer. 73(4):468-471.
*Sclerococcus chilensis* & *tillandsiae*; key to adult females; hosts & distribution; affinities.

**1983a.** A revision of the genus *Asterococcus* Borchsenius (Homoptera: Cerococcidae). Proc. Entomol. Soc. Wash. 85(2):297-308.
*A. ramakrishnai* n. sp.; 2 spp. redescribed; key to spp.; n. syn.

**1983b.** A new species of scale insect, *Cerococcus gabonensis*, from Gabon (Homoptera: Coccoidea: Cerococcidae). Ann. Entomol. Soc. Amer. 76(1):75-77.
Description of adult female; host & distribution; modified key to accommodate *C. gabonensis*; distinguishing characters.

**1983c.** New species of pit scale, *Asterolecanium russellae* (Homoptera: Asterolecaniidae), from the Republic of the Philippines. Ann. Entomol. Soc. Amer. 76(6):1002-1004.
Description; host & distribution; modified key for separation from other asterolecaniids.

**1984.** Bioecology of the tuliptree scale, *Toumeyella liriodendri* (Gmelin). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 387-388.
Damage; seasonal history; beneficial & associated insects.

*See* Hamon, A. B., Lambdin, P. L., & Kosztarab, M.; Howell, J. O., Lambdin, P. L., & Kosztarab, M.; Miller, D. R., & Lambdin, P. L.

**Lambdin, P. L., Howell, J. O., & Kosztarab, M. 1973.** Morphology and systematics of five species in the Quercus group of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 85:1-29.
Redescribed & illustrated 4 inadequately known spp.: *Lecanodiaspis costata*, *foochowensis*, *peni* & *tingtunensis*; *L. murphyi* n. sp., taxonomic status, relationship to other pit scales, revised key to Quercus group presented; gen. *Prosopophora* is junior syn. of *Lecanodiaspis*; *L. foochowensis* recognized as a valid sp.

**1976.** Morphology and systematics of two species in the Quercus group of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 111:43-54.

*L. greeni* & *morrisoni* redescribed; affinities; revised key couplets.

**Lambdin, P. L. & Kosztarab, M. 1973a.** A revision of the seven genera related to *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 83:110 pp.

Include 13 spp.; *Virgulicoccus*, *Stictacanthus* & *Gallinococcus* n. gen.; *Gallinococcus ferrisi*, *Psoraleococcus lombokanus* & *multicribratus* n. spp.; *Amorphococcus* transferred to fam. Asterolecaniidae; *Amorphococcus leptospermi* retained within fam. Lecanodiaspididae, placed in *Gallinococcus* & named *G. ferrisi*; *Lecanodiaspis mimusopis* transferred to *Cosmococcus*; zoogeography, hosts, parasites, predators & associated ants, biology; key to spp. of *Anomalococcus*, *Cosmococcus*, *Psoraleococcus*; key to gen. of fam. Lecanodiaspididae.

**1973b.** A morphological study on the adult female and two nymphal stages of *Mallococcus sinensis* (Maskell) with notes on its systematic position (Homoptera: Coccoidea: Coccidae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 85:53-68.

Comparative morphological studies proved that *Mallococcus* belongs to fam. Coccidae, rather than Eriococcidae, Asterolecaniidae or Lecanodiaspididae.

**1974.** A new genus and species of pit scale from Australia (Homoptera: Coccoidea: Lecanodiaspididae). Ann. Entomol. Soc. Amer. 67(3):409-412.

*Brookesiella* n. gen.; *B. tuberans* n. sp.; description; affinities; habits; economic importance; key couplet to related gen.

**1975a.** A new genus *Abditicoccus* (Homoptera: Coccoidea: Asterolecaniidae) with a redescription of its type species *A. acaciae* (Brain). Ann. Entomol. Soc. Amer. 68(2):316-318.

Illustration; host & distribution.

**1975b.** A redescription of *Amorphococcus mesuae* Green with notes on its systematic position (Homoptera: Coccoidea: Asterolecaniidae). Proc. Entomol. Soc. Wash. 77(3):376-381.

Hosts & distribution; natural enemy; transferred to Asterolecaniidae.

**1976a.** The genus *Solenophora* and its type species (Homoptera: Coccoidea: Cerococcidae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 111:33-41.

Redescription of *S. fagi*; key to separate *Solenophora* from related gen.; *Solenophora* reinstated & transferred to fam. Cerococcidae.

**1976b.** Morphology and systematics of *Celaticoccus cantentulatus* (Froggatt), a gall-forming scale insect from Australia (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 111:55-61.

*Celaticoccus* n. gen.; *Sphaerococcus cantentulatus* transferred & redescribed.

**1977a.** *Acalyptococcus eugeniae*: a new genus and species of eriococcid from Singapore (Homoptera: Coccoidea: Eriococcidae). Proc. Entomol. Soc. Wash. 79(2):245-249.

Description; affinities of gen. discussed; host & distribution; association with ants (*Camponotus* sp.).

**1977b.** Morphology and systematics of the adult females of the genus *Cerococcus* (Homoptera: Coccoidea: Cerococcidae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 128:252 pp.

45 spp. redescribed; 4 n. spp.; notes on 7 other spp.; key to adult females of 3 pit scale fam., 3 gen. & spp.; distribution map; indices to parasites & predators; host plants & scale insect taxa.

**1981.** Revision of the genus *Frenchia* with description of a new species (Homoptera: Coccoidea: Asterolecaniidae). Proc. Entomol Soc. Wash. 83(1):105-120.
*F. banksiae* n. sp.; redescriptions of *F. casuarinae* & *semiocculta*; key to spp. of all stages; economic importance.

**Lambdin, P. L. & Watson, J. K. 1980.** New collection records for scale insects of Tennessee. J. Tenn. Acad. Sci. 55(3):77-81.
Give records for 74 coccoid spp. in 9 fam.; 26 spp. new for Tennessee; present 142 new county records.

**Lanati, S. J.**, *see* Mallea, A. R., Macola, G. S., Garcia, S. J. G., & Lanati, S. J.

**Landin, B. O. 1967.** Insects, a field guide. Stockholm, Victor Pettersons Bokindus. Ab. 394 pp. (coccoids on p. 229-233). (In Swedish).
Lists several spp. of Coccoidea; key to 3 fam.; hosts.

**Langworth, J. F.**, *see* Entwistle, J. P., & Langworth, J. F.

**Lapis, E. B. 1970.** The biology of the grey mealybug, *Ferrisia virgata* (Cockerell) (Pseudococcidae, Homoptera). Philippine Entomol. 1(5):397-405.
Description of first instar nymph; life span of adult female; feeding habits; hosts.

**Laraichi, M.**, *see* El-Homriti, M., & Laraichi, M.

**Laroussilhe, F. De** see De Laroussilhe, F.

**Larsson, S. G. 1978.** Baltic amber - a paleobiological study. Entomograph 1:192 pp. (Not seen).

**Lattin, J. D. & Oman, P. 1983.** Where are the exotic insect threats? *In* "Exotic Plant Pests and North American Agriculture," edited by Wilson, C. L. & Graham, C. L. Academic Press, New York. 522 pp.
Mention host & distribution of 4 coccoid spp. on p. 112.

**Laudého, Y. & Canard, M. 1978.** Quelques aspects des études rélisées en vue de la mise en application de la lutte biologique contre les ravageurs de l'olivier en Grèce. Biol. Gallo-Hellenica 7(1/2):181-201. (English summary).
*Saissetia oleae*; mention 7 other coccoid spp.

**Lavabre, E. M. & Boulard, M. 1967.** Premières données sur les insectes nuisibles au poivrier cultivé en République Centrafricaine. Agron. Trop. 22:1078-1093. (English & Spanish summaries).
*Ferrisia virgata* on *Piper nigrum*; short description & photographs.

**Lavigne, R. J.**, *see* Kumar, R., Lavigne, R. J., Lloyd, J. E., & Pfadt, R. E.

**Lawani, S. M.**, *see* Ibekwe, G. O., & Lawani, S. M.

**Lawton, J. H.**, *see* Strong, D. R., Lawton, J. H., & Southwood, R.

**Lazarev, B. S. 1975.** On the study of sucking insect pests of pear in Moldavia. *In* "Tree and Shrub Insects of Moldavia." Akad. Nauk Moldavskoii SSR Inst. Zool. p. 54-61. (In Ukrainian).
Mentions 7 coccoid spp.

**Lecoustre, R.**, *see* Tourneur, J. C., & Lecoustre, R.

**Lee, J. W.**, *see* Yoon, J. K., & Lee, J. W.

**Lee, R. F. 1971.** A preliminary annotated list of Malawi forest insects. Malawi Forest Res. Inst. Res. Record No. 40:132 pp. (coccoids on p. 39-42).
Records 63 coccoid spp.; hosts & distribution; parasites; several first records.

**Lemaeva, A. K.**, *see* Myartseva, S. N. & Lemaeva, A. K.

**Leonardi, G. 1896.** Coccoids on citrus in Italy. Agric. Patol. Veg., Padova 3(1):2-9. (In Italian).
Discusses 6 coccoid spp.

**1898e.** On *Aonidiella perniciosa* (Comst.) Berl. et Leon. Gior. Agric. Comm. della Toscana 16(9):187-189. (In Italian). (Not seen).

**1899b.** *Ceroplastes rusci* L., the scale insect of the fig (*Ficus carica*). Bol. Entomol. Agric. Patol. Veg. 4(1):203-205. (In Italian).
Description & control.

**1899c.** *Parlatoria zizyphi*. Bol. Entomol. Agric. Patol. Veg. 6(1):3-6. (In Italian).
Description; damage.

**1899d.** About a species of coccoid that damages *Araucaria excelsa*. Bol. Entomol. Agric. Patol. Veg. 6(3):53-55; (4):81-84; (5):103-105; (6/7):137-139; (9):193-196; (10):219-223. (In Italian).
Description & biology of *Eriococcus araucariae*.

**1899e.** *Pulvinaria camelicola* Signoret and a way to control it. Ann. Reale Scuola Sup. Agr. Portici 2(1):389-403. (In Italian).
Description of all stages; biology; control.

**1899f.** Coccoids on citrus in Italy. Bol. Lab. Entomol. Agr. Portici No. 24:1-10. (In Italian). (Not seen).

**1903c.** The coccoids of mulberry (*Diaspis pentagona* Targ.). Bol. Reale Scuola Sup. Agr. Portici 8(2):1-12. (In Italian).
Description & control.

**1910.** On two coccoids harmful to citrus recently introduced to Italy. Bol. Reale Scuola Sup. Agr. Portici 4(4):1-19. (In Italian).
Description & biology of *Aonidiella aurantii* & *Chrysomphalus dictyospermi* var. *pinnulifera*.

**Leonardi, G. & Berlese, A. 1895.** About some coccoids. Bol. Entomol. Agric. Patol. Veg., Padova 2(5):73-75. (In Italian). (Not seen).

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Lists 6 scale insects; discusses chemical, biological & integrated control.

**Le Roux, D. P. 1981.** Agricultural research, 1980. Repub. South Africa Dept. Agric. Tech. Serv. Rep. p. 83-89.
Discusses *Dactylopius austrinus*.

**Le Ruyet, H.**, *see* Matile-Ferrero, D., & Le Ruyet, H.

**Leston, D. 1970.** Entomology of the cocoa farm. Annu. Rev. Entomol. 15:273-294.

Lists 6 mealybugs; short description.

*See* Evans, H. C., & Leston, D.

**Leuschner, K.**, *see* Akinlosotu, T. A., & Leuschner, K.

**Leuschner, K. & Nwanze, K. 1978.** Preliminary observations of the mealybug (Hemiptera: Pseudococcidae) in Zaire. Proc. Cassava Prot. Workshop (Cali, Colombia, 1977) CIAT. 244 pp. (p. 195-198).
*Phenacoccus manihoti*; biology; damage; economic importance; hosts; natural enemies; control.

**Lewartowski, R.**, *see* Kagan, F., & Lewartowski, R.

**Lewis, R., Jr.**, *see* Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P.

**Li, A. L.**, *see* Hu, Y. Y., Dai, H. G., Du, X. T., & Li, A. L.

**Liang, Z. J.**, *see* Wang, T. C., Yao, T. F., Teui, S. Y., & Liang, Z. J.

**Liang, Z. Q.**, *see* Su, Z. A., Zhai, Q. H., Liang, Z. Q., & Guo, C. T.

**Liese, W.**, *see* Parameswaran, N., & Liese, W.

**Lim, W. H. 1973.** Studies on the bisexual race of *Dysmicoccus brevipes* Ckll: its bionomics and economic importance. Malaysian Agric. J. 49(2):254-267.
Description of different stages; mealybug-ant relationship.

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List of 22 new hosts with localities.

**Limon, F.**, *see* Panis, A., Carrero, J. M., & Limon, F.

**Lin, L. F.**, *see* Huang, P. K., Tsai, H. L., Lin, L. F., & Kuo, W. I.

**Lin, T. H. 1971.** Morphology of *Pseudococcus comstocki* (Kuwana) (Homoptera: Coccoidea: Pseudococcidae). Plant Prot. Bul. (Taipei) 13(4):162-166.
Lists hosts.

**Lindroth, C. H. & Ball, G. E. 1969.** *In* "An annotated list of invertebrates of the Kodiak Island Refugium," edited by Karlstrom, T. N. V. & Ball, G. E. Boreal Inst. Univ. Alberta 1969. p. 122-155.
List *Orthezia cataphracta* & *Phenacoccus* sp. on p. 137.

**Liniowska, E.**, *see* Koteja, J., & Liniowska, E.; Koteja, J., Liniowska, E., & Lubowiedzka, A.

**Linsley, E. G.**, *see* Hurd, P. D., Jr., & Linsley, E. G.

**Linzon, S. N.**, *see* Bisessar, S., McLaughlin, D. L., & Linzon, S. N.

**Liotta, G. 1981.** Entomological problems of the olive tree. Informatore Fitopatol. 31(1/2):11-17.

*Saissetia oleae*, *Pollinia pollini*; biology; damage; natural enemies; mentions 5 other coccoid spp.

**Liotta, G., Bissanti, G., & Lombardo, A. 1985.** The population dynamics of *Aspidiotus nerii* Bouché (Hom. Diaspididae) on lemon in Sicily. Proc. XIV Italian Natl. Congr. Entomol. 591-598. (In Italian, English summary).
Study shows no significant differences in population density due to location on fruit or change in climate.

**Liotta, G. & Sammartano, B. 1978.** Note on biology of *Pollinia pollini* (Costa) in Sicily (Hom. Asterolecaniidae). Atti Giornate Fitopatol. p. 304-306. (In Italian, English summary).
*P. pollini* has only 1 generation per year in Sicily; suggest time for control.

**1981.** Bioethological data on *Pollinia pollini* (Costa) (Hom. Asterolecaniidae) in Sicily. Redia 64:205-216. (In Italian, English summary).
Field & laboratory observations; damage.

**Litsinger, J. A.**, *see* Barrion, A. T., & Litsinger, J. A.

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**Lloyd, J. E.**, *see* Kumar, R., Lavigne, R. J., Lloyd, J. E., & Pfadt, R. E.

**Lockwood, G.**, *see* Bigger, M., & Lockwood, G.; Bigger, M., Lockwood, G., & Boafo, E. O.

**Lombardo, A.**, *see* Liotta, G., Bissanti, G., & Lombardo, A.

**Longo, S. 1985.** Morphological and biological observations on *Ceroplastes japonicus* Green (Homoptera: Coccoidea) in Italy. Proc. XIV Italian Natl. Congr. Entomol. p. 185-193. (In Italian, English summary).
Morphology; biology; life cycle.

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Rate of infestation; *C. fagisuga* is not confined only to fungal entry in the development of beech bark disease.

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Resistance; correlation; partial resistance to *C. fagisuga* attack associated with smooth bark with regular vertical pattern in its surface.

*See* Houston, D. R., Parker, E. J., & Lonsdale, D.

**Lorick, G. 1970.** Differential DNA synthesis in heterochromatic and euchromatic chromosome sets of *Planococcus citri*. Chromosoma 32(1):11-30.
Discusses results of cytophotometry, autoradiography & cytochemical variables.

**Loucif, Z. & Bonafonte, P. 1977.** Observation des population du pou de San Jose, *Quadraspidiotus perniciosus* Comst. (Hom. Diaspididae) dans la plaine de la Mitidja (Algerie) d'Octobre 1975 a Mai 1976. Fruits 32(4):253-261. (English summary).
Life cycle; mortality; climate; geographical distribution in Algeria.

**Louis, C. 1971.** Ultrastructure de microorganismes symbiotiques des coccides (Homoptera, Coccoidea). Proc. 13th Int. Congr. Entomol. (Moscow, 1968). 1:267-268.

**1972.** Une réaction exceptionnelle des symbiotes chez une cochenille pseudococcine, *Pseudococcus adonidum*: la sortie de leurs enclaves et leur destruction par la cellule hôte. J. Microscopie 14(2):64a-65a.
*Planococcus citri*, *Pseudococcus obscurus*, *gahani*, *diminitus* & *adonidum*.

**Louis, C. & Kuhl, G. 1972.** Synthèse in situ de protéines chez les symbiotes et chez les mycétocytes de *Pseudococcus obscurus* (Coccidae - Pseudococcinae) en absence ou en présence d'inhibiteurs spécifiques. Compt. Rend. Hebd. Seances, Acad. Sci. (Ser. D) Sci. Nat. (Paris) 274(5):715-718.
Describe techniques & probable migration proteins.

**Löyttyniemi, K. 1971.** On the occurrence of *Physokermes* Targ. species (Hom., Lecaniidae) and *Sacchiphantes abietis* L. (Hom., Adelgidae) on various local races of *Picea abies* in Finland. Ann. Entomol. Fennici 37(1):60-64.
Distribution; habitats, hosts of *P. hemicryphus* & *piceae*; first record for *P. hemicryphus*.

**1978.** Scale insects of the genus *Matsucoccus* (Homoptera, Margarodidae) on pine in Finland. Notulae Entomol. 58(3):115-116.
First record of *Matsucoccus pini* in Finland; host: *Pinus sylvestris*.

**Lozano, J. C., Toro, J. C., Castro, A., & Bellotti, A. 1977.** Production of cassava planting material. Cali Columbia: CIAT. 28 pp.
Damage; spreading of insects with plant pieces; *Aonidomytilus albus*, *Saissetia miranda*, *Phenacoccus gossypii* & mealybugs.

**Lubowiedzka, A.**, *see* Koteja, J., Liniowska, E., & Lubowiedzka, A.

**Luck, R. F. 1973.** Natural decline of an insecticide-induced outbreak of the pine needle scale, *Chionaspis pinifoliae* (Fitch) at South Lake Tahoe, California. Thesis, Univ. California Berkeley. 116 pp.

**1981.** Parasitic insects introduced as biological control agents for arthropod pests. *In* "Handbook of Pest Management in Agriculture" vol. 2, edited by Pimentel, D. CRC Press Inc., Boca Raton, Florida. 501 pp. (p. 125-284).
Lists 60 coccoid spp.; hosts & distribution; natural enemies.

*See* Carroll, D. P., & Luck, R. F.

**Luck, R. F. & Dahlsten, D. L. 1974.** Bionomics of the pine needle scale, *Chionaspis pinifoliae*, and its natural enemies at South Lake Tahoe, Calif. Ann. Entomol Soc. Amer. 67(3):309-316.
Give life history; 2 sympatric populations studied, one unisexual, other bisexual; list 3 parasites and 2 predators.

**Lugaresi, C. 1982.** *Diaspis pentagona* (*Pseudaulacaspis pentagona* Targioni-Tozzetti). Informatore Fitopatol. 32(3):31-34. (In Italian).
Morphology; biology; distribution; control; damage; hosts; natural enemies.

**Lukins, R. G. 1974.** Survey of scale insects of citrus. Commonwealth Sci. & Ind. Res. Org. Div. Entomol. Annu. Rep. (1973-1974). p. 77-78.
Reports of 11 coccoid spp.

**Lyon, H. H.**, *see* Johnson, W. T., & Lyon, H. H.

**MacGregor, L. R. 1972.** Estudio critico sobre tecnicas de montaje de coccidos (Insecta - Homoptera - Coccoidea). Anales Inst. Biol. Univ. Nacional Autónoma Mexico 43, Ser. Zool. (1):121-130. (French summary).
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**1974.** Algunos coccidos de importancia economica en Mexico (Homoptera: Coccoidea). Folia Entomol. Mexicana 29:81-82.
Lists 47 spp. in 8 fam.

**1981.** Coccoidea de Mexico, III. Redescripción del género *Takahashia* Cockerell y la revalidación del género *Pendularia* Fonseca, con las redescriptiones de las especies *P. pendens* Fonseca y *P. jaliscensis* (Cockerell) (Homoptera - Coccidae). Anales Inst. Biol. Univ. Nacional Autónoma Mexico 51 (1980) Ser. Zool. No. 1:299-314. (English summary).
Detailed study.

**MacGregor, L. R. & Sampedro, R. G. 1984.** Catalogo de coccidos Mexicanos - I. Familia Dactylopiidae (Homoptera - Coccoidea). Anales Inst. Biol. Univ. Nacional Autónoma Mexico 54 (1983) Ser. Zool. No. 1:217-223.
List 5 spp. occurring on Cactaceae.

**Macola, G. S.**, *see* Mallea, A. R., Macola, G. S., Garcia, S. J. G., Bahamondes, L. A., & Suarez, J. H.; Mallea, A. R., Macola, G. S., Garcia, S. J. G., & Lanati, S. J.

**Madar, Z.**, *see* Golan, Y., Madar, Z., & Mendel, Z.

**Maddison, P. A.**, *see* Mitchell, W. C., & Maddison, P. A.

**Magakian, Y. A.**, *see* Akopian, L. A., & Magakian, Y. A.; Khachatrian, M. G., Akopian, L. A., Petrosian, A. V., Karalova, E. M., Makarian, S. R., & Magakian, Y. A.; Khachatrian, M. G., Karalova, E. M., & Magakian, Y. A.; Khachatrian, M. G., Magakian, Y. A., & Karalova, E. M.

**Magakian, Y. A., Karalova, E. M., & Khachatrian, M. G. 1979a.** The oogenesis of the Ararat cochineal. 3. Nucleic acid synthesis in the nuclei of auxiliary cells during their differentiation and accomplishment of specific functions. Tsitologiya 21 (5):548-557. (In Russian).
*Porphyrophora hamelii*; used quantitative cytochemistry & radioautography.

**1979b.** DNA synthesis and accumulation in the oocyte nucleus during the follicular period of ovariole development in Ararat cochineal. Biol. Zhur. Armenii 32(12):1209-1214. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii*; used radioautography & cytophotometry.

**1980.** The oogenesis of the Ararat cochineal. 4. Nucleic acid synthesis and accumulation of DNA and histones in oocyte nuclei. Tsitologiya 22(11):1323-1330. (In Russian).
*Porphyrophora hamelii*.

**Magakian, Y. A., Makarian, S. R., Akopian, L. A., & Petrosian, A. V. 1979.** Oocyte nucleus in the oogenesis of cochineal insect (functional morphology of chromosomal nuclear apparatus). Biol. Zhur. Armenii 32(11):1129-1134. (In Russian, Armenian & English summaries).
Ararat cochineal, *Porphyrophora hamelii*.

**Magakian, Y. A., Makarian, S. R., Petrosian, A. V., Mkrtchian, L. P., Abroian, L. O., & Akopian, L. A. 1976.** The oogenesis of the Ararat cochineal (*Porphyrophora hamelii* Brandt). I. Histomorphological characteristics of the formation of follicular apparatus and the development of oocytes. Tsitologiya 18(8):932-936. (In Russian, English summary).
Give differentiation & development of oocytes, megatrophocytes & follicular cells.

**Magalhaes, B. P.**, *see* Silva, A. B., Magalhaes, B. P., & Costa, M. S.

**Magué, D. L. 1982.** Biology of the San Jose scale (*Quadraspidiotus perniciosus* (Comstock)) (Homoptera: Diaspididae) in New York apple orchards: male flight phenology and crawler dispersal. Dissertation Abstract Int. (B) 43(4)1982:975 Rec. Ac. No. 0394473.
Life cycle & development; ecology; population study; population dynamics; seasonal abundance; habitat; host & distribution within habitat; cyclical activity.

**Magué, D. L. & Reissig, W. H. 1983a.** Airborne dispersal of San Jose scale, *Quadraspidiotus perniciosus* (Comstock) (Homoptera: Diaspididae), crawlers infesting apple. Environ. Entomol. 12(3):692-696.
Aerial dispersal of *Q. perniciosus* crawlers within apple tree canopy & between trees was positively correlated with seasonal abundance of crawlers on bark.

**1983b.** The phenology of the San Jose scale (Homoptera: Diaspididae) in New York State apple orchards. Canad. Entomol. 115(7):717-722.
*Quadraspidiotus perniciosus*; pheromone trapping; report 2 periods of male flight activity; show logistic relationship between crawler density & fruit infestation.

**Mahdihassan, S. 1970.** Sex differentiation of young lac insects (*Kerria sindica*) under polarized light. Philippine J. Sci. 99(3/4):195-201.
Sex differences visible under polarizing microscope.

**1976a.** The anal ring hairs of coccids (Hem. Homoptera). Eos (Madrid) 51:65-68.
Study based on lac insect.

**1976b.** A fig tree heavily infested with *Icerya aegyptica* (Dougl.). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 33:315-317.
*I. aegyptica* & *Parasaissetia nigra* reported for first time in Karachi (Pakistan).

**1977.** Mixed infection of lac. J. Bombay Nat. Hist. Soc. 74(3):551-552.
Lists several coccoid spp. on same food plant which might be used for lac production.

**1978.** The mango tree in Karachi extensively infected by a scale insect. Pakistan J. Sci. Industrial Res. 21(1):19-21.
*Chloropulvinaria polygonata*; first record in Karachi; damage.

**1979.** A comparative study of some scale insects interpreting the biogenesis of lac products. Pakistan J. Sci. Res. 31(3/4):223-228.
Investigated 8 coccoid spp. that produce lac or similar secretions.

**1983.** Stebbing on early sex differentiation between larvae of lac insect and on the Indian wax insect. Pakistan J. Sci. Industrial Res. 26(4):254-256.

Discusses correctness of Stebbing's illustrations.

*See* Quadri, N. N., & Mahdihassan, S.

**Makarian, S. R. 1980.** Morphological characteristics of the symbionts of the Ararat cochineal. Biol. Zhur. Armenii 33(9):980-984. (In Russian).
*Porphyrophora hamelii*; oocyte of sp. infected with symbionts; symbiotic organisms characterized by globular forms.

*See* Khachatrian, M. G., Akopian, L. A., Petrosian, A. V., Karalova, E. M., Makarian, S. R., & Magakian, Y. A.; Magakian, Y. A., Makarian, S. R., Akopian, L. A., & Petrosian, A. V.; Magakian, Y. A., Makarian, S. R., Petrosian, A. V., Mkrtchian, L. P., Abroian, L. O., & Akopian, L. A.

**Maksimova, V. I. 1973a.** Characteristics of the San Jose scale (*Quadraspidiotus perniciosus* Comst.). Vestnik Zool. 7(3):81-84. (In Russian).
Studied growth of the thorax & body on different hosts & effect of temperature on body dimension.

**1973b.** Colonization of San Jose scale (*Quadraspidiotus perniciosus* Comst.). Vestnik Zool. 7(6):78-80. (In Russian).
Crawlers react to air temperature and humidity.

**1974.** The effect of the ambient temperature on the development of San Jose scale (*Quadraspidiotus perniciosus* Comst.). Vestnik Zool. No. 2:81-82. (In Russian).
Optimal developmental temperature in first instar on apple branches was 26-28°C; higher temperatures (33-38°C) were unfavorable for development.

**1976.** Sex ratio and female sterility in *Quadraspidiotus perniciosus* Comst. Vestnik Zool. No. 2:76-78. (In Russian).
Detailed study.

**1978.** Respiration of the San Jose scale *Quadraspidiotus perniciosus* (Insecta, Coccoidea). Vestnik Zool. No. 5:58-61. (In Russian, English summary).
Studied respiration at different stages of ontogenesis.

**Malhotra, C. P. 1983.** Systematic trials of culturing lac insect, *Kerria lacca* (Kerr) in USSR, with a short bibliography of lac insect and its host plant. Indian J. Forestry 6(4):269-274.
Reviews of results at numerous trial sites with regards to different strains.

**1984.** Role of the biotic factors in limiting lac production in USSR. Indian J. Forestry 7(4):281-286.
Lists 22 predators & 11 harmful parasites.

**Mallea, A. R., Macola, G. S., Garcia, S. J. G., Bahamondes, L. A., & Suarez, J. H. 1974.** Observaciones sobre posturas de *Aspidiotus hederae* (Vallot) (Homoptera - Diaspididae). Rev. Fac. Cien. Agrarias (Argentina) 20(2):145-147. (English summary).
Observed egg laying & almost immediate hatching.

**Mallea, A. R., Macola, G. S., Garcia, S. J. G., & Lanati, S. J. 1984.** Bio-Eto-Ecología de *Pollinia pollini* (Costa) (Homoptera - Asterolecaniidae) para la provincia de Mendoza, Republica Argentina. Intersectum 16(3):1-16.
Redescription; morphology; biology; damage & control.

**Malphettes, C. B. 1980.** Études entreprises sur *Cryptococcus fagi* Baersp. en haute Normandie. Ann. Sci. For. 37(4):291-297. (English & German summaries).

Population dynamics; ecology.

*See* Decourt, N., Malphettes, C. B., Perrin, R., & Caron, D.

**Mamedova, S. R. 1971.** Pests on *Thea sinensis* L., citrus and persimmon (*Diospyros kaki* Thunb.) in Azerbaidz. Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 2:356.
Lists 9 coccoid spp.

**Mammen, K. V. 1976.** Occurrence of rice mealybug in Kerala. Int. Rice Res. Newsletter 1(2):14-15.
*Rypersia oryzae*; infestation; control.

**Manabe, Y.**, *see* Waku, Y., & Manabe, Y.

**Manjunath, T. M. 1985.** *Maconellicoccus hirsutus* on grapevine. FAO Plant Prot. Bul. 33(2):74.
Serious outbreaks of *M. hirsutus* occurred in India; distribution; life history; biological control.

**Marchewczyk, A.**, *see* Dziedzicka, A., & Marchewczyk, A.

**Marcu, O. 1978.** Contributions to the study of beech canker. Bul. Univ. Brasov Ser. B. Econ. Forest. 20:39-44. (In Romanian, English summary).
*Cryptococcus fagi*; causes of attack; damage; influence on wood quality; distribution.

**Marin, L. R. & Cisneros, V. F. H. 1977.** Biologia y morfologia de la cochinilla del Carmin, *Dactylopius coccus* Costa (Homopt.; Dactylopiidae). Rev. Peru. Entomol. 20(1):115-120. (English summary).
Describe all stages; host.

**1979.** La queresa negra del chirimoyo: *Saissetia nigra* (Nietner) (Homoptera: Coccidae). Rev. Peru. Entomol. 22(1):103-110.
Life cycle; hosts; natural enemies.

**Marotta, S.**, *see* Tranfaglia, A., & Marotta, S.; Tranfaglia, A., Pellizzari, G., & Marotta, S.

**Marotta, S. & Tranfaglia, A. 1985.** Redescription of *Macrocerococcus superbus* Leonardi and consideration on its generic position, with a note on *Puto* Signoret. Bol. Lab. Entomol. Agr. "Filippo Silvestri" 42:212-219. (In Italian, English summary).
Designated lectotype for *M. superbus*; generic characters for *Puto*.

**Marsh, P. M.**, *see* Miller, D. R., Marsh, P. M., & Gordon, R. D.

**Martelli, G. P.**, *see* Rosciglione, B., Castellano, M. A., Martelli, G. P., Savino, V., & Cannizzaro, G.

**Martin, H. E.**, *see* Panis, A., & Martin, H. E.

**Martin, P. B.**, *see* Tippins, H. H., & Martin, P. B.

**Martinez, Z. & Diaz-Sanchez, J. 1981.** Estudio biologico comparativo de *Coccus viridis* Green en café y citricos. Centro Agric. 8(1):67-73. (English summary).
Development; observed 3 nymphal instars; mortality caused by a fungus.

**Martín-Mateo, M. P. 1983.** Inventario preliminar de los coccidos de España. I. Diaspididae. Graellsia 39:47-71. (English summary).

Host & distribution of 86 coccoid spp. in 45 gen.; notes on some; correction of earlier misidentifications.

**1984.** Inventario preliminar de los coccidos de España. II. Asterolecaniidae, Kermococcidae, Coccidae y Aclerdidae. Graellsia 40:63-79.
Host & distribution of 41 coccoid spp. in 26 gen.; notes & correction of former misidentifications.

**1985.** Inventario preliminar de los coccidos de España. III. Pseudococcidae, Ortheziidae y Margarodidae. Graellsia 41:89-104. (English summary).
Hosts & distribution of 49 spp.

**Martino, E. di. & Benefatto, D. 1981.** Ethological notes on *Saissetia oleae* (Oliv.) in an olive-growing area in Eastern Sicily. Informatore Fitopatol. 31(1/2):61-64. (In Italian, English summary).
Population fluctuation; life cycle; natural enemy.

**Martinovich, V. & Folk, Gy. 1982.** Ornamental Plant Protection. Mezögazdasági Kiadó, Budapest. 250 pp. (In Hungarian).
Discuss different diseases & pests of about 100 plants; control recommendations; pests include 30 coccoid spp.

**Martorell, L. F. 1976.** Annotated food plant catalog of the insects of Puerto Rico. Agric. Expt. Sta., Univ. Puerto Rico, Dept. Entomol. 303 pp.
Lists 110 coccoid spp. in 54 gen.; hosts & distribution.

*See* Medina-Gaud, S., & Martorell, L. F.

**Martorell, L. F. & Medina-Gaud, S. 1974.** Orchid pests in Puerto Rico. J. Agric. Univ. Puerto Rico 58(1):105-124.
List 11 coccoid spp. in 5 fam.; short description; hosts & distribution.

**Mason, A. H. 1977.** A review of maple bark scale, *Cryptococcus williamsi* Krb. and Hale (Homoptera: Cryptococcidae) in New Hampshire. J. New York Entomol. Soc. 85(4):190-191. (Paper presented at 47th Annu. Meeting Eastern Branch, Entomol. Soc. Amer., Boston).
Hosts & distribution; natural enemy.

**Masutti, L. 1983.** Leaf-sucking arthropods in forest biocenoses. Proc. XIII Italian Natl. Congr. Entomol. (Turin). p. 357-369. (In Italian, English summary).
Discusses *Matsucoccus feytaudi*.

**Matei, I. & Bobirnac, B. 1971.** The dynamics of development of *Parthenolecanium corni* Bché on *Ribes aureum* Pursh in the period 1968-1969 (Note 1). Muzeul Stiintele Nat. Bacau. Studii Comunicari. p. 93-102. (In Romanian).
Effects of temperature & rainfall.

**Matesova, G. Ia. (Matesova, G.) 1971.** An ecological-geographical description of the coccids of the southeast of Kazakhstan. Akad. Nauk Kazakhskoi SSR Inst. Zool. Trudy 32:24-32. (In Russian).
Data on food-plants & distribution of 129 coccoid spp.

**1974.** A new species from the genus *Metadenopsis* Matesova (Homoptera, Coccoidea, Pseudococcidae). Akad. Nauk Kazakhskoi SSR Inst. Zool. Trudy 35:56-63. (In Russian).
*M. ceratocarpi*; description; comparison with *M. halogetanis*; hosts & distribution.

**1975.** A new species of the genus *Cerococcus* (Homoptera, Asterolecaniidae) from West Kazakhstan. Zool. Zhur. 54(5):784-787. (In Russian, English summary).
*C. polyporus*.

**1976.** Two new species of eriococcids ("feltcoccoid") (Homoptera, Coccoidea, Eriococcidae) in Kazakhstan. Izv. Akad. Nauk Kazakhskoi SSR Ser. Biol. 3:22-26. (In Russian).
*Acanthococcus artemisiarum* & *multispinosus*.

**1977.** California scale insect - dangerous quaratine pest in Kazakhstan. Izv. Akad. Nauk Kazakhskoi SSR Ser. Biol. 3:26-30.
*Quadraspidiotus perniciosus*; damage; biological control.

**1979.** New species in the genus *Parafairmairia* Cockerell (Homoptera, Coccoidea). *In* "New Species of Insects." Akad. Nauk SSSR Trudy Vses. Entomol. Obsh. 61:48-49. (In Russian).
*P. elongata*.

**1980a.** Records on the biology of San Jose scale, *Quadraspidiotus perniciosus* (Comst.) in Southwest Kazakhstan. *In* "The Insects of Kazakhstan." Akad. Nauk Kazakhskoi SSR Inst. Zool. Trudy 39:6-23. (In Russian).
Phenology; mortality factors; density; climatic conditions; hosts.

**1980b.** New species of the genus *Rhizoecus* Künckel (Homoptera, Pseudococcidae) in Kazakhstan. Akad. Nauk Kazakhskoi SSR Inst. Zool. Trudy 39:110-112. (In Russian).
*R. kazachstanus*.

**1981.** New species of *Mirococcopsis* (Homoptera, Coccoidea, Pseudococcidae) from Kazakhstan. Trudy Zool. Inst. Leningrad 105:56-62. (In Russian).
*M. salina*, *brevipilosa* & *longipilosa* n. spp.; key to spp.

**1984.** A new species of the genus *Heliococcus* (Homoptera, Pseudococcidae) from Kazakhstan. Zool. Zhur. 63(9):1427-1429. (In Russian, English summary).
*H. etubularis*.

*See* Konstantinova, G. M., Kozár, F., Jasnosh, V. I., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, E., Gura, N. A., & Knyazatova, V. J.

**Matesova, G. Ia. & Romanenko, K. E. 1982.** The plum scale (*Sphaerolecanium prunastri* Fonsc.) - a pest of stone varieties in the Chu Lowlands. Entomol. Issled. v. Kirgizii No. 15:77-83. (In Russian).
Biology; host; effect of temperature; natural enemy; comparison with *Rhodococcus turanicus*.

**Matevosian, A. K. 1977.** Karyological peculiarities of the Ararat cochineal, *Porphyrophora hamelii* Brandt (Coccoidea: Margarodidae). Tsitologiya 19(6):704-707. (In Russian, English summary).
Detailed study.

**Mathys, G.**, *see* Ody, M., Mathys, G., & Huggel, H.

**Matile-Ferrero, D.,** formerly Ferrero, D.

**Matile-Ferrero, D. 1970.** Hemiptera (Homoptera): Coccoidea. South African Animal Life 14:171-185.
Results of Lund University Expedition in 1950-1951. *Heliococcus brincki* n. sp., *Pleistocerarius* n. gen., *P. capensis* n. sp.

**1974.** Un *Augulaspis* nouveau des montagnes du Cameroun Occidental (Hom. Coccoidea Diaspididae). Ann. Soc. Entomol. France 10(3):647-651. (English summary).
*A. balachowskyi* n. sp.; gen. *Versiculaspis* synonymized with *Augulaspis*; n. combs.; key to spp.

**1976.** La faune terrestre de l'Île de Sainte-Hélène. Part III. (7.) Coccoidea. Mus. Roy. l'Afrique Centrale - Tervuren, Belgique Ann. Ser. 8, Sci. Zool. No. 215:292-318.
Records 31 spp. in 19 gen. & 4 fam. with hosts; n. syn.; *Ripersiella mediatlantica* n. sp.; n. combs.; key to spp. of *Ripersiella*.

**1977.** Une cochenille nouvelle nuisible au manioc en Afrique Équatoriale, *Phenacoccus manihoti* n. sp. (Homoptera, Coccoidea, Pseudococcidae). Ann. Soc. Entomol. France 13(1):145-152. (English summary).
Description of 3 nymphal instars & adult female; hosts & distribution; parasites & predators.

**1978a.** Homoptères Coccoidea de l'Archipel des Comores. *In* "Faune Entomologique de l'Archipel des Comores," edited by Matile, L. Mus. Natl. Hist. Nat. Mémoires (n.s.) Ser. A. 109:39-70.
*Mametia* n. gen.; *M. louisieae* n. sp.; first record for 35 coccoid spp. in 6 fam.; n. syns.; n. combs.

**1978b.** Cassava mealybug in the People's Republic of Congo. Proc. Int. Workshop on the Cassava Mealybug *Phenacoccus manihoti* Mat.-Ferr. (Pseudococcidae) (Zaire, 1977). p. 29-46.
Distribution; description of female & third instar nymph; association with ants.

**1979.** Description d'un *Chorizococcus* nouveau inféodé au riz au Cameroun; remarques sur les genres voisins (Hom. Coccoidea, Pseudococcidae). Rev. Franç. Entomol. 1(2):70-74. (English summary).
*C. mireorum*; key to 3 *Chorizococcus* spp. living on rice; list of 11 mealybugs injurious to rice.

**1982.** Note sur les *Ischnaspis* Douglas et *Trischnaspis* Ben-Dov Afrotropicaux et description de trois espèces nouvelles (Homoptera, Coccoidea, Diaspididae). Rev. Franç. Entomol. 4(2):63-71. (English summary).
*Ischnaspis ghesquierei* & *remaudierei* & *Trischnaspis balachowskyi* n. spp.; key to 5 spp. of *Ischnaspis*; new distribution records.

**1983a.** Espèces nouvelles de cochenilles associées à une pelouse alpine (Insecta, Homoptera, Coccoidea, Pseudococcidae). Rev. Suisse Zool. 90(3):629-638. (English summary).
*Atrococcus gouxi*, *Heterococcus dethieri* & *Volvicoccus alpinus* n. spp.; *Heliococcus radicicola* redescribed; new records.

**1983b.** *Allococcus euphorbiae* (Ezzat & McConnell) nouvel ennemi du gèranium dans le midi de la France. L'Entomologiste 39(5):253-255.
Host & distribution; natural enemy; ant; short description.

**1984a.** Le genre *Iberococcus* Gomez-Menor, 1928 dans le Bassin Méditerranéen Occidental (Homoptera: Coccoidea: Pseudococcidae) 1. Contribution à l'étude faunistique des Pseudococcidae du Bassin Méditerranéen. Ann. Soc. Entomol. France (n.s.) 20(3):291-296. (English summary).
*I. gomezmenori* n. sp.; *Iberococcus* redefined; *I. andalusicus* redescribed.

**1984b.** *Etiennea villiersi*, n. g., n. sp. du Sénégal Méridional (Homoptera, Coccoidea, Coccidae). Rev. Franç. Entomol. 6(3):99-103. (English summary).
Characteristics; description of adult female; host & distribution; natural enemy.

**1984c.** Professor Alfred Serge Balachowsky. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 313-314.
Biography.

**1984d.** Insects of Saudi Arabia, Homoptera: Subordo Coccoidea. Fauna Saudi Arabia 6:219-228. (Arabic summary).
Lists 47 spp. in 38 gen. & 8 fam.; *Dysmicoccus jizani* & *Peliococcus talhouki* n. spp.

**1985.** Deux nouveaux *Puto* associés au 'páramo desertico' des Andes Vénézuéliennes (Homoptera, Coccoidea, Pseudococcidae). Rev. Franç. Entomol. 7(3):135-141. (English summary).
*Puto lamottei* & *paramoensis* n. spp.; description; hosts; habitat; key for 5 spp. of South American *Puto*.

*See* Balachowsky, A. S., & Matile-Ferrero, D.; Ben-Dov, Y., & Matile-Ferrero, D.; Couturier, G., Matile-Ferrero, D., & Richard, C.; Delage-Darchen, B., Matile-Ferrero, D., & Balachowsky, A. S.; Kozár, F., & Matile-Ferrero, D.

**Matile-Ferrero, D. & Balachowsky, A. S. 1972.** Contribution à l'étude de la faune des Coccoidea des Îles Canaries avec description de deux espèces nouvelles (Hom.). Bul. Soc. Entomol. France 77:106-114.
*Phenacoccus menieri* & *Aonidiella atlantorum* n. spp.; description; illustrations; biology; hosts & distribution; parasites & predators; list of 7 coccoid spp. living on *Euphorbia* spp. on Canary Islands; new locality records for 4 spp.

**1973.** Deux Aspidiotini (Homoptera, Coccoidea - Diaspididae) nouveaux de Nouvelle-Calédonie. Cahiers Pacifique No. 17:239-243.
*Octaspidiotus caledonicus* & *Aspidiotus cochereaui* n. spp.; description; biology; host & distribution.

**Matile-Ferrero, D. & Le Ruyet, H. 1985.** Cochenilles nouvelles du massiforestier de Tai, en Côte d'Ivoire (Homoptera, Coccoidea). Rev. Franç. Entomol. 7(5):257-272. (English summary).
Describe 2 n. gen. & 8 n. spp. from the Tai Tropical Rain Forest on Ivory Coast.

**Matile-Ferrero, D. & Nonveiller, G. 1984.** Coccoidea. *In* Nonveiller, G., "Catalogue commenté et illustré des insectes du Cameroun d'intérêt agricole (apparitions, répartition, importance)." Institut pour la Protection des Plantes, Beograd, Mém. XV:210 pp. (p. 62-70).
List 89 spp. in 56 gen. & 7 fam.; hosts; distribution; natural enemies.

**Matsubara, Y.**, *see* Kawai, S., Matsubara, Y., & Umesawa, K.

**Maw, M. G. 1984.** *Opuntia polyacantha* Haworth, plains prickly-pear cactus (Cactaceae). *In* "Biological Control Programmes Against Insects and Weeds in Canada 1969-1980," edited by Kelleher, J. S. & Hulme, M. A. CAB, England. 410 pp. (coccoids on p. 183-184).
Records on *Dactylopius coccus* & *confusus*.

**McAtee, W. L. 1907.** Birds that eat scale insects. U.S. Dept. Agric. Yearbook (1906). p. 189-198.
Lists 13 coccoid spp. eaten by birds; gives list of birds.

**McCambridge, W. F. 1974.** Pinyon needle scale. U.S. Forest Serv. Forest Pest Leaf. 148:1-4.
*Matsucoccus acalyptus*; life history; damage; control; hosts & distribution.

**McClanahan, R. J. 1970.** Cottony maple scale and its natural control. Entomophaga 15(3):287-289.

Occurrence & abundance of *Pulvinaria innumerabilis* on maple near Harrow, Ontario on *Acer negundo*.

**McClaren, G. F.**, *see* Emms, L. M., & McClaren, G. F.

**McClure, M. S. 1976.** Colonization and establishment of the red pine scale, *Matsucoccus resinosae* (Homoptera: Margarodidae) in a Connecticut plantation. Environ. Entomol. 5(5):943-947.
Horizontal & vertical distribution; dispersal; densities; hosts.

**1977a.** Resurgence of the scale, *Fiorinia externa* (Homoptera: Diaspididae), on hemlock following insecticide application. Environ. Entomol. 6(3):480-484.
Biology; host; natural enemies; control.

**1977b.** Dispersal of the scale *Fiorinia externa* (Homoptera: Diaspididae) and effects of edaphic factors on its establishment on hemlock. Environ. Entomol. 6(4):539-544.
Detailed study.

**1977c.** Population dynamics of the red pine scale, *Matsucoccus resinosae* (Homoptera: Margarodidae): the influence of resinosis. Environ. Entomol. 6(6):789-795.
Infected trees secrete resins from feeding wounds; nymphs feeding on these trees require 2-3 weeks longer to mature and females produce significantly fewer eggs than their mothers.

**1978.** Seasonal development of *Fiorinia externa*, *Tsugaspidiotus tsugae* (Homoptera: Diaspididae), and their parasite, *Aspidiotiphagus citrinus* (Hymenoptera: Aphelinidae): importance of parasite-host synchronism to the population dynamics of two scale pests of hemlock. Environ. Entomol. 7(6):863-870.
Life stages; parasitism.

**1979a.** Self-regulation in populations of the elongate hemlock scale, *Fiorinia externa* (Homoptera: Diaspididae). Oecologia (Berlin) 39:25-36.
Detailed study; life history; natural enemy; host.

**1979b.** Self-regulation in populations of the elongate hemlock scale, *Fiorinia externa* (Homoptera: Diaspididae): role of food quantity and quality. Entomol. Soc. Amer. Misc. Publ. 11(3):33-40.
Studies revealed that survival, development rate & fecundity of *F. externa* were negatively influenced by its own density for 2 consecutive generations.

**1979c.** Spatial and seasonal distribution of disseminating stages of *Fiorinia externa* (Homoptera: Diaspididae) and natural enemies in a hemlock forest. Environ. Entomol. 8(5):869-873.
Author concludes that all stages were able to establish new infestations; means of dispersal; abundance; time of year.

**1980a.** Foliar nitrogen: a basis for host suitability for elongate hemlock scale, *Fiorinia externa* (Homoptera: Diaspididae). Ecology 61(1):72-79.
Hosts; success on fertilized hemlocks; density dependent success; development rate; fecundity.

**1980b.** Competition between exotic species: scale insects on hemlock. Ecology 61(6):1391-1401.
Mentions *Fiorinia externa* & *Tsugaspidiotus tsugae*; colonization time; fecundity; foliar nitrogen; interspecific & intraspecific competition; parasitism; survival.

**1981a.** Effects of voltinism, interspecific competition and parasitism on the population dynamics of the hemlock scales, *Fiorinia externa* and *Tsugaspidiotus tsugae* (Homoptera: Diaspididae). Ecol. Entomol. 6:47-54.
Detailed study.

**1981b.** A new (?) insect pest of red pine in Connecticut. Frontiers Plant Sci. 33(2):4-6.
New insect pest for Connecticut is *Pineus boerneri*; host, damage & biological note for *Matsucoccus resinosae*.

**1982.** Distribution and damage of two *Pineus* species (Homoptera: Adelgidae) on red pine in New England. Ann. Entomol. Soc. Amer. 75(2):150-157.
Records *Matsucoccus resinosae*, *Tsugaspidiotus tsugae*, *Fiorinia externa* & *Phenacaspis pinifoliae*.

**1983a.** Population dynamics of a pernicious parasite: density dependent vitality of red pine scale. Ecology 64(4):710-718.
*Matsucoccus resinosae*; developmental rate; dispersal; fecundity; fitness; overwintering mortality; population dynamics; predation; survivorship.

**1983b.** Temperature and host availability affect the distribution of *Matsucoccus matsumurae* (Kuwana) (Homoptera: Margarodidae) in Asia and North America. Ann. Entomol. Soc. Amer. 76(4):761-765.
Author states that *M. matsumurae* is very much confined to areas with moderate temperature by its inability to exploit available hosts in areas with more extreme winter & summer temperature than its native habitat; host list & distribution.

**1983c.** Reproduction and adaptation of exotic hemlock scales (Homoptera: Diaspididae) on their new and native hosts. Environ. Entomol. 12(6):1811-1815.
*Fiorinia externa*, *Nuculaspis tsugae*.

**1984.** Influence of cohabitation and resinosis on site selection and survival of *Pineus boerneri* Annand and *P. coloradensis* (Gillette) (Homoptera: Adelgidae) on red pine. Environ. Entomol. 13(3):657-663.
Mentions 3 coccoid spp., 2 of them as examples of cohabitation.

**1985a.** Patterns of abundance, survivorship, and fecundity of *Nuculaspis tsugae* (Homoptera: Diaspididae) on *Tsuga* species in Japan in relation to elevation. Environ. Entomol. 14(4):413-415.
Hosts; density, survivorship & fecundity were significantly greater at the edges of natural distribution & at low elevation cultivated sites than at any of the natural montane sites.

**1985b.** Susceptibility of pure and hybrid stands of *Pinus* to attack by *Matsucoccus matsumurae* in Japan (Homoptera: Coccoidea: Margarodidae). Environ. Entomol. 14(4):535-538.
Survivorship of scale nymphs & fecundity of adults were significantly lower on the native Japanese pines & on their interspecific hybrid than on several pure & hybrid pines of related exotic spp.

*See* Young, B. L., Miller, D. R., & McClure, M. S.

**McClure, M. S., Dahlsten, D. L., DeBarr, G. L., & Hedden, R. L. 1983.** Control of pine bast scale in China. J. Forestry 81(7):440, 475-477.
*Matsucoccus matsumurae*; damage; life cycle; biological, chemical & silvicultural control; list of susceptible & resistant hosts; map of distribution.

**McClure, M. S. & Fergione, M. B. 1977.** *Fiorinia externa* and *Tsugaspidiotus tsugae* (Homoptera: Diaspididae): distribution, abundance, and new hosts of two destructive scale insects of eastern hemlock in Connecticut. Environ. Entomol. 6(6):807-811.
Give detailed table on density by hosts & locality.

**McClure, M. S. & Hare, J. D. 1984.** Foliar terpenoids in *Tsuga* species and the fecundity of scale insects. Oecologia (Berlin) 63:185-193.
*Fiorinia externa*, *Nuculaspis tsugae*; analysis of foliar terpenoids may provide basis for predicting relative susceptibility of *Tsuga* spp. to attack by *F. externa* & *N. tsugae*.

**McComb, C. W.**, *see* Talerico, R. L., McComb, C. W., & Garrett, W. T.

**McCracken, F. I.**, *see* Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P.

**McDaniel, B. 1970.** The armored scale insects of Texas (Homoptera: Coccoidea: Diaspididae). Part III. Southwest. Nat. 14:411-440.
Key to Texas spp. of *Melanaspis* & *Quadraspidiotus*; records; hosts & descriptive notes.

**1971.** The armored scale insects of Texas (Homoptera: Coccoidea: Diaspididae). Part IV. The tribe Diaspidini. Southwest. Nat. 15:275-308.
Key to spp. in some gen.; records; hosts; descriptive notes; description of *Duplachionaspis mackenziei* n. sp.

**1972a.** The mealybugs of Texas (Homoptera: Coccoidea: Pseudococcidae). Part I. Texas J. Sci. 23:309-342.
Description & figures of adult female of 12 spp.; hosts & distribution records including new records for each sp.; key to gen.; morphology.

**1972b.** The armored scale insects of Texas (Homoptera: Coccoidea: Diaspididae). Part V. The tribe Diaspidini. Southwest Nat. 16:321-340.
*Lepidosaphes boguschi* & *Pelliculaspis celtis* n. spp.; further descriptions; keys to spp. in 3 gen.; hosts & distribution.

**1973.** The armored scale insects of Texas (Homoptera: Coccoidea: Diaspididae). Part VI. The tribe Diaspidini genus *Pinnaspis*. Southwest. Nat. 17:389-404.
Descriptive notes for 15 spp. in 10 gen.; syn.; keys to spp.; hosts & distribution in Texas.

**1974.** The armored scale insects of Texas (Homoptera: Coccoidea: Diaspididae). Part VII. Southwest. Nat. 18(4):417-442.
Records 8 spp. in 5 gen.; hosts & distribution; descriptive notes; key to spp. in 2 gen.; key to subfamily & tribe of Texas Diaspididae; key to gen. of Texas Aspidiotini, Diaspidini & Odonaspidini; host list & index of Texas Diaspididae.

**1975a.** The mealybugs of Texas (Homoptera: Coccoidea: Pseudococcidae). Part II. Texas J. Sci. 26(1/2):19-51.
Description of 17 spp. in 10 gen.; syns.; hosts & distribution; keys to some spp.

**1975b.** The mealybugs of Texas (Homoptera: Coccoidea: Pseudococcidae). Part III. Texas J. Sci. 26(3/4):485-518.
Describes 16 spp. in 6 gen.; syns.; keys; hosts & distribution; host list of Texas Pseudococcidae.

**McEwen, F. L.**, *see* Beardsley, J. W., Jr., Su, T. H., McEwen, F. L., & Gerling, D.

**McFadyen, R. E. 1979.** The cactus mealybug *Hypogeococcus festerianus* (Hem.: Pseudococcidae) an agent for the biological control of *Eriocerus martinii* (Cactaceae) in Australia. Entomophaga 24(3):281-287.
Life history; hosts; natural enemies.

*See* Auld, B. A., Hosking, J., & McFadyen, R. E.; Zimmermann, H. G., Erb, H. E., & McFadyen, R. E.

**McIntire, S. J. 1889.** Further notes upon some remarkable Coccidae from British Guiana. J. Quekett Microscopical Club, Ser. II. 4:22-25. (Not seen).

**McKenzie, H. L.**, *see* Miller, D. R., & McKenzie, H. L.

**McLaren, I. W. 1971.** A comparison of the population growth potential in California red scale, *Aonidiella aurantii* (Maskell), and yellow scale, *A. citrina* (Coquillet), on citrus. Austral. J. Zool. 19(2):189-204.
Effect of temperature and humidity.

**McLaughlin, D. L.**, *see* Bisessar, S., McLaughlin, D. L., & Linzon, S. N.

**McLaughlin, J. R.**, *see* Heath, R. R., McLaughlin, J. R., Tumlinson, J. H., Ashley, T. R., & Doolittle, R. E.

**McLaughlin, J. R. & Ashley, T. R. 1977.** Photoperiod and temperature modulation of male eclosion timing in the white peach scale, *Pseudaulacaspis pentagona*. Physiological Entomol. 2:209-212.
Eclosion of males depend on light & temperature; light is critical for release of eclosion; temperature ensures maximum survival & mating.

**McMullen, R. D. 1978.** Two mealybugs (Homoptera: Pseudococcidae) new to British Columbia. Canad. Entomol. 110(8):895.
*Pseudococcus comstocki* & *Anisococcus quercus*.

**McPherson, J. E.**, *see* Nixon, P. L., & McPherson, J. E.

**Medina, V. 1978.** Presencia en Valencia de *Rhizoecus cacticans* (Hambl.) (Homoptera, Pseudococcidae). Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 4(1):15-21. (English summary).
Characteristics of the gen.; description; damage; control; first record in Spain; short review of other *Rhizoecus* spp.

**Medina-Gaud, S.**, *see* Martorell, L. F., & Medina-Gaud, S.

**Medina-Gaud, S. & Garcia-Tuduri, J. 1977.** New arthropod records for Puerto Rico. Agric. J. Univ. Puerto Rico 61(3):409-412.
First record for 8 coccoid spp.; hosts & distribution.

**Medina-Gaud, S. & Martorell, L. F. 1973.** New insect records for Puerto Rico. J. Agric. Univ. Puerto Rico 57(3):247-254.
List 5 coccoid spp. in 2 fam.; hosts & distribution.

**Medler, J. T. 1980.** Insects of Nigeria...check list and bibliography. Mem. Amer. Entomol. Inst. No. 30:919 pp. (coccoids on p. 85-90).
Lists 163 coccoid spp. in 123 gen. & 10 fam.

**Megahed, M.**, *see* Salama, H. S., El-Sherif, A. F., & Megahed, M.

**Mehendale, A. R., Rama-Rao, A. V., & Venkataraman, K. 1972.** Lac pigments: VII. Constitution and synthesis of desoxyerythrolaccin and isoerythrolaccin: and an NMR spectral method for distinguishing isomeric hydroxyanthraquinone derivatives. Indian J. Chem. 10(11):1041-1046.
Mention *Eriococcus confusus*.

**Mehra, B. P.**, *see* Das Gupta, J. M., & Mehra, B. P.; Gokulpure, R. S., & Mehra, B. P.

**Mehra, B. P., Naqvi, A. H., & Sah, B. N. 1979.** Note on the emergence of dimorphic males of the lac insect. Indian J. Agric. Sci. 49(1):57-60.
*Kerria lacca*; male production could be winged or wingless; gravid females from variety of food plants are able to produce either type of males.

**Meinwald, J.**, *see* Eisner, T., Nowicki, S., Goetz, M., & Meinwald, J.

**Meinwald, J., Smolanoff, J., Chibnall, A. C., & Eisner, T. 1975.** Characterization and synthesis of waxes from homopterous insects. J. Chem. Ecol. 1(2):269-274.
*Dactylopius confusus*.

**Meirleire, H. de. 1984.** Cochenilles Pulvinaires des arbres d'ornement: deux espèces a ne pas confondre. Phytoma 354:37-38.
*Eupulvinaria hydrangeae* & *Pulvinaria regalis*; biology; damage; biological & chemical control.

**Melia, A. & Blasco, J. 1980.** Los coccidos perjudicales a los citricos de Castellon, y sus parasitos. Fruits 35(9):551-554. (French summary).
Discuss 10 coccoid spp.; biology; economic importance.

**Mendel, Z.**, *see* Golan, Y., Madar, Z., & Mendel, Z.

**Menge, A. 1856.** Lebenszeichen vorweltlicher, im Bernstein eingeschlossener Thiere. *In* "Programm der Öffentlichen Prüffung der Schüler der Petrischule," Danzig. 32 pp. (Not seen).
Record on coccoid fossil.

**Menke, A.**, *see* Rust, R., Menke, A., & Miller, D.

**Merrifield, L. E. & Howcroft, N. H. S. 1975.** *Ceroplastes rubens* Maskell damage of *Pinus caribaea* Morelet, with notes on the scale's preference of certain clones as host material (Hemiptera: Coccidae). Silvae Genet. 24(4):110-113.
Study in Papua, New Guinea.

**Merz, T.**, *see* Swanson, C. P., Merz, T., & Young, W. J.

**Mescheloff, E.**, *see* Gerson, U., Mescheloff, E., & Dubitzki, E.

**Meyerdirk, D. E.**, *see* Ervin, R. T., Moffit, L. J., & Meyerdirk, D. E.; Harlan, D. P., Hart, W. G., Ingle, S. J., & Meyerdirk, D. E.

**Meyerdirk, D. E., Chandler, L. D., Summy, K. R., & Hart, W. G. 1981.** Spatial distribution of citrus mealybug on grapefruit trees. J. Econ. Entomol. 74(6):662-664.
*Planococcus citri*.

**Meyerdirk, D. E. & Newell, L. M. 1979.** Seasonal development and flight activity of *Pseudococcus comstocki* in California. Ann. Entomol. Soc. Amer. 72(4):492-494.
Confirm existence of a fourth generation by monitoring seasonal flight activity of *P. comstocki.*

**Mhaskar, V. V.**, *see* Singh, A. N., Mhaskar, V. V., & Dev, S.

**Michelakis, S.**, *see* Alexandrakis, V., & Michelakis, S.; Neuenschwander, P., Michelakis, S., & Alexandrakis, V.; Paraskakis, M., Neuenschwander, P., & Michelakis, S.

**Mihajlovic, L.**, *see* Kozarzhevskaya, E. F., & Mihajlovic, L.

**Mikami, E.**, *see* Yamada, S., Noda, N., Hayakawa, J., Mikami, E., & Uno, K.

**Milena-Varela, A. & Bellotti, A. C. 1981.** Algunos aspectos biologicos y observaciones de un nuevo piojo harinoso de la yuka *Phenacoccus herreni* (Homoptera: Pseudococcidae) en Colombia. Rev. Colombiana Entomol. 7(1/2):21-26. (English summary).
Description of male & female; life cycle.

**Milena-Varela, A., Bellotti, A. C., & Reyes, J. A. 1979.** Biologia y ecologia del piojo harinoso de la yuka, *Phenacoccus gossypii* Townsend y Cockerell (Homoptera: Pseudococcidae). Rev. Colombiana Entomol. 5(1/2):9-15. (English summary).
Life cycle; natural enemies.

**Miller, C. E.**, *see* Nakahara, S., & Miller, C. E.

**Miller, D.**, *see* Ashley, T. R., & Miller, D.

**Miller, D. R. (Miller, D.) 1970.** A new genus and species of scale insect from Tasmania (Homoptera: Eriococcidae). J. Austral. Entomol. Soc. 9:157-159.
*Phacelococcus* n. gen.; *P. brookesae* n. sp.

**1971a.** A redescription of *Tessarobelus guerini* Montrousier (Homoptera: Coccoidea: Margarodidae). Proc. Entomol. Soc. Wash. 73:64-68.
Key to genera of *Monophlebulini*; generic characters; taxonomic notes.

**1971b.** Mealybugs of Santa Cruz Island, California (Homoptera: Coccoidea: Pseudococcidae). Pan-Pacific Entomol. 47:293-303.
Biotopes described; species composition & plants on which found; records on 23 spp. in 13 gen.; distribution.

**1973a.** Mealybugs of San Miguel Island, California (Homoptera: Coccoidea: Pseudococcidae). Pan-Pacific Entomol. 49:264-269.
Lists 13 spp. of mealybugs in 12 gen., none endemic; *Pseudococcus obscurus* more abundant & occupies more diverse habitats than on mainland or on Santa Cruz Island; hosts & distribution.

**1973b.** *Brevennia rehi* (Lindinger) a potential pest in the U.S. (Homoptera: Coccoidea: Pseudococcidae). Proc. Entomol. Soc. Wash. 75:372.
*Heterococcus tuttlei* is a junior syn. of *H. rehi*; *H. rehi* transferred to *Brevennia* (n. comb.); hosts & distribution.

**1973c.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md.1(1):10 pp.

Lists workers in coccidology with address, general & primary interests; note on future contents.

**1973d.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 1(2):17 pp.
Lists current publications in coccidology.

**1974a.** Two new *Heliococcus* species, a key to the North American species, and a list of world species (Homoptera: Coccoidea: Pseudococcidae). Pan-Pacific Entomol. 50(2):177-192.
*H. clemente* & *deserticola* n. spp.; hosts & distribution; first description of first instar nymphs of North American *Heliococcus* spp.

**1974b.** Mealybugs of San Clemente Island, California (Homoptera: Coccoidea: Pseudococcidae). Pan-Pacific Entomol. 50(2):193-202.
First report of 11 spp. in 9 gen.; discussion & comparison of mealybug fauna with adjacent mainland & islands of San Miguel & Santa Cruz.

**1974c.** *Dactylopius* Costa, 1835 and *Pseudococcus* Westwood, 1840 (Insecta Homoptera): proposed designation of type-species under the plenary powers with proposed suppression of *Diaprosteci* Costa, 1828. Z.N.(S.) 2056. Bul. Zool. Nomenclature 31(3):146-153.
Author's purpose to ensure continuous usage of the generic name *Dactylopius* Costa & *Pseudococcus* Westwood; history of both gen. given.

**1974d.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 2(1):37 pp.
Lists under "Notes" (p. 30-31) research projects and information received from the coccidology community; gives "Current Publications" (p. 31-37).

**1975.** A revision of the genus *Heterococcus* Ferris with a diagnosis of *Brevennia* Goux (Homoptera: Coccoidea: Pseudococcidae). U.S. Dept. Agric. Tech. Bul. 1497:61 pp.
Redescribed 6 *Heterococcus* spp.; *H. raui* n. sp.; detailed description of instars; keys separating spp. & instars; 8 spp. transferred from *Heterococcus* to *Brevennia*; description of *B. rehi*.

**1976.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 4(1):54 pp.
Lists a collection of 2x2 slides associated with national collection of Coccoidea; third additions to workers in coccidology; recent publications; gives information on the "International Congress" and on the "5th Coccoidea Symposium in USA" on p. 40-54.

**1977.** Introduction and Summary. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127(III):99-101.
Introduced and summarized papers presented at symposium of "Recent Advances in the Study of Scale Insects," 15th Int. Congr. Entomol. (Washington, D.C.) 1976.

**1979.** Coccidologist's Newsletter. Duplicated at U.S. Syst. Entomol. Lab. Beltsville, Md. 5(1):37 pp.
Gives notes on Coccoidea Symposium (p. 31-37), also additions to list of workers in coccidology.

**1980.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 6(1):35 pp.
Besides "Editor's Notes" (p. 1), a list is given (p. 24-35) of recent publications.

**1981a.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 7(1):60 pp.

News from coccidologists; mailing lists of coccidologists with area of interest; list of recent publications.

**1981b.** Reply...to Danzig & Kerzhner "Comments on the proposal on *Dactylopius* and *Pseudococcus*, with additional proposal to use the plenary powers for suppression of *Coccus adonidum* Linnaeus, 1767 and *Pediculus coffae* Linnaeus, 1767, and for validation of *Dactylopius longispinus* Targioni-Tozzetti, 1867 (Insecta: Homoptera) Z.N.(S.) 2091. Bul. Zool. Nomenclature 38(2):82-83.

**1982.** Coccidologist's Newsletter. Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 8(1):39 pp.
News from coccidologists around the world; nomenclatural news; announcement on 4th International Meeting of Coccidology; additions to U.S. National Museum Coccoidea Collection; recent publications.

**1983a.** The Scale (formerly Coccidologist's Newsletter). Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 9(1):37 pp.
News (p. 1-2); recent publications (p. 14-37).

**1983b.** Key to North and Central American species of the mealybug genus *Hypogeococcus* (Homoptera: Coccoidea: Pseudococcidae) with description of four new species and redescription of the type species. Pan-Pacific Entomol. 59(1/4):188-217.
*H. boharti*, *gilli*, *hamoni* & *margaretae* n. spp.

**1984a.** Phylogeny and classification of the Margarodidae and related groups (Homoptera: Coccoidea). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 321-324.
Investigated relationships of specified margarodid subunits by comparing them with other scale insect groups; for analysis used Wagner Algorithm Component of the Physys Program; mentions 3 coccoid spp.

**1984b.** The Scale (formerly Coccidologist's Newsletter). Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 10(1):52 pp.
Recent literature (p. 7-42); notes (p. 46-47); terminology for Eriococcidae (p. 47-49).

**1985a.** The Scale (formerly Coccidologist's Newsletter). Duplicated at U.S. Dept. Agric. Agric. Res. Serv. Syst. Entomol. Lab. Beltsville, Md. 11(1):48 pp.
Recent literature (p. 26-48).

**1985b.** Symposium conclusions and summation. *In* "Entomology of the California Channel Islands," edited by Menke, A. & Miller, D. Santa Barbara Mus. Nat. Hist., Santa Barbara, Calif. 178 pp. (p. 113-116).
Correlation between island area and number of spp.; significant correlation between species diversity & maximum island elevation; endemic taxa have not been analyzed in any detail except Orthoptera.

**1985c.** Superfamily Coccoidea. Scale Insects (p. 87-123). *In* Drooz, A. T., "Insects of Eastern Forests." U.S. Dept. Agric., Misc. Pub. 1426:608 pp.

*See* Blackburn, V. L., & Miller, D. R.; Davidson, J. A., & Miller, D. R.; Davidson, J. A., Miller, D. R., & Nakahara, S.; Gill, S. A., Miller, D. R., & Davidson, J. A.; Gimpel, F. W., Jr., Miller, D. R., & Davidson, J. A.; Howell, J. O., & Miller, D. R.; Knipscher, R. G., Miller, D. R., & Davidson, J. A.; Kosztarab, M., Miller, D. R., & Davidson, J. A.; Rust, R., Menke, A., & Miller, D.; Stoetzel, M. B., & Miller, D. R.; Stoetzel, M. B., Nakahara, S., Miller, D. R., & DeBold, K. J.; Stoetzel,

M. B., Nakahara, S., Miller, D. R., DeBold, K. J., & Miller, J. F.; Williams, D. J., & Miller, D. R.; Young, B. L., Miller, D. R., & McClure, M. S.

**Miller, D. R. & Appleby, J. E. 1971.** A redescription of *Phenacoccus dearnessi* (Homoptera: Coccoidea: Pseudococcidae). Ann. Entomol. Soc. Amer. 64:1342-1357.
Taxonomic notes; key to instars of 2 spp.

**Miller, D. R. & Davidson, J. A. 1974.** Feature photograph. Ann. Entomol. Soc. Amer. 67(5):4.
A cluster of perivulvar pores of *Lopholeucaspis japonica*.

**1981.** A systematic revision of the armoured scale genus *Crenulaspidiotus* MacGillivray (Diaspididae, Homoptera). Polskie Pismo Entomol. 51(4):531-595.
Description of 11 spp.; 7 n. spp.; 4 spp. redescribed; keys to spp. based on adult females, first & second instars & on adult males.

**Miller, D. R., Davidson, J. A., & Stoetzel, M. B. 1984.** A taxonomic study of the armored scale *Pseudischnaspis* Hempel (Homoptera: Coccoidea: Diaspididae). Proc. Entomol. Soc. Wash. 86(1):94-109.
*P. acephala* & *bowreyi*; key to spp.; description; n. syn.; lectotype designation; taxonomic discussion.

**Miller, D. R. & Denno, R. F. 1977.** A new genus and species of mealybug with a consideration of morphological convergence in three arboreal species (Homoptera: Pseudococcidae). Syst. Entomol. 2:111-157.
*Plotococcus* n. gen.; *P. eugeniae* n. sp.; *Leptococcus metroxyli* & *Macrocepicoccus loranthi* redescribed; descriptions cover all stages of males & females of the 3 spp.; morphological comparison of these spp. presented in 2 tables.

**Miller, D. R., Gill, R. J., & Williams, D. J. 1984.** Taxonomic analysis of *Pseudococcus affinis* (Maskell), a senior synonym of *Pseudococcus obscurus* Essig, and a comparison with *Pseudococcus maritimus* (Ehrhorn) (Homoptera: Coccoidea: Pseudococcidae). Proc. Entomol. Soc. Wash. 86(3):703-713.
Detailed study; n. syns.; revised key.

**Miller, D. R. & Gimpel, F. W., Jr. 1974.** Scale insects. Electron Microscope Central Facility Newsletter Univ. Maryland No. 2:5.
Studies pseudococcidae & Coccidae using scanning electron microscope (SEM).

**Miller, D. R. & González, R. H. 1975.** A taxonomic analysis of the Eriococcidae of Chile. Rev. Chilena Entomol. 9:131-163. (Spanish summary).
Detailed study; 4 n. gen.; 10 n. spp.; key to gen & spp.; hosts & distribution; morphological characters; notes on zoogeography.

**Miller, D. R. & Howard, F. W. 1981.** A new species of *Abgrallaspis* (Homoptera: Coccoidea: Diaspididae) from Louisiana. Ann. Entomol. Soc. Amer. 74(2):164-166.
*A. liriodendri* n. sp.; description of second & third stage females; modification of former key; host & distribution; gall causing sp.

**Miller, D. R. & Kosztarab, M. 1979.** Recent advances in the study of scale insects. Annu. Rev. Entomol. 24:1-27.
Review of ecology, control, genetics, endosymbionts, sperm & systematics.

**Miller, D. R. & Lamdin, P. L. 1978.** A new genus and two new species of asterolecaniid scale insects on palm from Colombia and Trinidad (Homoptera: Coccoidea: Asterolecaniidae). Proc. Entomol. Soc. Wash. 80(2):240-263.
*Grammococcus* n. gen.; *G. adetocorymbus* & *corymbus* n. spp.; affinities & diagnosis of the gen.; hosts & distribution.

**Miller, D. R., Marsh, P. M., & Gordon, R. D. 1975.** The scanning electron microscope as a tool for studies in insect taxonomy. Electron Microscope Central Facility Newsletter Univ. Maryland 3:12.
Provide scanning electron micrographs for complicated morphological features.

**Miller, D. R., Miller, J. F., Schuster, R. O., & Stover, C. 1973.** A list of Coccoidea species deposited in collection of University of California, Davis. Coccidologist's Newsletter 1(1):1-22.
List 2035 species with 34,550 specimens in the collection.

**Miller, D. R. & McKenzie, H. L. 1970.** Review of the mealybug genus *Heterococcus* (Homoptera: Coccoidea: Pseudococcidae) with a description of a new species. Ann. Entomol. Soc. Amer. 63:438-453.
New generic syns.; generic relations; description of *H. tuttlei* n. sp.; n. comb.; hosts; economic importance; sp. groups; records.

**1971.** Sixth taxonomic study of North American mealybugs, with additional species from South America (Homoptera: Coccoidea: Pseudococcidae). Hilgardia 40:565-602.
*Prorhizoecus* n. gen.; 15 n. spp.; distribution; revised keys to North American spp. and some gen.; key to 2 spp. of *Mammicoccus*.

**1973.** Seventh taxonomic study of North American mealybugs (Homoptera: Coccoidea: Pseudococcidae). Hilgardia 41:489-542.
Redescribed 16 spp. of pseudococcids; taxonomic status; gen. assignment; relationship to other mealybugs given; syns.; n. comb.; revised keys to 6 gen.; morphology; distribution; hosts.

**Miller, D. R. & Williams, D. J. 1976.** Proposed conservation of the family-group name Eriococcidae Cockerell, 1899 (Insecta, Homoptera) and the designation of a type-species for *Eriococcus* Targioni-Tozzetti, 1868 under the plenary powers Z.N.(S.) 2140. Bul. Zool. Nomenclature 33(2):118-123.
History of *Eriococcus* & of the fam.-group name Eriococcidae; propose that Eriococcini be given precedence over Acanthococcidae; *Coccus buxi* be designated as type-sp. of *Eriococcus*.

**1985.** Lectotype designation for *Pseudococcus affinis* (Maskell) (Homoptera: Coccoidea: Pseudococcidae). Proc. Entomol. Soc. Wash. 87(2):480.
Designated an adult female of *Dactylopius affinis* from 3 syntypes as lectotype; all are deposited in New Zealand Collection of Arthropods, Department of Science & Industrial Research, Auckland, New Zealand.

**Miller, G., Berlowitz, L., & Regelson, W. 1971.** Chromatin and histones in mealybug cell explants: activation and decondensation of facultative heterochromatin by a synthetic polyanion. Chromosoma (Berlin) 32:251-261.
*Planococcus citri*.

**Miller, J. F.**, *see* Miller, D. R., Miller, J. F., Schuster, R. O., & Stover, C.; Stoetzel, M. B., Nakahara, S., Miller, D. R., DeBold, K. J., & Miller, J. F.

**Miller, S. E.**, *see* Hogue, C. L., & Miller, S. E.

**Miller, T. A.**, *see* Mori, K., Hummel, H. E., & Miller, T. A.

**Milne, W. M. 1974.** The relationship between ants and scale insects on citrus. Commonwealth Sci. & Industrial Res. Org. Div. Entomol. Annu. Rep. (1973-1974). p. 78.
Ants protect *Aonidiella aurantii*, *Saissetia oleae* & *Coccus hesperidum* from parasites & predators.

**Minakata, H.**, *see* Komura, H., Mizukawa, K., & Minakata, H.

**Mineo, G. 1976.** First observations on the population dynamics of *Saissetia oleae* (Oliv.) in Sicily. Bol. Ist. Entomol. Agr. Osservatorio Fitopatol. Palermo 10:69-80. (In Italian, English summary).
Conducted study in 2 different localities & on 3 food plants; natural enemies.

**Mineo, G. & Sinacori, A. 1976.** On the population dynamics and parasites of *Saissetia oleae* (Oliv.) in Sicily. Bol. Ist. Entomol. Agr. Osservatorio Fitopatol. Palermo 10:177-183. (In Italian, English summary).
Development; mortality; hosts.

**Ming, W. J.**, *see* Cheng, H. Y., & Ming, W. J.

**Miralibekov, N. 1971.** Review of the main insect pests of fruit trees of western Pamir. Izv. Akad. Nauk Tadz. SSR OTD Biol. Nauk 3:69-73. (Tadzhik summary).
Mentions *Rhodococcus turanicus*, *Eulecanium rugolosum* & *Parlatoria oleae*.

**1975.** Scales - Coccoidea - pests of fruit crops in western Pamir. Problemy Biologii i Sel'skogo Khoziaistva Pamira. p. 131-136. (In Russian).
Discusses 6 coccoid spp.; hosts; biology; description & natural enemies for some.

**Mishra, R. C. & Bhalla, O. P. 1974.** Occurrence of *Eulecanium* sp. *tiliae* (L.) (Homoptera: Coccidae) on plum and apple in Himachal Pradesh. Current Sci. 43(13):428.
Biology; host; parasite; first record.

**Mishra, Y. D.**, *see* Chauhan, N. S., & Mishra, Y. D.

**Miskimen, G. W. & Bond, R. W. 1970.** The insect fauna of St. Croix, United States Virgin Islands. Sci. Survey Puerto Rico & Virgin Islands 13(Part I):117 pp. (coccoids on p. 29-33).
List 51 coccoid spp. in 7 fam.

**Mitchell, W. C. & Maddison, P. A. 1983.** Major taro pests in the Pacific Islands. Proc. Pacific Sci. Congr. 15(1/2):167.
*Planococcus citri*.

**Miyamoto, F.**, *see* Naya, Y., Miyamoto, F., & Takemoto, T.; Tempesta, M. S., Iwashita, T., Miyamoto, F., Yoshihara, K., & Naya, Y.

**Miyamoto, F., Naoki, H., & Naya, Y. 1979.** The secretion of a scale insect, *Ceroplastes ceriferus*. Tennen Yuki Kagobutsu Toronkai Koen Yoshishu 22:79-80.
Detailed analysis.

**Miyamoto, F., Naoki, H., Naya, Y., & Nakanishi, K. 1980.** Study of the secretion from a scale insect (*Ceroplastes ceriferus*) diterpenoids and sesterterpenoids. Tetrahedron 36(24):3481-3488.
Structures described; "cyclic wax."

**Miyamoto, F., Naoki, H., Takemoto, T., & Naya, Y. 1979.** New macro cyclic sesterterpenoids from a scale insect (*Ceroplastes ceriferus*). Tetrahedron 35(16):1913-1918.
Isolation; chemical correlation; stereochemistry.

**Miyazaki, I.**, *see* Suplicy, F. N., Sampaio, A. S., & Miyazaki, I.

**Mizukawa, K.**, *see* Komura, H., Mizukawa, K., & Minakata, H.

**Mkrtchian, L. P. 1977.** Patterns of the formation of male genitalia and sperm bundles in the Ararat cochineal (*Porphyrophora hamelii*). Zool. Zhur. 56(4):638-642. (In Russian, English summary).
Studied third & fourth instars.

**1982.** Reduction of the testes in some coccids of the genus *Porphyrophora* Brandt (Homoptera: Coccinea: Margarodidae). Entomol. Obozr. 61(4):764-768. (In Russian). Entomol. Rev. 61(4):54-58. (In English).
Reproduction & development; used *P. hamelii*, *polonica* & *tritici*.

*See* Magakian, Y. A., Makarian, S. R., Petrosian, A. V., Mkrtchian, L. P., Abroian, L. O., & Akopian, L. A.; Sarkisov, R. N., & Mkrtchian, L. P.; Sarkisov, R. N., Mkrtchian, L. P., & Kheochoian, L. S.; Sarkisov, R. N., Sarkisian, S. M., & Mkrtchian, L. P.; Sarkisov, R. N., Sevumian, A. A., & Mkrtchian, L. P.; Sarkisov, R. N., Sevumian, A. A., Sarkisian, S. M., & Mkrtchian, L. P.

**Mkrtchian, L. P. & Sarkisian, S. M. 1975.** The reproduction of the Ararat cochineal insect (*Porphyrophora hamelii* Brandt). I. Biol. Zhur. Armenii 28(2):84-89. (In Russian, Armenian summary).
Investigated female reproductive system before & after mating, during & after egg laying.

**Mkrtchian, L. P., Sarkisian, S. M., & Sarkisov, R. N. 1978.** Heterogenity of eggs in Ararat cochineal *Porphyrophora hamelii* Brandt (Homoptera: Coccoidea). Biol. Zhur. Armenii 31(9):921-926. (In Russian, Armenian & English summaries).
Non-mated & mated females lay eggs; egg-laying is somewhat delayed in individuals not mated as compared with mated ones.

**Mkrtchian, L. P., Sarkisov, R. N., & Sarkisian, S. M. 1979.** On the type of structure of the ovarioles in the Ararat cochineal *Porphyrophora hamelii* Brandt (Homoptera, Coccoidea, Margarodidae). Biol. Zhur. Armenii 32(3):204-208. (In Russian, Armenian & English summaries).
Comparative study; noted significant differences in structure allowing distinction of similar ovarioles in a separate follicular-polytrophic type.

**1980.** The types of ovarian structure in scale insects (Homoptera, Coccoidea). Biol. Zhur Armenii 33(3):279-282. (In Russian, Armenian & English summaries).
Propose 3 types of classification: "unbranched," "branched" & "looped"; *Parthenolecanium pomeranicum*, *Kerria lacca* & several spp. of Margarodidae, Ortheziidae, Pseudococcidae & Diaspididae.

**Modi, B. N.**, *see* Rawat, R. R., & Modi, B. N.

**Moffit, L. J.**, *see* Ervin, T. R., Moffit, L. J., & Meyerdirk, D. E.

**Mohammed, O. S.**, *see* Rizk, G. N., & Mohammed, O. S.

**Moharana, S.**, *see* Parida, B. B., & Moharana, S.

**Moini, M.**, *see* Farahbakhch, G., & Moini, M.

**Moin-Shah, S.**, *see* Knorr, L. C., & Moin-Shah, S.

**Monaco, R. 1977.** Bio-ecological notes on *Trabutina leonardii* Silv. (Rhynchota - Hom. - Coccidae) and its predators. Entomologica (Bari) 13:155-164. (In Italian, English summary).
Biology; damage; hosts; natural enemies.

**Montanari, G.**, *see* Pucci, C., Salmistraro, D., Forcina, A., & Montanari, G.

**Moore, W. S.**, *see* Donaldson, D. R., Moore, W. S., Koehler, C. S., & Joos, J. L.

**Moore, W. S., Koehler, C. S., Joos, J. L., Donaldson, D. R., Cassidy, D. V., & Gill, R. J. 1979.** Ice plant scale insects. Univ. Calif. Div. Agric. Sci. Leaf. 21084:1-7.
*Pulvinaria mesembryanthemi* & *Pulvinaria* sp.; description & life cycle; hosts & distribution; damage; chemical & biological control.

**Moran, V. C. 1981a.** Belated kudos for cochineal insects. Antenna 5(2):54-58.
*Dactylopius coccus*, *austrinus* & *opuntiae*; general morphology & life cycle; discusses their usefulness as source of carmine dye & as biological control agent; hosts & distribution.

**1981b.** The biological control of *Opuntia aurantica* in South Africa: evaluation and emerging control strategies. Proc. 5th Int. Symp. Biol. Control of Weeds (Brisbane, Australia, July 1980) edited by Del Fosse, E. S. p. 383-387. (publ. by Commonwealth Sci. & Ind. Res. Org., Melbourne, Australia).
Discusses *Dactylopius austrinus*.

**1983.** The phytophagous insects and mites of cultivated plants in South Africa: patterns and pest status. J. Appl. Ecol. 20(2):439-450.
Describes method for measuring pest status; no specific sp. mentioned; relative pest status in %: Diaspididae 5.6%, Pseudococcidae 5.5%, Coccidae 2.2%, Margarodidae 1.8%.

*See* Annecke, D. P., & Moran, V. C.

**Moran, V. C. & Annecke, D. P. 1979.** Critical reviews of biological pest control in South Africa 3. The jointed cactus *Opuntia aurantica* Lindley. J. Entomol. Soc. South. Africa 42(2):299-330.
*Dactylopius austrinus*; biology; natural enemies.

**Moran, V. C. & Cobby, B. S. 1979.** On the life-history and fecundity of the cochineal insect *Dactylopius austrinus* De Lotto (Homoptera: Dactylopiidae), a biological control agent for the cactus *Opuntia aurantica*. Bul. Entomol. Res. 69(4):629-636.
Male & female instars illustrated.

**Moran, V. C., Gunn, B. H., & Walter, G. H. 1982.** Wind dispersal and settling of first-instar crawlers of the cochineal insect *Dactylopius austrinus* (Homoptera: Coccoidea: Dactylopiidae). Ecol. Entomol. 7(4):409-419.
*D. austrinus* acts as biological control agent on *Opuntia aurantica*; discuss length of wind dispersal with males & females; most crawlers settled on cladodes that were dehydrated & preferred cladodes in shade to those in the sun.

**Moreno, D. S. 1972.** Location of the site of production of the sex pheromone in the yellow scale and the California red scale. Ann. Entomol. Soc. Amer. 65(6):1283-1286.
Fragmented parts & cryostatic sections of *Aonidiella citrina* & *aurantii* presented to males of the respective sp.; pygidium of both females was the attractive area; bioassays of dissected pygidial glands showed that these glands were site of pheromone production.

*See* Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Foster, H. S., Plimmer, J. R., & Devilbiss, E. D.; Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Fargerlund, J., & Plimmer, J. R.; Gieselmann, M. J., Moreno, D. S., Fargerlund, J., Tashiro, H., & Roelofs, W. L.; Morse, J. G., Arbaugh, M. J., & Moreno, D. S.; Rice, R. E., & Moreno, D. S.; Roelofs, W. L., Gieselmann, M. J., Cardé, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J.

**Moreno, D. S., Carman, G. E., Fargerlund, J., & Shaw, J. G. 1974.** Flight and dispersal of the adult male yellow scale. Ann. Entomol. Soc. Amer. 67(1):15-20.
*Aonidiella citrina.*

**Moreno, D. S., Carman, G. E., Rice, R. E., Shaw, J. G., & Bain, N. S. 1972.** Demonstration of a sex pheromone of the yellow scale, *Aonidiella citrina*. Ann. Entomol. Soc. Amer. 65(2):443-446.
Characteristics of sex pheromone in relation to behavior of males.

**Moreno, D. S. & Fargerlund, J. 1975.** Histology of the sex pheromone glands in the yellow scale and California red scale. Ann. Entomol. Soc. Amer. 68(3):425-428.
Detailed study on *Aonidiella citrina* & *aurantii*.

**Moreno, D. S., Fargerlund, J., & Ewart, W. H. 1984.** Citrus mealybug (Homoptera: Pseudococcidae): behavior of males in response to sex pheromone in laboratory and field. Ann. Entomol. Soc. Amer. 77(1):32-38.
*Planococcus citri*; sp. encompasses complex hierarchy of responses elicited by sex pheromone & possibly other cues.

**Moreno, D. S., Fargerlund, J., & Shaw, J. G. 1973.** California red scale: captures of males in modified pheromone traps. J. Econ. Entomol. 66(6):1333.
Trap has great potential as survey tool for detecting low population that often escape visual inspection.

**1976.** California red scale: development of a method for testing juvenoids. J. Econ. Entomol. 69(2):292-297.
*Aonidiella aurantii*; results indicate that optimum time to treat sp. with juvenoids is near molting stages.

**Moreno, D. S. & Kennett, C. E. 1983.** Monitoring insect pest populations by trapping in California citrus orchards. Proc. Int. Soc. Citriculture (1981) 2:684-689.
Discuss 8 coccoid spp.; detection; host & distribution; seasonal abundance; control.

**Moreno, D. S., Rice, R. E., & Carman, G. E. 1972.** Specificity of the sex pheromones of female yellow scales and California red scales. J. Econ. Entomol. 65(3):698-701.
In all tests 2 pheromones were specific, based on the responses of female.

**Moreno, R. 1977.** Revision de las tecnicas de muestreo en Entomologia Aplicada. Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 3(1/2):207-217. (English summary).
Establishes criteria which enable advantages to be appreciated of each of the methods currently known.

**Moreno, R. & Garijo, C. 1980.** Dinamica de poblaciones de *Saissetia oleae* Colv. (Hom. Coccidae) sobre citricos. Comparacion de diversos metodos para estimar la densidad de adultos a nivel de erbol. Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 6(1):75-94. (English summary).
Detailed study.

**Morge, G. 1973.** Entomology in the western world in antiquity and in medieval times. *In* "History of Entomology." Publ. by Annu. Rev. Inc., Palo Alto, Calif. p. 37-80.
Mentions *Ceroplastes rusci*, *Coccus ilicis*, *Margarodes polonicus*, *Coccus cacti* & *Cerococcus quercus*.

**Mori, K. 1981.** Recent progress in the synthesis of optically active pheromones. Colloques INRA No. 7:41-53.
Mentions *Aonidiella citrina*, *Pseudococcus comstocki*.

*See* Nakagawa, N., & Mori, K.; Negishi, T., Uchida, M., Tamaki, Y., Mori, K., Ishiwatari, T., Asano, S., & Nakagawa, K.; Uchida, M., Negishi, T., Asano, S., & Mori, K.

**Mori, K., Hummel, H. E., & Miller, T. A. 1984.** The significance of chirality: Methods for determining absolute configuration and optical purity of pheromones and related compounds. *In* "Techniques in Pheromone Research," edited by Hummel, H. E. & Miller, T. A. Springer Verlag. p. 323-370.
Includes some coccoids of economic importance.

**Mori, L.**, *see* Perondini, A. L. P., Basile, R., & Mori, L.

**Morillo, C. 1973.** El desarrolo de *Saissetia oleae* (Olivier, 1791) en condiciones controladas (Hem. Coccidae). Graellsia 29:201-210. (English summary).
Detailed study; discusses geotropism & phototropism.

**1975.** Regulacion de las poblaciones de *Saissetia oleae* (Olivier, 1791). Factores de mortalidad (Hem. Coccidae). Graellsia 30:221-231. (English summary).
Climatic factors; natural enemies.

**1977.** Morfologia y biologia de *Saissetia oleae* (Hemiptera Coccidae). Bol. Real Soc. Espanola Hist. Nat. (Biol.) 75:87-108. (English summary).
Systematic position; description of all stages; hosts; interaction of coccoid & host.

**Morrison, J. F.**, *see* Hartley, A. H., Walter, G. H., & Morrison, J. F.

**Morse, J. G., Arbaugh, M. J., & Moreno, D. S. 1985.** California red scale - computer simulation on CRS population. Calif. Agric. 39(5/6):8-10.
Generalized population model (GPM) developed for simulating natural developmental cycle, aging from one life stage to next; compared field catches of males with model simulation prediction; used GPM system to population peak prediction, thus aiding forecasting & management programs.

**Mosquera, P. F. 1973.** Algunos piojos blancos que afectan las plantas cultivadas en Colombia. Fac. Nac. Agron. Medellin, Rev. 28(2):57-64.
Short description; hosts & distribution of 5 coccoid spp.; 3 spp. new for Colombia; key for separation of these spp.

**1976.** Escamas protegidas más frecuentes en Colombia. Min. Agric. Inst. Colombiano Agropecuario, Div. Sanidad Vegetal, Bol. Tecnico 38:103 pp.
Literature review; key; description; hosts & distribution; economic importance; natural enemies of 39 coccoid spp. in 27 gen.

**1977.** Estudio preliminar sobre las escamas protegidas (Homoptera: Diaspididae) en cocotero en las Isla de San Andres y posible control. Rev. Colombiana Entomol. 3(1/2):7-17. (English summary).

Lists 6 coccoid spp.; damage.

**1979a.** El genero *Ceroplastes* (Homoptera: Coccidae) en Colombia. Caldasia 12(60):595-627.
*C. boyacensis*, *cundinamarcensis*, *martinae* & *trochezi* n. spp.; morphological characters; key for separation of spp.; hosts & distribution.

**1979b.** Algunas consideraciones sobre la importancia economica del piojo blanco de los citricos, *Unaspis citri*. Rev. Colombiana Entomol. 5(3/4):53-56. (English summary).
Noted that 86-95% of specimens of a colony of *U. citri* were not feeding & 43-78% of active sp. were crawlers & males which do not cause damage after second molt.

**1984.** El genero *Ceroplastes* (Homoptera: Coccidae) en Colombia II. Caldasia 14(66):125-148.
*C. bicolor* & *ocreus* n. spp.; redescription of *C. floridensis*; key to Colombian spp. of *Ceroplastes*.

**Motte, G.**, *see* Köhler, G., Tenckhoff, V., & Motte, G.

**Moursi, K.**, *see* El-Minshawy, A. M., & Moursi, K.

**Moursi, K. S. & Hegazi, E. M. 1983.** The olive-tree scale, *Leucaspis riccae* Targ. (Hom.: Diaspididae) as a key pest of olive trees in dry farm system in the Egyptian western desert. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 40:119-124.
Damage; monthly variation in infestation; influence of weather; resistant varieties; biology; natural enemy.

**Mroczkowski, M.**, *see* Komosinska, H., & Mroczkowski, M.

**Mullins, D. E.**, *see* Short, D. E., & Mullins, D. E.

**Muma, M. H. 1970.** Preliminary studies on environmental manipulation to control injurious insects and mites in Florida citrus groves. Proc. Tall Timbers Conf. Ecol. Animal Control by Habitat Management (Tallahassee, Fla.) No. 2:23-40.
Mentions 8 coccoid spp.

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*Pseudococcus obscurus*, *Ferrisia virgata* & *Phenacoccus solani*; comparison between *Pseudococcus* & *Planococcus* spp.; morphologically similar species were found to differ greatly.

**1977b.** Maternal inheritence of enzymes in the mealybug *Pseudococcus obscurus* (Homoptera). Genetics 86:149-160.
Discusses esterase, tyrosinase & mannosephosphate isomerase; genetics of other loci; maternal inheritance results from transmission of polar bodies; expected frequencies of genotypes & phenotypes; frequency of alleles in natural populations.

**1979.** Gonoid thelytoky in soft scale insects (Coccidae: Homoptera). Chromosoma (Berlin) 72:89-104.
Detailed study of *Coccus hesperidum* & *Saissetia coffeae*; a new scheme for classifying types of parthenogenesis is described.

**1980.** Evolution of unusual chromosome systems in scale insects (Coccoidea: Homoptera). *In* "Insect Cytogenetics," edited by Blackman, R. L., Hewitt, G. M., & Ashburner, M. Blackwell Sci. Publ., Oxford, U.K. 278 pp. (this article p. 97-117).
Mentions 28 coccoid spp. with different type of chromosome systems; evolution of each type discussed.

**1982.** Destruction of specific heterochromatic chromosomes during spermatogenesis in the Comstockiella chromosome system (Coccoidea: Homoptera). Chromosoma (Berlin) 85(4):519-530.
Used *Dactylopius opuntiae*; data from *Parlatoria oleae* are analyzed.

**1983.** Expression of a gene derived from the heterochromatic set in a mealybug. Genetics 104(1 Pt. 2):S54-S55.
Used *Pseudococcus obscurus*.

*See* Scarbrough, K., Hattman, S., & Nur, U.

**Nur, U. & Brett, B. L. H. 1985.** Genotypes suppressing meiotic drive of a B chromosome in the mealybug *Pseudococcus obscurus*. Genetics 110:73-92.
Rate of transmission of a supernumerary B chromosome in male mealybugs is shown to depend on the chromosome set of maternal origin.

**Nurmamatov, A. M. (Nurmamatov, A.) 1975.** New species of mealybugs from the genus *Heliococcus* Sulc (Homoptera, Coccoidea, Pseudococcidae) from Tadzhikistan. Izv. Akad. Nauk Tadzh. SSR Otd. Biol. Nauk No. 4(61):25-31.
*H. chodzhentica*, *scutellariae* & *hissarica* n. spp.

*See* Bazarov, B. B., & Nurmamatov, A.

**Nwanze, K. F. 1978.** Biology of the cassava mealybug, *Phenacoccus manihoti* Mat.-Ferr. in the Republic of Zaire. Proc. Int. Workshop on the Cassava Mealybug, *Phenacoccus manihoti* Mat.-Ferr. (Pseudococcidae) (Zaire, 1977). p. 20-28.
Host & distribution; damage; parasites & predators.

**1982.** Relationships between cassava root yields and crop infestations by the mealybug, *Phenacoccus manihoti*. Trop. Pest Management 28(1):27-32.
Assessment of damage; recommends cassava varieties that are able to offset early peaks in *P. manihoti* populations; presents table about the effect of *P. manihoti* on root yield.

*See* Leuschner, K., & Nwanze, K.

**Nwanze, K. F & Leuschner, K. (eds.) 1978.** Summary of discussions. Proc. Int. Workshop on the Cassava Mealybug *Phenacoccus manihoti* Mat.-Ferr. (Pseudococcidae) (Zaire, 1977). p. 81-83.
Origin & distribution; development; damage; biological & chemical control; host plants resistance; natural enemies.

**Nwanze, K. F., Leuschner, K., & Ezumah, H. C. 1979.** The cassava mealybug, *Phenacoccus* sp. in the Republic of Zaire. PANS 25(2):125-130. (French & Spanish summaries).
*P. manihoti*; biology; damage; dispersal; control; natural enemy.

**Odden, W.**, *see* Carlsen, P. H., & Odden, W.

**Ody, M., Mathys, G., & Huggel, H. 1969.** Contribution à l'étude anatomique du pou de San José: *Aspidiotus perniciosus* Comst. (Cochenilles, Diaspines). Schweiz. Entomol. Gesellschaft Mitteilungen 42(1/2): 38-45.
Descriptive notes; morphology of adult male & female & nymphal stages.

**Oetting, R. D. 1984.** Biology of the cactus scale, *Diaspis echinocacti* (Bouché) (Homoptera: Diaspididae). Ann. Entomol. Soc. Amer. 77(1):88-92.
Hosts; natural enemies; presents biological data in 2 tables.

**Oetting, R. D., Coleman, V. R., Stacey, A. L., & Tippins, H. H. 1982.** Ornamental, lawn and turf insects. *In* "Summary of Economic Losses Due to Insects Damage and Costs of Control in Georgia, 1980," edited by Suber, E. F., Sheppard, D. C., & Gardner, W. A. Univ. Georgia, Coll. Agric. Expt. Sta. Special Bul. No. 20: 20-21.
Cost of control of scale insects & mealybugs on ornamentals & damage were estimated.

**Oganesian, S. B.**, *see* Adzhemian, L. A., Babaian, G. A., & Oganesian, S. B.; Babaian, G. A., & Oganesian, S. B.

**Oganesian, S. B. & Babaian, G. A. 1979.** Effect of air temperature and humidity on survival of eggs and duration of development of the Comstock mealybug embryo. Ekologiya 10(4):98-100. (In Russian). Sov. J. Ecol. 10(4):353-354. (In English).
*Pseudococcus comstocki*; biology; optimal temperature; effect of frost & relative humidity.

**Ogiwara, T., Nozawa, T., Hirata, K., Amakawa, E., Oishi, M., & Seki, H. 1980.** Analytical methods for natural dyes in foods. I. Detection of water-soluble natural dyes by a polyamide batch method. Shokuhin Eiseigaku Zasshi 21(3):207-213.
Identified cochineal as one of 11 water-soluble natural dyes in foods.

**Ogorodnikova, V. I.**, *see* Bogacheva, V. I., & Ogorodnikova, V. I.

**Ohgushi, R. & Nishino, T. 1966.** On the winter mortality of arrowhead scale, *Prontaspis yanonensis* Kuwana. Japanese J. Appl. Entomol. Zool. 10(1):7-16. (In Japanese, English summary).
Tabulated data & graphs.

**Ohgushi, R., Nishino, T., Tazoe, S., & Gamo, Y. 1967.** Ecological observations and the control of California red scale, *Aonidiella aurantii* Maskell, in Nagasaki Prefecture. Proc. Kyushu. Assoc. Plant Prot. 13:118-121. (In Japanese).
On citrus at Nagasaki City; 3 generations per year.

**Ohkubo, N. 1978.** Dispersal of the first instar nymphs of arrowhead scale, *Unaspis yanonensis* Kuwana in young citrus tree. Proc. Kyushu Assoc. Plant Prot. 24:151-153. (In Japanese).
Detailed study.

**1980.** Ecology and control of the arrowhead scale, *Unaspis yanonensis* Kuwana. Rev. Plant Prot. Res. 13:1-11.
Reviews work on ecology & physiology; chemical control was the only effective control so far; integrated program will rely heavily on insecticides.

**Oishi, M.**, *see* Ogiwara, T., Nozawa, T., Hirata, K., Amakawa, E., Oishi, M., & Seki, H.

**Okoli, O. O. 1982.** Prospects of breeding for host plant resistance to cassava mealybug (*Phenacoccus manihoti*) and to green spider mites of cassava (*Mononychellus tanajoa*). Proc. Int. Workshop on Control of Cassava Mealybug & Green Spidermite 10(1):72-75.

**Okudai, S.**, *see* Korenaga, R., & Okudai, S.

**Okudai, S., Korenaga, R., & Sakagami, Y. 1971a.** The effect of temperature on the development of the arrowhead scale, *Unaspis yanonensis*: I. Development of the 1st generation under constant temperatures. Bul. Hort. Res. Sta. (Minist. Agric.) Ser. B. (Okitsu) 11:193-201. (In Japanese, English summary).

**1971b.** Studies on the autumnal appearance of larvae of the arrowhead scale, *Unaspis yanonensis*: I. Effect of temperature and diapause of the female adult on the autumnal appearance of larvae. Bul. Hort. Res. Sta. (Minist. Agric.) Ser. B. (Okitsu) 11:203-213. (In Japanese, English summary).

**1975.** Effect of temperature on the ovarian development of the arrowhead scale, *Unaspis yanonensis* Kuwana, in the late hibernating period. Fruit Tree Res. Sta. Bul. Ser. B. (Okitsu) 2:97-106. (In Japanese, English summary).
Detailed study.

**Okul, A.**, *see* Iren, Z., & Okul, A.

**Oliveira, A. M. de**, *see* Cruz, C. de A., & Oliveira, A. M. de.; Vasconcellos, H. de O., Cruz, C. de A. da, & Oliveira, A. M. de.

**Oliver, A. D.**, *see* Brewer, B. S., & Oliver, A. D.; Howard, F. W., & Oliver, A. D.

**Oliver, A. D. & Chapin, J. B. 1981.** Seasonal history and population dynamics of Florida wax scale, *Ceroplastes floridensis* Comstock (Homoptera: Coccidae), on Dahoon holly in Louisiana. Proc. Louisiana Acad. Sci. 44:29-36.
Also natural enemies.

**Oliveria, F. L.**, *see* Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P.

**Olkowski, W. 1974.** A model ecosystem management program. Proc. Tall Timbers Conf. Ecol. Animal Control by Habitat Management (Tallahassee, Fla. 1973) No. 5:103-117.
*Saissetia oleae*; host.

**Olmi, M.**, *see* Sampo, A., & Olmi, M.

**Olmi, M., Currado, I., & Sampo, A. 1979-1982.** A new pest of red spruce in Italy: *Paroudablis piceae* (Low.) (Hemiptera: Pseudococcidae) preventive note. Ann. Fac. Sci. Agric. Univ. Studi Torino 12:1-6. (In Italian, English summary).
New host record; biology.

**Oloo, G. W. 1975.** Sugarcane. I.-*Aulacaspis* spp. and other scales. *In* "Annual Report of the Scientific Research Division for 1972." Min. Agric., Nairobi, Kenya. 362 pp. (this article p. 55-63).
*A. tegalensis*; life history; behavior; feeding; reproduction; population studies; development; hosts; natural enemies; economic importance; control; 2 coccoid spp. new for Kenya.

**1978.** A synoptic review of the biology and ecology of sugar-cane mealybug. Proc. Int. Workshop on Cassava Mealybug, *Phenacoccus manihoti* Mat.-Ferr. (Pseudococcidae) (Zaire, 1977). p. 53-64.
Mentions over 20 spp.; tables for country of origin; ant association; parasites, predators & pathogenic fungi.

**Oman, P.**, *see* Lattin, J. D., & Oman, P.

**Öncüer, C. 1974.** Research on scale insects, *Coccus* (Homoptera: Coccidae). Damage caused to crops in the Egeenne Region, their morphological characters, their distribution, and their natural enemies. Bitki Koruma Bül (Plant Prot. Bul.) Suppl. 1:1-59. (In Turkish, French summary).
*C. pseudomagnoliarum* new record for Turkey; *C. hesperidum* is much less widespread.

**1977.** Investigations on the identification, distribution and effectiveness of the families of the natural enemies associated with the most important species of scale insects (Coccidae, Homoptera) causing damage to fruit trees in the Province of Izmir. Ege Univ. Ziraat Fakult. Yayinlari No. 336:129 pp. (In Turkish, English summary).
*Ceroplastes rusci*, *Coccus hesperidum*, *C. pseudomagnoliarum*, *Filippia follicularis*, *Eulecanium pruinosum* & *prunastri* & *Saissetia oleae*.

**Öncüer, C. & Tuncyürek, M. 1975.** Observations sur la biologie et les ennemis naturels de *Coccus pseudomagnoliarum* Kuw. dans les vergers d'agrumes de la région Égéenne. Fruits 30(4):255-257.
First record for *C. pseudomagnoliarum* in the Mediterranean area.

**Önder, E. P. 1982.** Investigations on the biology, food-plants, damage and factors affecting seasonal population fluctuations of *Aonidiella* species (Homoptera: Diaspididae) injurious to citrus trees in Izmir and its surroundings. Arastirma Eserleri Serisi No. 43:171 pp. (In Turkish, English summary).
*A. aurantii* & *citrina*; new hosts; natural enemy.

**Onillon, J. C.**, *see* Bénassy, C., & Onillon, J. C.

**Onore, G.**, *see* Nkouka, N., Onore, G., & Fabres, G.

**Ördögh, G. 1976.** New scale insects from greenhouses in Hungary. Univ. Hort. (Budapest) Publ. 40:421-423. (In Hungarian, English & Russian summaries).
*Pseudococcus maritimus*, *Asterolecanium epidendri* & *Diaspis echinocacti*.

**1977.** Scale insects damaging ornamental plants in greenhouses. Univ. Hort. (Budapest) Publ. "Lippay János" Sci. Sessions Lectures 2(8):2436-2442. (In Hungarian, English & Russian summaries).
Lists 7 spp. in 5 fam.; 3 spp. new for Hungary.

**1979.** Scale insects frequently damaging greenhouse ornamental plants in Hungary. Doctoral Diss., Univ. Hort. Dept. Plant Prot., Budapest, Hungary. 154 pp. (In Hungarian).
Recognition, biology, hosts & control of 7 spp.

**1981.** The greenhouse hemispherical scale (*Saissetia coffeae* Walker) on greenhouse and home ornamental plants. Univ. Hort. (Budapest) Publ. 45:139-142.
Lists 25 hosts; biology.

**1981.** The greenhouse hemispherical scale (*Saissetia coffeae* Walker) on greenhouse and home ornamental plants. Univ. of Hort. (Budapest) Publ. 45:139-142.
Lists 25 hosts; biology.

**1983.** Host plants of *Pseudococcus maritimus* (Ehrhorn) and possibilities of control. Növényvédelem 19(5):202-206. (In Hungarian, English & Russian summaries).
Symptoms of damage; chemical control recommendation.

**1984.** Pest scale insects of ornamental plants in Central European greenhouses. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 358-360.
Discusses 7 coccoid spp.; hosts & distribution.

*See* Kozár, F., Ördögh, G., & Kosztarab, M.

**Ördögh, G. & Farkas, K. 1983.** Spreading of the white peach scale. Kertészet és Szölészet 32(33):9. (In Hungarian).
*Pseudaulacaspis pentagona*; short description; biology; host & distribution; damage; control recommendation.

**Orphanides, G. M. 1982.** Biology of the California red scale, *Aonidiella aurantii* (Maskell) (Homoptera, Diaspididae), and its seasonal availability for parasitization by *Aphytis* spp. in Cyprus. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 39:203-212.
Hosts; sex ratio; effect of temperature.

**1984.** Population dynamics of the California red scale, *Aonidiella aurantii* (Maskell) (Homoptera: Diaspididae) on citrus in Cyprus. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 41:195-209.
Distribution of sp. was studied under different climates.

**Orphanidis, P. S. & Kalmoukos, P. E. 1970.** Observations sur la mortalité du *Saissetia oleae* Bern. sous l'action de facteurs biotiques. Ann. Inst. Phytopathol. Benaki (n.s.) 9(3):183-200.
*S. oleae* subject to considerable population fluctuations.

**Ortu, S. 1982.** Observations on *Planococcus citri* (Risso) in citrus plantations in Sardinia. Studi Sassaresi 29:199-209. (In Italian, English summary).
Population dynamics; intraspecific relationships; various means of control; natural enemies.

*See* Delrio, G., Ortu, S., & Prota, R.

**Osman, M.**, *see* El-Minshawy, A. M., & Osman, M.

**Osores, V. M.**, *see* Costilla, M. A., Osores, V. M., & Basco, H. J.

**Ossiannilsson, F. 1971.** To the knowledge of Hemiptera on Kullaberg Mtn. Kullabergs Nat. 14:55 pp. (coccoids on p. 53). (In Swedish).
Records 7 coccid spp.; some new records; hosts.

**1972.** To the knowledge of the Hemiptera of the Abisko Region. Entomol. Tidskrift 93:88-99. (In Swedish, English summary).
A survey of hemipterous fauna of the Abisco District in northern Swedish Lapland; first record for *Matsucoccus pini*, *Steingelia gorodetskia* & *Heliococcus osborni*.

**1977.** Mire invertebrate fauna at Eidskog, Norway. V. Auchenorrhyncha, Psylloidea, and Coccoidea (Hem.). Norw. J. Entomol. 24:11-14.
First record for *Atrococcus paludinus* & *Spinococcus calluneti* in bog-like habitat; hosts & distribution.

**1984.** On the distribution of Ortheziidae (Homoptera: Coccoidea) in Sweden. Entomol. Tidskrift 105:123-127. (In Swedish, English summary).
Key to 4 spp. found in Sweden; hosts & distribution.

**1985.** New finds of coccids in Sweden (Homoptera: Coccoidea). Entomol. Tidskrift 106:145-146. (In Swedish, English summary).
Lists 15 coccoid spp. of which 12 spp. are new for Scandinavia.

**Ossiannilsson, F., Russell, L. M., & Weber, H. 1970.** Homoptera. *In* Tuxen, S., "Taxonomist's Glossary of Genitalia in Insects." Copenhagen, Munksgaard, 1970. p. 179-190.
Descriptions.

**Ostmark, H. E. 1974.** Economic insect pests of bananas. Annu. Rev. Entomol. 19:161-176.
*Chavesia* spp. root & rhizome feeders.

**Ostrofsky, W. D., Shortle, W. C., & Blanchard, R. O. 1984.** Bark phenolics of American beech (*Fagus grandifolia*) in relation to the beech bark disease. European J. Forest Pathol. 14(1):52-59. (French & German summaries).
*Cryptococcus fagisuga*.

**Ou, B. R., Hong, G. J., Yang, X. C., & Wang, Y. D. 1984.** Studies on the biology of lac insect, *Laccifer lacca* (Kerr) Targ. Acta Entomol. Sinica 27(1):70-80. (In Chinese, English summary).
Detailed study; reproduction; voltinism; developmental stages; sex ratio; settlement; behavior; distribution; optimal environmental conditions; practices to monitor & enhance lac production are presented.

**Owens, J. M. 1978.** Mealybugs. Focus Floriculture 6(4):4-6.
Mentions 4 spp.; short description & life cycle in general; damage; control recommendation.

**Owosu, G. K. 1971.** Availability of cocoa swollen shoot virus to mealybugs from tolerant and sensitive cocoa. 3rd Int. Cocoa Res. Conf. (Accra, Ghana, 1969), Ghana Cocoa Res. Inst. p. 512-517.
*Planococcoides njalensis*; studied rate of transmission in the greenhouse & in the field.

**Packard, A. S. 1869.** Guide to the study of insects, and a treatise on those injurous and beneficial to crops: for the use of colleges, farm-schools, and agriculturists. Salem: Naturalist's Book Agency. London: Trubner & Co. 702 pp.
Discusses 11 species of coccoids under Coccidae (p. 525-530); *Coccus gloverii* n. sp.

**Paik, W. H. 1972.** Scale insects found in the greenhouses in Korea. Korean J. Plant Prot. 11(1):1-4. (In Korean, English summary).
Records 8 coccid spp.; first record for *Chionaspis kentiae*, *Chrysomphalus aonidum*, *Planococcus kraunhiae* & *Aspidiotus hederae*.

**1978.** Illustrated flora and fauna of Korea. Insecta (VI), Publ. by Min. Education (Samhwa Publ. Co. Ltd.). 22:481 pp. (In Korean, English introduction).
Treated 122 spp. in 58 gen. & 11 fam.; keys; hosts & distribution; Beesoniidae new in Korea.

**Paik, W. H. (ed.) 1982.** Catalogue of parasite-predator-host insects of Korea. Publ. by Coll. Agric. Seoul Univ. No. 82-5:99 pp. (In Korean, English summary).
Lists 42 coccoid spp. in 26 gen. with natural enemies; gives index to genera, spp. of parasites, predators & host insects.

**Paik, W. H. & Kim, J. H. 1977.** Study on the scale insects of conifers. Seoul Natl. Univ. Forests. Bul. 13:41-54. (In Korean, English summary).
List 16 coccoid spp.; description, hosts & natural enemies for 5 spp. new to Korea.

**Pallotta, D. 1972.** The effect of ions on the structure and function of facultative heterochromatin in the mealybug. Canad. J. Genetics & Cytology 14(4):809-815.
Used *Planococcus citri*.

*See* Berlowitz, L., & Pallotta, D.; Berlowitz, L., Pallotta, D., & Pawlowski, P.

**Pallotta, D. & Berlowitz, L. 1970.** Histones of two insect species. Biochimica et Biophysica Acta 200:538-543.
*Planococcus citri* & a cricket.

**Pallotta, D., Berlowitz, L., & Rodriguez, L. 1970.** Histones of genetically acitve and inactive chromatin in mealybugs. Expt. Cell Res. 60(3):474-477.
Used second & third instar male & female of *Pseudococcus citri*.

**Palm, C. E.**, *see* Grimble, D. G., & Palm, C. E.

**Paloukis, S. S. 1979.** The most important scale insects of fruit trees in northern Greece. Plant Prot. Inst. Thessaloniki, Greece. 148 pp.
Discusses 9 coccoid spp.; economic importance of hosts & scales on it; general biology; morphology; taxonomic position; identification; slide preparation & preservation; control measures; host plants.

**1984.** Studies on the bioecology and chemical control of scale insect pests of pome and stone fruit trees in northern Greece. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 353-357.
Lists 10 coccoid spp. & discusses 3 of them in detail; natural enemies.

**Pampaloni, L. 1903.** Microflora and microfauna in "disodile" in Melilli, Sicily. Boll. Accad. Gioenia, Sci. Nat. Catania 67:248-253. (In Italian). (Not seen).
Record on coccoid fossil.

**Pancer-Koteja, E.**, *see* Boratynski, K., Pancer-Koteja, E., & Koteja, J.

**Panis, A. 1970a.** Observations biologiques sur une cochenille farineuse des plantes ornamentales: *Chorizococcus lounsburyi* (Brain) (Hom. Coccoidea Pseudococcidae). Bul. Soc. Entomol. France 75:75-80.
Distribution; hosts; first record for France.

**1970b.** Méthode d'estimation de la densité de population de *Saissetia oleae* Bernard (Homoptera, Coccoidea, Coccidae) sur agrumes pour une étude ecologique à l'échelle d'un arbre. Al Awamia 37:25-31. (Arabic, English & Spanish summaries).
Based on population density, precise studies on population fluctuation could be worked out.

**1975.** Une pulvinaire de la canne à sucre d'introduction récente au Maroc (Homoptera, Coccoidea, Coccidae). Rev. Zool. Agric. Pathol. Végét. 74(4):147-153. (English summary).
*Pulvinaria elongata*; distinguishing characters; natural enemies.

**1977a.** Lecaninos (Homoptera, Coccoidea, Coccidae) dentro del plan de lucha integrada en la citricultura Mediterranea. Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 3(1/2):111-119. (English summary).
Discusses 4 coccoid spp. as economically important; mentions 12 more; damage; chemical & biological control.

**1977b.** Pseudococcidos (Homoptera, Coccoidea, Pseudococcidae) en el marco de la lucha integrada en cultivos de agrios del entorno Mediterráneo. Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 3(1/2):139-145. (English summary).
*Planococcus citri*; chemical treatment; natural enemies; notes on other *Pseudococcus* spp.

**1977c.** Bioecologia de la cochinilla comun de los agrios en la region Mediterranea (Homoptera, Coccoidea, Coccidae). Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 3(1/2):157-160. (English summary).
*Coccus hesperidum*.

**1977d.** Contribution al conocimiento de la biologia de la "cochinilla negra de los agrios" (*Saissetia oleae* Olivier). Bol. Serv. Def. contra Plagas Inspecc. Fitopatol. 3(1/2):199-205. (English summary).
Discusses mesoclimatic, microclimatic, cultural & geographical factors.

**1978.** Caractères écologiques et biocénotiques de la cochenille noire de l'Olivier *Saissetia oleae* (Olivier) (Homoptera, Coccoidea, Coccidae). Lab. d'Ecologie des Régions Arides - Nov. 1977 - Feb. 1978. p. 40-45.
Biology; natural enemies; chemical control.

**1981.** Les cochenilles circum-Méditerranéennes des arbres d'alignement et brise-vent (Homoptera, Coccoidea). Sixièmes Journées Phytiatrie & Phytopharmacie Circum-Méditerranéennes (Perpignan, France). 11 pp. (mimeographed) (English summary).
Discusses damage caused by 15 coccoid spp.; gives a table of distribution for 74 spp. in 8 fam.

**1984.** Les cochenilles. Vititechnique 75:22-24.
Notes on 9 coccoid spp.; biology; damage; natural enemies; control recommendation.

**Panis, A., Carrero, J. M., & Limon, F. 1977.** Nota biologica sobre la entomofauna de los citricos en España. Inst. Nac. Invest. Agric. Anales Ser. Prot. Vegetal No. 7:139-143. (English & French summaries).
*Parlatoria pergandii* & *Saissetia oleae*; locality; natural enemies.

**Panis, A., Ferran, A., & Torregrossa, J. P. 1974.** Les cochenilles des cultures vivrières et fourragères aux Antilles et en Guyane Française (Homoptera, Coccoidea). Rev. Zool. Agric. Pathol. Végét. 73(1):22-27. (English summary).
About 28 coccoids listed; damage; hosts & distribution.

**Panis, A. & Martin, H. E. 1976.** Cochenilles des plantes cultivées en République Dominicaine (Homoptera, Coccoidea) (Première Liste). Bul. Soc. Linnéenne de Lyon 45(1):7-8. (English summary).
List 9 coccoid spp. with hosts.

**Pant, N. C. 1983.** Nutrition of phytophagous insects. *In* "Insect Physiology and Anatomy," edited by Pant, N. C. & Chai. Publ. by Indian Council Agric. Res., New Delhi, India. 332 pp. (species on p. 232-238).
*Planococcus citri*.

**Papa, P.**, *see* Rotundo, G., Tremblay, E., & Papa, P.

**Paparatti, B. 1984.** Bibliography of *Saissetia oleae* (Olivier) and bibliographical notes on its principal parasites and predators. Agric. Italiana No. 1/2:77-115. (In Italian).
This bibliography contains nearly 600 titles of publications concerning *S. oleae* on olive in Italy & elsewhere, its control & its main predators & parasites, whether in direct relation to the pest or not.

**Papp, C. S.**, *see* Swan, L. A., & Papp, C. S.

**Parameswaran, N. 1983.** Rickettsia-like organism in *Cryptococcus fagisuga* on beech. European J. Forest Pathol. 13(5/6):376-380. (French & German summaries).
Occurrence & fine structural characteristics of rickettsia-like organism in *C. fagisuga* described; these are related to endosymbionts; mycoplasma-like organism was not found.

**Parameswaran, N. & Liese, W. 1982.** Rasterelectronenmikroskopische Beobachtungen an der Buchwollschildlaus. Allgemeine Forstzeitschrift No. 43:1302-1303.
Biology; nymphal morphology; structure of wax filaments produced by nymphs; life cycle reviewed.

**Paramonova, O. V. & Saakyan-Baranova, A. A. 1984.** The black currant scale *Pulvinaria ribesiae* Sign. (Homoptera, Coccoidea) and its parasites in Belorussia. Entomol. Obozr. 63(2):250-258. (In Russian). Entomol. Rev. 63(2):65-76. (In English).
Morphology; biology.

**Paraskakis, M.**, *see* Neuenschwander, P., & Paraskakis, M.

**Paraskakis, M., Neuenschwander, P., & Michelakis, S. 1980.** *Saissetia oleae* (Oliv.) (Hom. Coccidae) and its parasites on olive trees in Crete, Greece. Ztschrt. f. Angew. Entomol. 90(5):450-464.
Population dynamics; climatic conditions; olive varieties; rate of parasitism.

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Intensity of thinning had no apparent effect on the increase of *C. fagisuga*; host.

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**Parnell, L. A.**, *see* Schultz, P. B., & Parnell, L. A.

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Description of all stages of males & females; new morphological characters.

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*Dysmicoccus brevipes*, *Pseudococcus adonidum* & *Quadraspidiotus perniciosus*; protractor & retractor muscles play the most important role in moving the bristles & inserting them into the host plants.

**1976.** The pineapple mealybug (*Dysmicoccus brevipes* (Cockerell)) biology, ecology and control in Cuba. Doctoral Diss. Extract, Univ. Agric. Gödöllö, Hungary. 12 pp.

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**Patti, A. F.**, *see* Cameron, D. W., Feutrill, G. I., Karge, R. L., & Patti, A. F.; Cameron, D. W., Feutrill, G. I., Patti, A. F., Raston, C. L., Raverty, W. D., & White, A. H.

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Detailed study.

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*See* Berlowitz, L., Pallotta, P., & Pawlowski, P.

**Pearce, M. J.**, *see* Cox, J. M., & Pearce, M. J.; Foldi, I., & Pearce, M. J.

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Environmental influences were examined in determining propagation of this sp.

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*Physokermes hemicryphus*; effect of temperature; level of infestation; survival; ants.

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Lists 10 coccoid spp. carried with downwind.

**Peleg, B. A. 1982.** Effect of a new insect growth regulator RO-13-5223 on scale insects. Phytoparasitica 10(1):27-32.
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*Chrysomphalus aonidum*, *Aonidiella aurantii*, *Saissetia oleae* & *Ceroplasted floridensis*.

**Pellizzari, G. 1975-1976.** Observations on *Syngenaspis parlatoriae* Sulc and on other scale insects exclusive to conifers. Bol. Zool. Agr. Bachicoltura, Ser. II, 13:1-21. (In Italian, English summary).
Discusses 6 coccoid spp.; short description; hosts & distribution; first record for *S. parlatoriae*.

*See* Kozár, F., Tranfaglia, A., & Pellizzari, G.; Tranfaglia, A., Pellizzari, G., & Marotta, S.

**Pellizzari, G.** see also Pellizzari Scaltriti, G.

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Description; biology; hosts & distribution; natural enemy; first record in Italy.

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Morphological characters; biology; hosts; natural enemies.

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Taxonomy; description of female & male; distribution; natural enemies.

**1983.** Notes on two common scourges of lime. Proc. 20th Natl. Convention (Padova) (18 Sept. 1982) edited by Giulini, P. p. 56-59. (In Italian, English summary).
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*Pseudaulacaspis pentagona*, *Ceroplastes rusci* & *Eupulvinaria hydrangeae*; hosts & distribution; economic importance; control; natural enemies.

**Pena, J. E. & Waddill, V. 1982.** Pests of cassava in South Florida. Florida Entomol. 65(1):143-149.
*Aonidomytilus albus* & *Saissetia neglecta.*

**Penth, S.**, *see* Ziegler, H., & Penth, S.

**Pérez, E. Q. 1972.** The biology of the California red scale, *Aonidiella aurantii* (Maskell) (Diaspididae: Homoptera). Philippine Entomol. 2(3):227-245.
Hosts; enemies; control.

**Pérez, G., Carnero, A., & Barquin, J. 1984a.** *Dysmicoccus alazon* (Homoptera: Coccoidea) plaga de la platanera: I. Estudio taxonomiceo. Anales Inst. Nac. Invest. Agr. Ser. Agric. 26(7):93-112. (English summary).
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**1984b.** *Dysmicoccus alazon* (Homoptera: Coccoidea) plaga de la platanera: II. Biologia y control (avance provisional). Anales Inst. Nac. Invest. Agr. Ser. Agric. 26(8):113-135. (English summary).
Life cycle; behavior; reproduction; control recommendation; natural enemies.

**Pérez, G.** see also Pérez Guerra, G.

**Pérez Guerra, G. & Carnero Hernandez, A. 1985.** Nuevas aportaciones al estudio de los coccidos en Canarias. Bol. Soc. Portuguesa Entomol. Suppl. 1:313-321. (English summary).
List 89 coccoid spp. in 8 fam.; 16 spp. new for the Canary Islands.

**Pérez-Padron, G.**, *see* Gomez-Souse, J., & Pérez-Padron, G.

**Perlmutter, P.**, *see* Cameron, D. W., Feutrill, G. I., & Perlmutter, P.

**Perondini, A. L. P., Basile, R., & Mori, L. 1981.** Typical meiosis of insects. Ciencia Cult. 33(7):954-960. (In Portuguese).
Detailed study; illustrates phases of meiosis in a table for lecanoids, comstockiella & diaspidids; mention 2 coccoid spp.

**Perrin, R.**, *see* Decourt, N., Malphettes, C. B., Perrin, R., & Caron, D.

**Pesson, P. 1984.** Hommage a Alfred Serge Balachowsky (1901-1983). Ann. Soc. Entomol. France (n.s.) 20(3):235-238.
Life history; achievements; awards; list of publications.

*See* Foldi, I., & Pesson, P.

**Pesson, P. & Foldi, I. 1978.** Fine structure of the tegumentary glands secreting the protective "shield" in a sessile insect (Homoptera, Diaspididae). Tissue & Cell 10(2):389-399.
*Aonidiella aurantii.*

**Petrosian, A. V.**, *see* Khachatrian, M. G., Akopian, L. A., Petrosian, A. V., Karalova, E. M., Makarian, S. R., & Magakian, Y. A.; Magakian, Y. A., Makarian, S. R., Akopian, L. A., & Petrosian, A. V.; Magakian, Y. A., Makarian, S. R., Petrosian, A. V., Mkrtchian, L. P., Abroian, L. O., & Akopian, L. A.

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**Pfeiffer, D. G. 1985.** Pheromone trapping of males and prediction of crawler emergence for San Jose scale (Homoptera: Diaspididae) in Virginia apple orchards. J. Entomol. Sci. 20(3):351-353.
*Quadraspidiotus perniciosus.*

**Pflugfelder, O. 1970.** Alterung und Tod von *Kermes quercus* L. Weibchen (Coccina). Zool. Anz. 184(5/6):397-403.
Detailed study with several illustrations of different stages.

**Pinet, C.**, *see* Bénassy, C., & Pinet, C.

**Pires, A.**, *see* Schmutterer, H., Pires, A., & Kelin Koch, C.

**Pita, M. de S.**, *see* Vieira, R. M. da S., Carmona, M. M., & Pita, M. de S.

**Plaisance, G. 1978.** Le chene *Kermes.* Forêt Privée 123:20-26.
*Kermes ilicis.*

**Plimmer, J. R.**, *see* Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Foster, H. S., Plimmer, J. R., & Devilbiss, E. D.; Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Fargerlund, J., & Plimmer, J. R.

**Podoler, H.**, *see* Schneider, B., Podoler, H., & Rosen, D.

**Podoler, H., Bar-Zacay, I., & Rosen, D. 1979a.** Population dynamics of the Mediterranean black scale, *Saissetia oleae* (Olivier), on citrus in Israel. I. A partial life-table. J. Entomol. Soc. South. Africa 42(2):257-266.
Developmental stages; mortality; seasonal history; natural enemies.

**1979b.** Population dynamics of the Mediterranean black scale, *Saissetia oleae* (Olivier), on citrus in Israel. II. Distribution within the citrus tree. J. Entomol. Soc. South. Africa 42(2):267-273.
Distribution on leaves, between leaves & twigs & on the tree.

**Podoler, H., Dreishpoun, Y., & Rosen, D. 1981.** Population dynamics of the Florida wax scale, *Ceroplastes floridensis* (Homoptera: Coccidae) on citrus in Israel. 1. A partial life-table. Acta Oecologica, Oecologia Applicata 2(1):81-91.
Seasonal history; mortality of eggs, crawlers & adult females; construction & analysis of partial life table.

**Podsiadlo, E. 1972.** A contribution to the explanation of the status of *Asterodiaspis variolosum* (Ratzeburg) (Homoptera, Coccoidea, Asterolecaniidae) on the basis of material from Poland. Acta Zool. Cracoviensia 17:389-404. (Polish & Russian summaries).
*A. variolosum* & *quercicola* are shown to be distinctive spp. fully reliable differentiation is only possible between the first instar nymphs; biology; morphology of adult female & first instar.

**1974a.** Taxonomic studies on the species of *Asterodiaspis* Signoret, 1876 (Homoptera, Cocciodea, Asterolecaniidae) on oak in Poland. Acta Zool. Cracoviensia 19(20):487-530. (Polish & Russian summaries).
*A. minus* syn. of *A. quercicola*; status of *A. variolosum* confirmed; *A. variolosum* & *quercicola* occurs in population which differ from each other in morphological characters.

**1974b.** Comparative morphological studies on populations of *Asterodiaspis variolosum* (Ratzeburg) (Homoptera, Coccoidea, Asterolecaniidae) from the Swietokrzyskie Mts. (Poland). Ann. Zool. (Warszawa) 32(7):75-102. (Polish & Russian summaries).
Area & method of collection discussed; tables of comparison given; morphology of adult female & first instar nymph.

**1975a.** Life cycle of *Asterodiaspis variolosa* (Ratzeburg, 1870) (Homoptera, Coccoidea, Astereolecaniidae) in Poland. Ann. Zool. (Warszawa) 32(15):349-355. (Polish & Russian summaries).
Detailed study.

**1975b.** Studies on the identification and occurrence of species of the genus *Asterodiaspis* Signoret, 1876 (Homoptera, Coccoidea, Asterolocaniidae) in Poland. Przeg. Zool. 19(2):211-216. (In Polish, English summary).
Identifications of spp. based on morphological characters of first stage nymph; hosts & distribution.

**1976a.** Instructions for the identification of the species *Asterodiaspis* Signoret, 1876 (Homoptera, Coccoidea, Asterolecaniidae) damaging oak in Poland. Polskie Pismo Entomol. 46(2):401-409. (In Polish, English summary).
*A. quercicola* & *variolosa.*

**1976b.** Dispersal of individuals of *Asterodiaspis variolosa* (Ratzeburg) (Homoptera, Coccoidea, Asterolecaniidae) on host plants from their hatching place. Ekologia Polska 24(1):69-76. (Polish summary).
Detailed study.

**1983a.** *Dysmicoccus multivorus* (Kiritshenko), *Puto pilosellae* (Sulc) (Homoptera, Coccoidea, Pseudococcidae) and *Leptomastidea rubra* Tachikawa (Hymenoptera, Chalcidoidea, Encyrtidae) from Crete. Polskie Pismo Entomol. 53(1/2):179-189.
New records; redescription of adult female & third instar nymph of *P. pilosellae*; taxonomic notes; tables for different measurements.

**1983b.** Notes on scale insects (Homoptera, Coccoidea) found in Crete and their parasites. Fragmenta Faunistica 27(12):271-277. (Polish & Russian summaries).
Notes on 12 coccoid spp. in 3 fam.; hosts & distribution; parasites for some.

**1984.** Quantitative research on *Asterodiaspis quercicola* (Bouché) and *Asterodiaspis variolosa* (Ratzeburg) (Homoptera, Coccoidea, Asterolecaniidae) in some forest and oak trees planted in Warsaw. Sylwan 128(5):51-62. (In Polish, English summary).
Intensity of infestations; damage; frequency of occurrence; young trees were more intensively infested than older ones; intensity of *Asterodiaspis* spp. remained on similar level from 1977 to 1982.

**Podsiadlo, E. & Komosinska, H. 1976.** Further investigations on the scale insect fauna (Homoptera, Coccoidea) in the Nida Valley (Southern Poland). Acad. Polon. Sci. Bul. 24(2):87-91. (Russian summary).
List 18 coccid spp. with their hosts & distribution; 2 spp. new to Poland.

**Popov, G. B., Wood, T. G., & Haggis, M. J. 1984.** Insect pest of the Sahara. *In* "Key Environments. Sahara Desert," edited by Cloudsley-Thompson. Pergamon Press, Oxford. p. 145-174.
*Icerya purchasi*, *Parlatoria blanchardi*; biological control of *P. blanchardi*.

**Popov, I. A. 1980.** Historical development of Class Insecta. *In* "Works of Paleontological Institute Acad. Sci. USSR." Akad. Nauk SSSR Trudy Paleont. Inst. Publ. Nauka, Moscow. 175:269 pp. (coccoids on p. 58-69). (In Russian).
Development of Coccoidea discussed.

**Pradhan, S. B. 1981.** Rice mealybug and its alternate host plants. Int. Rice Res. Newsletter 6(4):11-12.
*Brevennia rehi*; severe outbreaks in Nepal.

**Prates, H. S.**, *see* Crestana, M. de S., & Prates, H. S.

**Prins, A. J., Ben-Dov, Y., & Rust, D. J. 1975.** A new observation on the association between ants (Hymenoptera: Formicidae) and armoured scale insects (Homoptera: Diaspididae). J. Entomol. Soc. South. Africa 38(2):211-216.
*Morganella conspicua.*

**Prota, R.**, *see* Delrio, G., Ortu, S., & Prota, R.

**Pruna, P. M. & Alayo, R. 1973.** Muestreo de Coccoideos y Aleyródidos en los cítricos de Isla de Pinos. Poeyana Inst. Zool. Acad. Cienc. Cuba 107:1-12. (English summary).
Found 10 spp. of coccids & 2 spp. of aleyrodids; most abundant spp. were: *Selenaspidus articulatus*, *Unaspis citri*, *Chrysomphalus aonidum*, *Coccus viridis* & *Lepidosaphes* spp. (*L. beckii* & *gloveri*).

**Pucci, C., Salmistraro, D., Forcina, A., & Montanari, G. 1982.** Effects of abiotic factors on the death rate of *Saissetia oleae* (Oliv.). Redia 65:355-366. (In Italian, English summary).
Study of the effects of temperature & the amount of rainfall on the death rate of first stage nymphs & the spatial distribution of insects between leaves & branchlets.

**Qadri, N. N. & Mahdihassan, S. 1981.** Pupal and prepupal stages of the male sind lac insect. Pakistan J. Sci. Industrial Res. 24(2):74-76.
*Kerria sindica*.

**Qafisha, W.**, *see* Ben-Dov, Y., Swirski, E., Qafisha, W., & Chen, Ch.

**Qi, Y. T.**, *see* Young, B. L., & Qi, Y. T.

**Qi, Y. T., Fu, W. J., Xu, S. F., & Wang, M. Z. 1985.** Study on development of the Japanese pine bast scale *Matsucoccus matsumurae* (Kuwana) indoors. Contr. Shanghai Inst. Entomol. 5:13-17. (In Chinese, English summary).
Dormancy changed due to indoor conditions; no change in response of males to sex pheromones regardless of climatic conditions or origin.

**Qi, Y. T., Yang, M. D., & Zhao, F. G. 1983.** A preliminary study of the sex pheromone of the Japanese pine bast scale, *Matsucoccus matsumurae* (Kuwana). Contr. Shanghai Inst. Entomol. (1982-1983). p. 21-28. (In Chinese, English summary).
Found low volatility & high chemical stability in sex pheromone; give information about its molecular structure.

**Qiu, J. H.**, *see* Huang, B. K., Qiu, J. H., & Jiang, F.

**Quaglia, F. & Raspi, A. 1982a.** Eco-ethological studies on cotton scale *Euphilippia olivina* Berlese & Silvestri (Rhynchota, Coccoidea), injurious to olive in Tuscany. Frustula Entomol. 2:85-112. (In Italian, English summary).
Biology of male & female; economic importance; natural enemies.

**1982b.** Eco-ethological notes on *Philippia oleae* (O. G. Costa) (Rhynchota, Coccoidea), a lecaniid exclusive to olive in Tuscany. Frustula Entomol. 2:196-229. (In Italian, English summary).
Host & distribution; life history; habits; natural enemies; economic importance.

**Quayyoom, M. A. 1972.** Studies on some synapomorphic characters among three margarodid tribes in relation to margarodid phylogeny. Pakistan J. Agric. Sci. 9(1/4):107-122.
Coelostomidini, Drosichini & Perissopneumoni; Droschinae new status, new sub-family.

**1973.** The role of furcal morphology in elucidating relations in two monophlebid adult females. Pakistan J. Sci. Res. 25(1/2):149-156.
States that *Perrissopneumon* & *Drosicha* belong to 2 different tribes if not sub-families.

**1980.** Studies on ethological behaviour of habitation in some Archeococcoidea females. Pakistan J. Sci. 32(1/2):121-126.
Etological parameters compared in families Margarodidae & Monophlebidae; discusses 8 margarodid & 12 monophlebid genera.

**1983.** Comparative taxonomic morphology of *Drosicha stebbingi* (Green) and *Drosichiella tamarindus* (Green) adult males. Pakistan J. Zool. 15(2):177-182.
A detailed study; placement of the 2 taxa is still not settled.

**Quayyoom, M. A. & Khan, M. R. 1974.** Studies on tribal affinities within Archeococcoidea. Pakistan J. Agric. Sci. 11(3/4):148-161.
Phylogenetically arranged & illustrated the tribes constituting Ortheziidae, Margarodidae, Monophlebidae & Phenacoleachiidae.

**Quezada, J. R. & DeBach, P. 1973.** Bioecological and population studies of the cottony-cushion scale, *Icerya purchasi* Mask., and its natural enemies *Rodolia cardinalis* Mul. and *Cryptochaetum iceryae* Will., in southern California. Hilgardia 41(20):631-688.
Detailed study.

**Quijano, L. 1981.** La quimica en los insectos: La contribucion Mexicana. Ciencia 32(4):215-225. (English summary).
*Ceroplastes albolineatus*; mentions 7 other coccoid spp.; reviews the fact which led to the discovery of the hormones & pheromones of insects, the structure elucidation & efforts to use these substances in insect control.

**Quyang, Z.**, *see* Gao, R. X., & Quayang, Z.

**Radjabi, G.**, *see* Rezvani, A., & Radjabi, G.

**Radkiewicz, J. 1981.** *Porphyrophora polonica* (L.) (Hom., Coccoidea) in western Poland. Przeg. Zool. 25(2):265-266. (In Polish, English summary).
New records for *P. polonica* are: Gorzow District: Owczary & Kunice, Zielona Gora District: Gestowice & Sudol near Lesniow Wielki.

**Radunz, L. A. J.**, *see* Williams, D. J., Radunz, L. A. J., & Brookes, H. M.

**Railian, N. N. 1980.** *Pseudococcus comstocki*, a dangerous quarantine pest. Sadovod. Vinograd. Vinodel. Moldavian No. 10:37-38. (In Russian).
Host & distribution; damage; control.

**Rajagopal, B. K.**, *see* Rajagopal, D., Siddaramegowda, T. K., & Rajagopal, B. K.

**Rajagopal, D., Siddaramegowda, T. K., & Rajagopal, B. K. 1982.** Incidence of pineapple mealybug, *Dysmicoccus brevipes* (Cockerell) on *Rhizobium* nodules of redgram and groundnut. J. Soil Biol. & Ecol. 2(2):97-98.
First record on these hosts in Bangalore, India; ant: *Monomorium* sp. was at mealybug infestation site.

**Rajendra, A. 1974.** The biology and control of *Saccharicoccus sacchari* Ckll. (Hom.: Pseudococcidae) the pink mealy bug of sugar cane in Sri Lanka. Ceylon J. Sci. (Biol. Sci.) 11(1):23-28.
Habitat; relationship with symbiotic ants; dispersal; damage; natural enemies.

**1979.** Insect pests attacking sugarcane in Sri Lanka and the parasites and predators recorded on them. Ceylon J. Sci. (Biol. Sci.) 13(1/2):29-35. *Saccharicoccus sacchari*, *Aclerda takahashii* & *Phenacoccus saccharifolii*.

**Rajotte, E. G.**, *see* Rhoades, M. H., Kosztarab, M., & Rajotte, E. G.

**Raju, K. & Seshagiri, R. G. 1982.** A note on the biology of sugarcane scale insect *Melanaspis glomerata* (Green) in Andhra Pradesh. Indian Sugar 32(1):19-20.
Influence of temperature; duration of life cycle.

**Ramachandran, M.**, *see* Ramanarayan, E. P., Chacko, M. J., & Ramachandran, M.; Ramanarayan, E. P., Ramachandran, M., & Deepak Singh, M. B.

**Raman, A.**, *see* Babujee, C. R., & Raman, A.

**Ramanarayan, E. P.**, *see* Chacko, M. J., Bhat, P. K., & Ramanarayan, E. P.

**Ramanarayan, E. P., Chacko, M. J., & Ramachandran, M. 1980.** Studies on the stylet penetration in *Saissetia coffeae*. J. Coffee Res. 10(4):71-74.
Stated that stylets penetrated the hot tissue mainly intracellularly & the site of feeding was phloem.

**Ramanarayan, E. P., Ramachandran, M., & Deepak Singh, M. B. 1976.** Mode of feeding in green bug, *Coccus viridis* (Green). J. Coffee Res. 6(3/4):76-80.
Stylet penetration intracellular; feeding site mainly phloem tissue.

**Rama-Rao, A. V.**, *see* Mehendale, A. R., Rama-Rao, A. V., & Venkataraman, K.

**Ramaseshiah, G. 1985.** Fruit pests and their natural enemies in Afghanistan. FAO Plant Prot. Bul. 33:19-25.
Recorded 11 scale insects & several other pests; need for biological control is discussed.

**Ramiro, Z. A.**, *see* Gabriel, D., Vecchio, M. C. del, Muniz, J. P., & Ramiro, Z. A.

**Rao, A. S.**, *see* Sankaran, K., & Rao, A. S.

**Rao, L. V. A.**, *see* Chacko, M. J., Deepak Singh, M. B., & Rao, L. V. A.; Chacko, M. J., Rao, L. V. A., & Deepak Singh, M. B.

**Rao, L. V. A. & Chacko, M. J. 1977.** Occurrence of *Ischnaspis longirostris* on coffee in India. J. Coffee Res. 7(2):55-57.
First record in India; hosts & distribution.

**Raouf, A.**, *see* Hafez, M., Tawfik, M. F. S., & Raouf, A.

**Rashad, A.**, *see* Ammar, E. D., Awadallah, K. T., & Rashad, A.; Awadallah, K. T., Ammar, E. D., Rashad, A.; Awadallah, K. T., Ammar, E. D., Tawfik, M. F. S., & Rashad, A.

**Rasina, B. P. 1971.** A new species of mealybug *Pseudococcus pseudoperrisii* Rasina (Coccoidea, Pseudococcidae) from the Latvian SSR. Latvijas Entomol. No. 13:3-6. (In Russian, German summary).
Host; comparison with related spp.

**Raspi, A.**, *see* Quaglia, F., & Raspi, A.

**Raston, C. L.**, *see* Cameron, D. W., Feutrill, G. I., Patti, A. F., Raston, C. L., Raverty, W. D., & White, A. H.

**Raupp, M. J. & Denno, R. F. 1979.** The influence of patch size on a guild of sap-feeding insects that inhabit the salt marsh grass *Spartina patens*. Environ. Entomol. 8(3):412-417.
*Odonaspis* sp. near *littoralis* & *Eriococcus* n. sp.

**Raverty, W. D.**, *see* Banks, H. J., Cameron, D. W., Edmonds, J. S., & Raverty, W. D.; Banks, H. J., Cameron, D. W., & Raverty, W. D.; Cameron, D. W., Feutrill, G. I., Patti, A. F., Raston, C. L., Raverty, W. D., & White, A. H.; Cameron, D. W., & Raverty, W. D.

**Ravid, M. & Yardeni, A. 1983.** *Ceroplastes floridensis* monitoring by capture of crawlers in comparison with counting on scales. Phytoparasitica 11(2):117-141. (species on p. 137).

**Rawat, R. R. & Jakhmola S. S. 1970.** Bionomics of the mango-coccid (*Rastrococcus iceryoides* Green; Homoptera: Coccidae). Indian J. Agric. Sci. 40(2):140-144.
Descriptive notes on eggs & adults; nymphs described; new host records for Madhya Pradesh.

**Rawat, R. R. & Modi, B. N. 1967.** A note on the pairing habit of *Ferrisia virgata* Ckll., the white mealybug. Sci. and Culture 39(9):408.
Period & incidence of copulation.

**1969.** Studies on biology of *Ferrisia virgata* Ckll. (Pseudococcidae: Homoptera) in Madhya Pradesh. Indian J. Agric. Sci. 39(3):274-281.
Hosts; studies in Jabalpur.

**Ray, C. H. (Ray, C. H., Jr.)**, *see* Ben-Dov, Y., Williams, M. L., & Ray, C. H., Jr.

**Ray, C. H. & Williams, M. L. 1980.** Description of the immature stages and adult male of *Pseudophilippia quaintancii* (Homoptera: Coccoidea: Coccidae). Ann. Entomol. Soc. Amer. 73(4):437-447.
Key to stages; hosts; discussion of generic status.

**1981.** Redescription and lectotype designation of the tessellated scale, *Eucalymnatus tessellatus* (Signoret) (Homoptera: Coccidae). Proc. Entomol. Soc. Wash. 83(2):230-244.
Description of 3 immature stages & adult female; key for the separation of instars; hosts & distribution.

**1982.** Descriptions of the immature stages of *Protopulvinaria pyriformis* (Cockerell) (Homoptera: Coccidae). Florida Entomol. 65(1):169-176. (Spanish summary).
Description of 3 immature instars; key for all developmental stages; hosts.

**1983.** Description of the immature stages and adult male of *Neolecanium cornuparvum* (Homoptera: Coccidae). Proc. Entomol. Soc. Wash. 85(1):161-173.
Key for the separation of developmental stages; propose *Toumeyella* group.

**1984.** Two new species of *Matsucoccus* (Homoptera: Margarodidae) from Arizona and Mexico with a key to species in North America. Ann. Entomol. Soc. Amer. 77(6):765-769.
*M. apachecae* & *leiophyllae.*

**Ray, C. H., Jr., Williams, M. L., & Daniels, I. E. 1983.** Auburn University Coccoidea Collection. The Scale 9(1):4-14.
Listing of ca. 15,000 slides; including a fair representation of Coccidae species.

**Regelson, W.**, *see* Miller, G., Berlowitz, L., & Regelson, W.

**Reichholf, H. & Reichholf, J. 1973.** "Honigtau" der Bracaatinga-Schildlaus als Winternahrung von Kolibris (Trochilidae) in Süd-Brasilien. Bonn. Zool. Beitr. 24(1/2):7-14.
Hummingbirds overwintering in the mountainous country feed on honeydew of Coccoidea; individuals defend single trees or groups of trees infested by the coccids.

**Reichholf, J.**, *see* Reichholf, H., & Reichholf, J.

**Reichstein, T.**, *see* Rothschild, M., Euw, J. von, & Reichstein, T.

**Reissig, W. H.**, *see* Magua, D. L., & Reissig, W. H.

**Reitzel, J.**, *see* Kozarzhevskaya, E. F., & Reitzel, J.

**Remaudiere, G. 1984.** Alfred-Serge Balachowsky (1901-1983). Obituary. The Scale 10(1):45-46.

**Ren, Z. Y.**, *see* Young, B. L., Hu, J. L., & Ren, Z. Y.

**Retan, A. H.**, *see* Burts, E. C., Hill, W. B., & Retan, A. H.

**Reyes, J. A.**, *see* Milena-Varela, A., Bellotti, A. C., & Reyes, J. A.

**Rezende, J. A. M., Rossetto, C. J., & Germeck, E. B. 1979.** Infestation of *Saccharicoccus sacchari* (Cockerell, 1895) in different varieties of *Saccharum* spp. Entomol. Newsletter, Int. Soc. Sugarcane Technologists 6:18 pp.
Investigated 19 varieties of sugarcane in greenhouse in Brazil.

**Rezvani, A. & Radjabi, G. 1983.** Biology of *Sphaerolecanium prunastri* Boyer de Fonscolombe in Iran. Entomol. Phytopathol. Appl. 51(1/2):17-22. (In Persian, English summary).
Damage; host & distribution.

**Rhoades, M. H., Kosztarab, M., & Rajotte, E. G. 1985.** Identification, hosts and distribution of *Pseudaulacaspis pentagona* (Targioni-Tozzetti) and *P. prunicola* (Maskell) in Virginia (Homoptera: Diaspididae). Proc. Entomol. Soc. Wash. 87(3):545-553.
Compared the records of the 2 spp.; concluded that they are 2 distinct spp.; however, some of their morphological characters are quite different from those in the world sample.

**Rice, R. E. 1974.** San Jose scale: field study with a sex pheromone. J. Econ. Entomol. 67(4):561-562.
*Quadraspidiotus perniciosus*; host suitability; response of males to virgin females; suggests that synthetic attractant could be used in pest management programs.

*See* Gieselmann, M. J., Rice, R. E., Jones, R. A., & Roelofs, W. L.; Hoyt, S. C., Westigard, P. H., & Rice, R. E.; Jorgensen, C. D., Rice, R. E., Hoyt, S. C., & Westigard, P. H.; Moreno, D. S., Carman, G. E., Rice, R. E., Shaw, J. G., & Bain, N. S.; Moreno, D. S., Rice, R. E., & Carman, G. E.

**Rice, R. E., Flaherty, D. L., & Jones, R. A. 1982.** Monitoring and modeling San Jose scale. Calif. Agric. 36(1/2):13-14.
*Quadraspidiotus perniciosus*; used tent traps & monitored male flights & population trends.

**Rice, R. E. & Hoyt, S. C. 1980.** Response of San Jose scale to natural and synthetic sex pheromones. Environ. Entomol. 9(2):190-194.
*Quadraspidiotus perniciosus*; trap design; pheromone component comparison; synthetic pheromone rate test; male flight thresholds.

**Rice, R. E. & Jones, R. A. 1977.** Monitoring flight patterns of San Jose scale (Homoptera: Diaspididae). Canad. Entomol. 109(10):1403-1404.
*Quadraspidiotus perniciosus*; used pheromone traps.

**Rice, R. E. & Moreno, D. S. 1970.** Flight of male California red scale. Ann. Entomol. Soc. Amer. 63(1):91-96.
Field tests of *Aonidiella aurantii* in Riverside, California.

**Rice, W. R. 1983.** Sexual reproduction: An adaptation reducing parent-offspring contagion. Evolution 37(6):1317-1320.

*Nuculaspis californicus*; donor & recipient tree; survival while changing host; studied the genetic basis of resistance on related host; concluded that a single episode of outbred sexual recombination is sufficient to eliminate any predation of scale insect transmitted from a parent tree to its seedlings.

**Richard, C. 1971.** Contribution à l'étude morphologique et biologique des Stictococcinae (Hom. Coccoidea). Ann. Soc. Entomol. France (n.s.) 7(3):571-609.
Divides *Stictococcus* into 2 subgenera: *Stictococcus* & *Parastictococcus*; key; n. syns.; *S. vayssierei* n. sp.; postembryonic development of male & female; host list; biogeographical distribution.

**1976.** Révision du groupe des *Stictococcus*, et création de taxa nouveaux (Homoptera, Coccoidea). Ann. Soc. Entomol. France (n.s.) 12(4):653-669. (English summary).
Reclassifies Stictococcinae as a family; divides Stictococcidae into 3 gen. containing 15 spp.; morphological & systematic characters; keys for gen. & spp.

**1979.** Deux nouvelles espèces d'Ortheziidae (Homoptera, Coccoidea) à l'île de la Reunion et à l'île Rodrigue. Bul. Mus. Natl. Hist. Nat. Paris Ser. 4, Sec. A, 1(4):1079-1085. (English summary).
*Nipponorthezia mameti* & *Newsteadia gomyi*.

*See* Couturier, G., Matile-Ferrero, D., & Richard, C.

**Rieux, R. 1975.** La spécificité alimentaire dans le genre *Matsucoccus* (Homoptera: Margarodidae) avec référence spéciale aux plantes-hôtes de *M. pini* Green. Classement des *Matsucoccus* d'après leurs hôtes. Ann. Sci. For. 32(3):157-168. (English summary).
Distribution; preferred site for fixation.

**1976.** *Matsucoccus pini* Green (1925) (Homoptera, Margarodidae) dans le Sud-Est de la France. Variations intraspécifiques. Comparaison avec des espèces les plus proches. Ann. Zool. Ecol. Animale 8(2):231-263. (English summary).
Describes all developmental stages; *M. pini* has geographic variation.

**Rincones, H. R. 1972.** Biology and development of "queresa coma," *Lepidosaphes beckii* Newman (Homopt., Coccoidea, Diaspididae) in citrus trees in the Ica Valley Peru. Rev. Peru. Entomol. 15(2):356-363.

**Riom, J. 1977.** Étude biologique et écologique de la cochenille du pin maritime *Matsucoccus feytaudi* Ducasse, 1942 (Coccoidea, Margarodidae, Xylococcinae) dans le Sud-Est de la France. III. - Structure des populations sur l'arbre. Ann. Zool. Ecol. Animale 9(4):709-732. (English summary).
Sectorial & vertical distribution; distribution between the trunk & crown.

**1979.** Étude biologique et écologique de la cochenille du pin maritime *Matsucoccus feytaudi* Ducasse, 1942 (Coccoidea, Margarodidae, Xylococcinae) dans le Sud-Est de la France. IV. Potentiel biotique et dynamique des populations. Ann. Zool. Ecol. Animale 11(3):397-456.
Detailed study.

**1984.** Interests of teledetection methods in following the progress of forest protection problems. Compt. Rend. Seances Acad. Agric. France 70(7):857-870. (In French, English summary). (Not seen).
*Cryptococcus fagisuga*; distribution; other forest pests.

**Riom, J. & Fabre, J. P. 1977.** Étude biologique et écologique de la cochenille du Pin maritime, *Matsucoccus feytaudi* Ducasse, 1942 (Coccoidea, Margarodidae, Xylococcinae) dans le Sud-Est

de la France. II. Régulation du cycle annuel, comportements des stades mobiles. Ann. Zool. Ecol. Animale 9(2):181-209. (English summary).
Detailed study; damage; host relationship.

**1979.** Décalage phenologique des éclosions des deux sexes chez *Matsucoccus feytaudi* Duc. (Homoptera, Coccoidea, Margarodidae). Compt. Rend. Hebd. Seances Acad. Sci. Ser. D, 288(1):89-92. (English summary).
Host & distribution; time different in emergence; fertilization; survival rate of host.

**Riom, J. & Gerbinot, B. 1977.** Étude biologique et écologique de la cochenille du Pin maritime *Matsucoccus feytaudi*, Ducasse, 1942 (Coccoidea, Margarodidae, Xylococcinae) dans le Sud-Est de la France. I. Biologie et phenologie générale. Ann. Zool. Ecol. Animale 9(1):11-50. (English summary).
Development; distribution.

**Riom, J., Gerbinot, B., Boulbria, A., & Fabre, J. P. 1971.** Elements de la bioécologie de *Matsucoccus feytaudi* Duc. (Coccoidea, Margarodidae) et de ses predateurs dans le Sud-Est le Sud-Oest de la France. Ann. Zool. Econ. Animale Spec. No. 1971:153-176. (English summary).
Geographical distribution in Europe & Africa; biology; regulation of annual cycle; population dynamics; natural enemy.

**Riom, J., Goillot, C., & Fabre, J. P. 1979.** Teledetection d'attaques de la cochenille *Matsucoccus feytaudi* Duc. (Coccoidea, Margarodidae) dans les fôrets de Pins maritimes du Sud-Est de la France par microdensitometrie trichrome sur film IRC. Ann. Sci. For. 36(4):299-320. (English summary).
Optical density of green & blue layers indicate the degree of attack by *M. feytaudi*.

**Risley, J. H.**, *see* Anderson, J. F., Ford, R. P., Kegg, J. D., & Risley, J. H.

**Rizk, A. M.**, *see* Salama, H. S., & Rizk, A. M.

**Rizk, G. N.**, *see* Saad, A. H., Rizk, G. N., & Younis, H. Y.

**Rizk, G. N. & Ahmed, O. S. 1981.** Studies on the biology of olive scale insect, *Leucaspis riccae* (Hemiptera, Homoptera, Diaspididae). Ain Shams Univ. Fac. Agric. Res. Bul. No. 1655:1-12.
Spring & fall generations; oviposition; life span; mortality of males & females; laboratory study.

**Rizk, G. N. & Mohammed, O. S. 1981.** Ecological studies on the olive scale insect *Leucaspis riccae* (Hemiptera, Homoptera, Diaspididae) in Iraq. Ain Shams Univ. Fac. Agric. Res. Bul. No. 1668:1-12.
Spring & fall generations; population densities; host resistance.

**Rizkallah, R.**, *see* Nour El-Dine, A. M., & Rizkallah, R.

**Roberti, D. & Tranfaglia, A. 1981.** *Allococcus inamabilis* (Hambleton) on *Cupressus macrocarpa*, new to Italy. Mem. Soc. Entomol. Italiana, (Genova) 60(2):305-309. (In Italian, English summary).
Notes on taxonomy & morphology of material collected in Italy.

**Robertson, G. 1971.** Marking red-scale with carbon-14 and its effect on reproduction and survival. Entomol. Experimentalis et Applicata 14(4):449-456.
*Aonidiella aurantii*.

**1973.** The sensitivity of scale insects to carbon-14 particles and to cobalt-60 gamma rays. Int. J. Radiation Biol. 24(4):313-323.

Used *Aonidiella aurantii*.

**Robertson, G. & Slowiak, D. 1974.** The distribution of carbon-14 in plants labelled as a source of food for red scale. Entomol. Experimentalis et Applicata 17(2):163-175. (French summary).
*Aonidiella aurantii*.

**Robison, W. G., Jr. 1971.** Unusual arrangements of microtubules in relation to mechanisms of sperm movement. *In* "Comparative Spermatology," edited by Baccetti, B. Academic Press, No. 137:311-320.
*Parlatoria oleae*.

**1972.** Microtubular patterns in spermatozoa of coccid insects in relation to bending. J. Cell Biol. 52:66-83.
Tested 10 coccid spp.

**1977.** Ultrastructure of Coccoidea sperm. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:35-50.
Sperm bundles & evolution, ultrastructure & motility.

*See* Harris, W. F., & Robison, W. G., Jr.

**Rocha, M. A. L. da**, *see* Vernalha, M. M., Gabardo, J. C., & Rocha, M. A. L. da.; Vernalha, M. M., Rocha, M. A. L. da, Gabardo, J. C., & Da Siva, R. P.

**Rodriguez, L.**, *see* Pallotta, D., Berlowitz, L., & Rodriguez, L.

**Rodziewicz, A.**, *see* Burzynski, J., & Rodziewicz, A.

**Roelofs, W. L.**, *see* Gieselmann, M. J., Moreno, D. S., Fargerlund, J., Tashiro, H., & Roelofs, W. L.; Gieselmann, M. J., Rice, R. E., Jones, R. A., & Roelofs, W. L.

**Roelofs, W. L., Gieselmann, M. J., Cardé, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J. 1977.** Sex pheromone of the California red scale, *Aonidiella aurantii*. Nature 267:698-699.
Components; attractancy of synthetic sex pheromone.

**1978.** Identification of the California red scale sex pheromone. J. Chem. Ecol. 4(2):211-224.
*Aonidiella aurantii*; pheromone, attractant, enantiomer, isomers.

**Rogers, P. F., Simbwa-Bunnya, M. N., & Early, M. P. 1972.** A survey of sugar cane diseases and pests in East Africa. J. East Afr. Agric. Forestry 38(2):162-169.
*Aulacaspis tegalensis* & *Saccharicoccus sacchari* major pests in 1970 survey.

**Rogojanu, V. 1962.** Contribution to the study of coccoids (Coccoidea-Homoptera) pests of conifers in the green belts. Studii Cercetari Biol. 13(2):279-307. (In Romanian, Russian & French summary).
Describes 9 spp.; distribution; biology; hosts.

**1963.** Contribution to the distribution of some species of Coccidae in the People's Republic of Romania. Studii Cercetari Biol. 14(2):277-292. (In Romanian, Russian & French summary).
Description & distribution for 14 spp.

**1966.** Coccoidea new for the Romanian fauna. Studii Cercetari Biol. 18(4):323-327. (In Romanian).

Eight spp. new to fauna.

*See* Trantescu, G., & Rogojanu, V.

**Roivainen, O. 1976.** Transmission of cocoa viruses by mealybugs (Homoptera: Pseudococcidae). J. Sci. Agric. Soc. Finland 48(3):293-304.
Describes experiments with light intensity, temperature, humidity, food uptake, etc.; *Planococcoides njalensis*, *Ferrisia virgata*, *Planococcus citri* & *Pseudococcus longispinus*.

**1980.** Mealybugs. *In* "Vectors of Plant Pathogens," edited by Harris, K. F. & Maramorosch, K. Academic Press, New York. 467 pp. (coccoids on p. 15-38).
Reports 23 coccoid spp. as vectors.

**Romanenko, K. E.**, *see* Matesova, G. Ia., & Romanenko, K. E.

**Rosas Costa, J. S. 1979.** Errece, un nuevo medio resinoso de montaje para microartropods. Neotropica 25(73):105-106.
Author claims that "errece" a mounting medium is superior to other resinous medium in mounting arthropods including coccoids; composition of "errece"; advantages & method of preparation given.

**Rosciewska, M.**, *see* Koteja, J., & Rosciewska, M.

**Rosciglione, B., Castellano, M. A., Martelli, G. P., Savino, V., & Cannizzaro, G. 1983.** Mealybug transmission of grapevine virus A. Vitis 22(4):331-347. (German summary).
*Pseudococcus longispinus*; mention 3 other mealybugs.

**Rosen, D. 1977.** *Aonidiella aurantii*, *Lepidosaphes beckii*. *In* chapter: Leafhoppers, white flies, aphids, scale insects etc. *In* "Diseases, Pests and Weeds in Tropical Crops," edited by Kranz, J., Schmutterer, H., & Koch, W. Verlag Paul Parey, Berlin & Hamburg, John Wiley & Sons, Chichester, New York, Brisbane, Toronto. 666 pp. (coccoids on p. 346-370).
Host & distribution; economic importance; life cycle; ecology; natural enemies & control for 12 spp.; notes on 13 other spp.

**1978.** The importance of cryptic species and specific identifications as related to biological control. Beltsville Symp. Agric. Res. 2. Biosystematics in Agriculture (Beltsville, 1977), Allanheld Osmun & Co., New York, 340 pp. (coccoids on p. 23-35).
Discusses 5 coccoid spp. with natural enemies for most of them.

*See* Podoler, H., Bar-Zacay, I., & Rosen, D.; Podoler, H., Dreishpoun, Y., & Rosen, D.; Schneider, B., Podoler, H., & Rosen, D.

**Rosen, D. & DeBach, P. 1977.** Use of scale-insect parasites in Coccoidea systematics. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:5-21.
Host specificity; discrimination on specific level; parasitological evidence in higher classification; mention 17 coccoid spp.

**1979.** Species of *Aphytis* of the world (Hymenoptera: Aphelinidae). Publisher Dr. W. Junk. The Hague, Boston, London. 801 pp. (coccoids on p. 752-765).
List 103 coccoid spp. with parasites & distribution.

**Rosen, D., Harpaz, I., & Samish, M. 1971.** Two species of *Saissetia* (Homoptera: Coccidae) injurious to olive in Israel and their natural enemies. Israel J. Entomol. 6(1):35-53.
*S. oleae* & *coffeae*; biology; seasonal history.

**Ross, J. 1971.** Microtubules and development of the corkscrew region of a mealybug sperm-bundle. Tissue & Cell 3(1):35-36.
Used *Pseudococcus obscurus*.

**1975.** Cylindrical organelles associated with microtubules during sperm elongation in a mealybug. Tissue & Cell 7(3):525-534.
*Pseudococcus obscurus*.

**Rossem, G. van, Bund, C. F. van de, & Burger, H. C. 1974.** Harmful insects in 1972. Entomol. Berichten 34(1):8-14. (In Dutch, English summary).
*Lecanopsis formicarium*, *Gossyparia spuria* & *Geococcus coffeae*.

**Rossetto, C. J.**, *see* Rezende, J. A. M., Rossetto, C. J., & Germeck, E. B.

**Rossler, Y.**, *see* Gerson, U., & Rossler, Y.

**Rotar, M. G.**, *see* Bichina, T. I., Rotar, M. G., & Rozinskaya, E. M.

**Rothschild, M., Euw, J. von, & Reichstein, T. 1973.** Cardiac glycosides in a scale insect (*Aspidiotus*), a ladybird (*Coccinella*) and a lacewing (*Chrysopa*). J. Entomol. (A) 48(1):89-90.
Cardiac glycosides in the body tissue of 3 different spp. of insects all feeding on *Nerium oleander* is recorded; *Aspidiotus neri* & *Pseudococcus adonidum* proved to be negative.

**Rotundo, G. 1975.** Serumdiagnostic discrimination in pseudococcids. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 32:60-66. (In Italian, English summary).
Examined *Planococcus citri*, *Pseudococcus obscurus*, *fragilis* & *adonidum* by double immunodiffusion; each sp. presents a pattern of reaction; immunological differences agree with morphological divergences.

**1978.** Massive isolation of the virgin females of *Pseudococcus calceolariae* (Mask.) (Homoptera, Coccoidea) through the use of juvenile hormone. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 35:162-168. (In Italian, English summary).
Hormone treatment eliminated time-consuming procedure of mechanical removal of minute male nymphs & did not prevent production of sex pheromone.

*See* Tremblay, E., & Rotundo, G.; Tremblay, E., Tranfaglia, A., Rotundo, G., & Iaccarino, F. M.

**Rotundo, G., Gaston, L. K., & Shorey, H. H. 1979.** Collection and purification of the female sex pheromone of *Pseudococcus calceolariae* (Homoptera: Coccoidea). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 36:160-171.
First study of this type; used virgin females.

**Rotundo, G. & Tremblay, E. 1973.** Study on a sex pheromone of *Planococcus citri* (Risso) (Homoptera, Coccoidea). I. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 30:217-230. (In Italian, English summary).
Observed remarkable attractivity of females of *P. citri*; extraction of the volatile substance produced by virgin females will be used for detection of infestation & population control through male suppression.

**1974.** Study on a sex pheromone of *Planococcus citri* (Risso) (Homoptera, Coccoidea). II. Extraction. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 31:121-131. (In Italian, English summary).
Description of laboratory method; result shown in table of comparison.

**1975a.** Study of a sex pheromone of *Planococcus citri* (Risso) (Homoptera, Coccoidea). III. Specificity. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 32:125-130. (In Italian, English summary).
Morphological differences between *P. citri* & *ficus*; pheromones species-specific; reproductive isolation possible in mixed colonies.

**1975b.** Attractivity of virgin females of two species of pseudococcids (Homoptera Coccoidea) for chalcidoid parasite (Hymenoptera Chalcidoidea). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 32:172-179. (In Italian, English summary).
*Pseudococcus calceolariae* & *Planococcus citri*.

**1976a.** Observations on male flight activity of *Pseudococcus calceolariae* (Mask.) (Homoptera Coccoidea). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 33:108-112. (In Italian, English summary).
Male activity demonstrated in table & diagram.

**1976b.** Serumdiagnostic studies in pseudococcids (Homoptera: Coccoidea). II. *Planococcus citri* (Ris.) and *Planococcus ficus* (Sign.). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 33:99-107. (In Italian, English summary).
*P. citri* & *ficus* compared by serological techniques.

**1976c.** Simple extraction and bioassay of the female sex pheromone of the citrus mealybug, *Planococcus citri*. Ann. Appl. Biol. 82:165-167.
Used ethanol, diethyl ether or petroleum ether.

**1977.** Observations on the intensity of attraction of virgin females of *Pseudococcus calceolariae* (Mask.) (Homoptera Coccoidea) when confronted by males in the field in canopy traps. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 34:136-149. (In Italian, English summary).
Tested sticky traps, glass traps & white plastic traps; white plastic was most effective.

**1978.** Data concerning the capture of males of *Pseudococcus calceolariae* (Mask.) (Homoptera Coccoidea) by means of virgin females in 1975. Proc. XI Italian Natl. Congr. Entomol. (Portici-Sorrento, 1976). p. 417-420. (In Italian, English summary).
Used sticky traps; capturing ratio of unbaited & baited traps compared.

**1980a.** Serological studies on five species of Pseudococcidae (Homoptera). Syst. Entomol. 5(4):431-435.
*Planococcus citri* & *ficus*, *Pseudococcus obscurus*, *calceolariae* & *longispinus*; present dendogram for the phylogenetic relations among the 5 spp.

**1980b.** Evaluation of the daily rate of sex pheromone release by the females of two mealybugs species (Homoptera Coccoidea Pseudococcidae). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 37:167-170.
*Pseudococcus calceolariae* & *Planococcus citri*.

**1981.** Scent trailing by virgin females of *Pseudococcus calceolariae*. J. Chem. Ecol. 7(1):85-88.
Scent marks serve as trails on the substrate & attract males.

**1982a.** Hybridization and sex pheromone responses in two closely related mealybug species (Homoptera: Pseudococcidae). Syst. Entomol. 7(4):475-478.
*Planococcus citri* & *ficus*.

**1982b.** Preliminary report on the attractivity of the synthetic pheromone of *Planococcus citri* (Rs.) (Homoptera Coccoidea) in comparison to virgin females. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 39:97-101.
Laboratory & field test; results showed that 1 μg of synthetic pheromone was about 5 times as effective as a living female; field temperature could vary result; laboratory test results were somewhat similar.

**Rotundo, G., Tremblay, E., & Giacometti, R. 1979.** Final results of mass captures of the citrophilous mealybug males (*Pseudococcus calceolariae* Mask.) (Homoptera Coccoidea) in a citrus grove. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 36:266-274.
Population of *P. calceolariae* decreased tenfold, while that of *Planococcus citri* increased.

**Rotundo, G., Tremblay, E., & Papa, P. 1980.** Short-range orientation of *Pseudococcus calceolariae* (Mask.) males (Homoptera Coccoidea) in a wind tunnel. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 37:31-37.
Tested males at different wind velocities; males can move against wind in zigzagging paths in absence of female odors.

**Roy, B. R.**, *see* Chakravarty, I., Ghosh, A., & Roy, B. R.

**Royer, M. 1971a.** Particularities ultrastructurales au cours de la spermiogenese chez *Icerya purchasi* (Insecte, Homoptère, Coccide). Bol. Zool. 38(3):299-310. (English summary).
Detailed study.

**1971b.** Présence de cellules haploides parmi les blastomeres diploides de l'embryon d'*Icerya purchasi* Mask. Compt. Rend. Hebd. Seances Acad. Sci. Ser. D, 272:3344-3347.

**1971c.** Observation on bi-nuclear spermatids of *Icerya purchasi* (Insecta, Homoptera, Coccidae). Bul. Zool. Soc. France 36(3):368.

**1973a.** Role de la polyspermie dans la formation des lignées cellulaires haploide et diploide chez l'insecte *Icerya purchasi*. Ann. Embryol. Morph. 6(3):243-252.
Functional polyspermy observed; presence of haploid cells explained.

**1973b.** La formation des ébauches gonadiques dans l'embryon de l'insecte hermaphrodite *Icerya purchasi* Mask. Compt. Rend. Acad. Sci. Ser. D. 276(10):1605-1608.

**1973c.** Pluralité des types génitaux chez l'insecte hermaphrodite *Icerya purchasi*. Bol. Zool. 40(3/4):269-289. (English summary).
Five genital types can be found.

**Royer, M. & Delavault, R. 1971.** Particularites ultrastructurales de la spermatide d'*Icerya purchasi* (Insecte, Homoptère, Coccide). Bol. Zool. 38(3):291-297. (Italian & English summaries).
Host: *Pittosporum tobira*.

**1974.** Formation of males in *Icerya purchasi* hermaphrodite insect (Homoptera, Coccidia). Compt. Rend. Hebd. Seances Acad. Sci. Ser. D, Sci. Nat. 278(17):2205-2208. (Not seen).
Arrhenotokous parthenogenesis; photoperiod.

**Rozinskaya, E. M.**, *see* Bichina, T. I., Rotar, M. G., & Rozinskaya, E. M.

**Rubin, A. Y. & Deirne, B. P. 1975.** The European fruit lecanium *Lecanium tiliae* (Homoptera; Coccidae) in southwestern British Columbia, Canada. J. Entomol. Soc. Brit. Columbia 72:18-20.
Hosts.

**Rupais, A.**, *see* Velce, D., & Rupais, A.

**Russell, L. M. 1970.** Additions and corrections to an annotated list of generic names of the scale insects (Homoptera: Coccoidea). U.S. Dept. Agric. Misc. Publ. 1015:13 pp.
Includes 151 entries.

**1974.** The correct citations for the reports on Homoptera collected during the Harriman Alaska Expedition. J. Wash. Acad. Sci. 63(4):154-155.
Correct citations are given for articles by Ashmead, Pergande & Schwartz in their reports on Homoptera collected during the expedition of 1899.

**1981.** Edson J. Hambleton (1902-1980). Proc. Entomol. Soc. Wash. 83(3):564-569.
Obituary.

**1982.** The habits and appearance of a rare mealybug, *Eurycoccus blanchardii* (King & Cockerell) (Homoptera: Coccoidea: Pseudococcidae). Proc. Entomol. Soc. Wash. 84(2):410-411.
Short description; host & distribution; gives an annotated list of previous articles mentioning *E. blanchardii*.

*See* Kosztarab, M., & Russell, L. M.; Ossiannilsson, F., Russell, L. M., & Weber, H.

**Russell, L. M., Kosztarab, M., & Kosztarab, M. P. 1974.** A selected bibliography of the Coccoidea. Second Supplement. U.S. Dept. Agric. Misc. Publ. 1281:122 pp.
Cite & annotate literature published between January 1, 1963 & December 31, 1969 & numerous articles published before 1963.

**Rust, D. J.**, *see* Prins, A. J., Ben-Dov, Y., & Rust, D. J.

**Rust, R., Menke, A., & Miller, D. 1985.** A biogeographic comparison of the bees, sphecid wasps, and mealybugs of the California Channel Islands (Hymenoptera, Homoptera). *In* "Entomology of the California Channel Islands," edited by Menke, A. & Miller, D. Santa Barbara Mus. Nat. Hist., Santa Barbara, Calif. 178 pp. (this article p. 29-41).
List & discuss 43 mealybug spp.

**Saad, A. H., Rizk, G. N., & Younis, H. Y. 1981.** Studies on the mode of reproduction in *Exaeretopus tritici* (Homoptera, Coccidae). Ain Shams Univ. Fac. Agric. Res. Bul. 1651:1-4.
Parthenogenetic & sexual reproduction; show differences in sex ratio between 2 types of reproduction.

**Saakyan-Baranova, A. A. 1971.** On some host-parasite adaptations in scales and chalcidoids (Homoptera, Coccidae; Hymenoptera, Chalcidoidea). Proc. 13th Int. Congr. Entomol. (Moscow, 1968) 1:552-553.
Found different forms of adaptations between 12 coccoid spp. & parasites.

*See* Paramonova, O. V., & Saakyan-Baranova, A. A.

**Saakyan-Baranova, A. A. & Borovikova, Y. Z. 1971.** *Rhodococcus turanicus* (Arch.) (Homoptera, Coccoidea) in the Alma-Ata fruit-growing zone. Entomol. Obozr. 50(1):22-27. (In Russian). Entomol. Rev. 50(1):12-17. (In English).
Description; including first description of some stages; biology; economic importance.

**Saakyan-Baranova, A. A. & Dergunova, Z. R. 1978.** A comparative morphobiological study of *Lepidosaphes mesasiatica* and *L. ulmi* (Homoptera, Coccoidea) and their parasites. Entomol. Obozr. 57(1):13-33. (In Russian). Entomol. Rev. 57(1):1-16. (In English).
Description of all stages including winged males.

**Saakyan-Baranova, A. A. & Muzafarof, S. S. 1972a.** The structure, biology and relationship of *Kermococcus quercus* L. (Homoptera, Kermococcidae) and its parasites (Hymenoptera, Chalcidoidea): I. Entomol. Obozr. 51(3):498-519. (In Russian). Entomol. Rev. 51(3):296-310. (In English).
Morphology & biology of *K. quercus* & its primary parasite *Tetrastrichus pachyneurus* were studied.

**1972b.** The structure, biology and interrelations of *Kermococcus quercus* L. (Homoptera, Kermococcidae) and its parasites (Hymenoptera, Chalcidoidea). II. Hyperparasites and relations between *Kermococcus quercus* L. and its parasites. The hyperparasite *Tetrastichus leptoneurus*, Ratzeburg. Entomol. Obozr. 51(4): 697-715. (In Russian). Entomol. Rev. 51(4): 411-422. (In English).
Parasites: *T. leptoneurus* & *pachyneurus* & *Eurytome* sp.

**Saakyan-Baranova, A. A., Sugonyaev, E. S., & Sheldeshova, G. G. 1971.** The brown scale and its parasites. Leningrad, Nauka Press. 165 pp. (In Russian).
*Parthenolecanium corni*; detailed descriptions of its 8 parasites.

**Sabour, M. 1971.** Nucleic acid and protein synthesis during early embryogenesis of a mealybug, *Pseudococcus obscurus* (Homoptera: Coccoidea). Ph.D. Diss., Univ. Calif. Berkeley, 1969 Cat. No. 82775142; Univ. Michigan, Ann Arbor Microfilms, 1971; Nal. Diss. 70-13.155. 49 leaves.

**1972b.** RNA synthesis and heterchromatization in early development of a mealybug. Genetics 70(2):191-198.
*Pseudococcus obscurus.*

**1978.** Autoradiography of DNA synthesis in eu- and heterochromatic chromosome sets of mealybug embryos. Genetica 49(1):71-76.
*Pseudococcus obscurus.*

**Sabour, M. & Barati, S. 1976.** DNA, histones and nonhistone proteins in eu- and heterochromatic chromosome sets in pre- and post-meiotic cells of male mealybugs. Genetics 83(3 Pt. 1). p. S66.
*Planococcus citri*.

**Sah, B. N.**, *see* Mehra, B. P., Naqvi, A. H., & Sah, B. N.

**Sakagami, Y.**, *see* Korenaga, R., & Sakagami, Y.; Okudai, S., Korenaga, R., & Sakagami, Y.

**Sakagami, Y. & Korenaga, R. 1982.** Studies on forecasting the occurrence of the arrowhead scale, *Unaspis yanonensis* Kuwana. II. Forecasting initial occurrence date of the first instar larvae by multiple regression equation. Fruit Tree Res. Sta. Bul. Ser. B. (Okitsu) 9:35-51. (In Japanese, English summary).
Used meteorological data & observation data for 16 years for estimating equations for forecasting.

**Salama, H. S. 1970a.** Ecological studies on the scale insect, *Chrysomphalus dictyospermi* (Morgan) in Egypt. Ztschrt. f. Angew. Entomol. 65(4):427-430.
Biology, seasonal incidence; host.

**1970b.** Population dynamics of the scale insect *Mycetaspis personatus* (Comstock) in Egypt (Homoptera - Coccoidea). Ztschrt. f. Angew. Entomol. 66(1):42-46.
Study on mango trees; 2-3 generations per year; distribution.

**1971.** Olfaction and gustation in coccids (Coccoidea) (*Planococcus citri* (Risso)). Experientia (1971) 27(11):1294.
Mentions *Lecanium acuminatum*; insects discriminated between chemicals.

**1972.** On the population density and bionomics of *Parlatoria blanchardi* (Targ.) and *Mycetaspis personatus* (Comstock) (Homoptera - Coccoidea). Ztschrt. f. Angew. Entomol. (1972) 70(4):403-407.
Study on date palms & on *Ficus nitida*.

**1977.** *Saccharicoccus sacchari* (Ckll.). *In* chapter: Leafhoppers, white flies, aphids, scale insects etc. *In* "Diseases, Pests and Weeds in Tropical Crops," edited by Kranz, J., Schmutterer, H., & Koch, W. Verlag Paul Parey, Berlin & Hamburg, John Wiley & Sons, Chichester, New York, Brisbane, Toronto. 666 pp. (coccoids on p. 346-370).
Host & distribution; economic importance; life cycle; ecology; natural enemies & control for 12 spp.; notes on 13 other spp.

*See* Habib, A., Salama, H. S., & Amin, A. H.; Habib, A., Salama, H. S., & Saleh, M. R.; Hafez, M., Salama, H. S., & Amin, A. H.; Hafez, M., Salama, H. S., & Saleh, M. R.; Saleh, M., & Salama, H. S.; Sayed, M. T., Soliman, A. A., & Salama, H. S.

**Salama, H. S., Amin, A. H., & Hawash, M. 1972.** Effect of nutrients supplied to citrus seedlings on their susceptibility to infestation with the scale insects, *Aonidiella aurantii* (Maskell) and *Lepidosaphes beckii* (Newman) (Coccoidea). Ztschrt. f. Angew. Entomol. 71(4):395-405. (German summary).
Effect of nutrient solutions on the increase of *A. aurantii* & *L. beckii* infesting citrus seedlings varied by species.

**Salama, H. S., El-Sherif, A. F., & Megahed, M. 1985.** Soil nutrients affecting the population density of *Parlatoria zizyphus* (Lucas) and *Icerya purchasi* Mask. (Homopt. Coccoidea) on citrus seedlings. Ztschrt. f. Angew. Entomol. 99(5):471-476. (German summary).
Excess amount of nitrogen or phosphorus caused an increase in population density of both pests; mention 3 other coccoid spp.

**Salama, H. S. & Hamdy, M. K. 1973.** Studies on the population dynamics of *Lepidosaphes pallida* (Green) (Hom., Coccoidea) (Hem., Diaspididae). II. Interaction of factors affecting insect distribution. Ztschrt. f. Angew. Entomol. 73(2):197-202.

**1974a.** Studies on populations on two scale insects infesting fig trees in Egypt (Coccoidea). Ztschrt. f. Angew. Entomol. 75(2):200-204.
*Asterolecanium pustulans*, 3 generations per year; *Hemiberlesia lataniae*, 2 generations per year; hosts & distribution.

**1974b.** Zum Auftreten von *Aspidiotus hederae* (Vallot) (Coccoidea, Diaspididae) an Cassia-Baumen in Agypten. Anz. Schädlingskunde, Pflanzen und Umweltschutz 47(9):138-139. (English summary).
Biology; control.

**Salama, H. S. & Rizk, A. M. 1969.** Composition of the honeydew in the mealybug, *Saccharicoccus sacchari* (Hem., Hom., Pseudococcidae). J. Insect Physiology 15:1873-1875.
Chromatographic analysis of the carbohydrate & amino-acid content of honeydew.

**Salama, H. S. & Saleh, M. R. 1970.** Distribution of the scale insect *Pulvinaria psidii* Maskell (Coccoidea) on orchard trees in relation to environmental factors. Ztschrt. f. Angew. Entomol. 66(4):380-385.
On *Psidium guajava*, 2 generations per year; distribution in different zones of the trees; seasonal variations.

**1971.** Some ecological aspects of the soft scale *Lecanium acuminatum* Signoret (Coccoidea). Ztschrt. f. Angew. Entomol. 68(1):98-101.
Seasonal abundance on mango.

**1972.** Population of the scale insect *Mycetaspis personatus* (Comstock) on different varieties of *Mangifera indica* L. Ztschrt. f. Angew. Entomol. 70(3):328-331.

**1984.** Components of the essential oil of three citrus species in correlation to their infestation with scale insects. Ztschrt. f. Angew. Entomol. 97(4):393-398.
*Aonidiella aurantii* & *Chrysomphalus ficus*; *Citrus* spp. with higher hydrocarbon contents more susceptible, while those with higher alcoholic terpene content more resistant to insect infestation.

**Salas, D. S.**, *see* Jiron, L. F., & Salas, D. S.

**Salazar, T. J. (Salazar, T. J. A.) 1972.** Contribucion al conocimiento de los Pseudococcidae del Peru. Rev. Peru. Entomol. 15(2):277-303.
Description of 13 spp. in 10 gen.; *Gossypina* n. gen.; *G. glauca* n. sp.; biology; damage; ecology; natural enemies; control.

*See* Coquis, F. D. Y., & Salazar, T. J. A.

**Saleh, M. (Saleh, M. R.)**, *see* Habib, A., Salama, H. S., & Saleh, M. R.; Hafez, M., Salama, H. S., & Saleh, M. R.; Salama, H. S., & Saleh, M. R.

**Saleh, M. & Salama, H. S. 1971.** Main chemical components of the honeydew excreted by the vine mealy bug *Planococcus vitis*. J. Insect Physiology 17(9):1661-1663.
Sucrose, glucose, fructose, raffinose & 14 amino acids.

**Salem, Y. S.**, *see* Amin, A. H., & Salem, Y. S.

**Sales, F. M.**, *see* Bastos, J. A. M., Sales, F. M., Gomes, N. G., & Figueiredo, R. W. de.

**Salmistraro, D.**, *see* Pucci, C., Salmistraro, D., Forcina, A., & Montanari, G.

**Samedov, B. A. 1966a.** Factors influencing populations of vineyard mealybugs in conditions of Azerbaidzhan. Akad. Nauk Azerbaidz. SSR Zakavkaz. Sovet Koordin. Nauchno-Issled. Rabot Zashch. Rast. Minist. Selsk. Khoz. SSR, 1966. p. 350-364. (In Russian). (Not seen).
*Pseudococcus citri*.

**1966b.** Role of food in the life cycle of *Pseudococcus citri* Risso. Akad. Nauk Azerbaidz. SSR, Izv., Ser. Biol. Nauk 5(1966):37-45. (In Russian).
Host plants in Azerbaidzhan.

**Samish, M.**, *see* Rosen, D., Harpaz, I., & Samish, M.

**Sammartano, B.**, *see* Liotta, G., & Sammartano, B.

**Sampaio, A. S.**, *see* Suplicy, F. N., Sampaio, A. S., & Miyazaki, I.

**Sampedro, G. (Sampedro, R. G.) 1984.** In memoriam Raúl MacGregor-Loaeza (1926-1983). Anales Inst. Biol. Univ. Nacional Autónoma Mexico Ser. Zool. 55(1):295-298.
Obituary.

*See* MacGregor, L. R., & Sampedro, R. G.

**Sampedro, G. & Butze, J. A. 1984.** Descripcion de una nueva especie de la familia Coccidae de Mexico (Homoptera: Coccoidea). Anales Inst. Biol. Univ. Nacional Autónoma Mexico Ser. Zool. 55(2):143-150.
*Ceroplastes macgregori*; description; host & distribution; life cycle.

**Sampo, A.**, *see* Olmi, M., Currado, I., & Sampo, A.

**Sampo, A. & Olmi, M. 1976.** Discovery in Italy of *Ortheziola vejdovskyi* Sulc, potentially injurious to the roots of ornamental plants (Coccoidea Ortheziidae). Atti Accad. Sci. Torino 110:217-219. (In Italian, English summary).
Hosts & distribution; taxonomic note.

**1979.** Biology of *Puto antennatus* (Signoret) on *Pinus cembra* L. and *Picea abies* L. in the Aosta Valley (Italy) (Coccoidea Pseudococcidae). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 36:172-178. (In Italian, English summary).
Comparative notes with other spp.; hosts.

**Samson, M. V.**, *see* Sriharan, T. P., Samson, M. V., & Krishnaswami, S.

**Sanchez de Leon, A.**, *see* Aurelio Flores, M., Sanchez de Leon, A., & Cid Ortiz, J. R. del.

**Sandlant, G. R. 1978.** Slide-mounting fresh specimens of small soft-bodied Homoptera (Mealybugs, Scale Insects and Aphids). New Zeal. Entomol. 6(4):430-431.
Methods described not intended to replace existing ones, but to offer an alternative for processing fresh specimens; used acid fuchsin & Essig's fluid in one operation, specimen dehydrated in alcohol & mounted in Euparol or Canada balsam after the body contents have been teased out.

**Sands, D. P. A. 1984.** Dissolving wax from scale insects: a method for assessing parasitism and determining instars of *Ceroplastes* spp. and *Gascardia destructor* (Newstead). J. Austral. Entomol. Soc. 23(4):295-296.

**Sankaran, K. & Rao, A. S. 1982.** Synthesis of 2,6 dimethyl-1,6 heptadien-3-ol acetate, a probable biogenetic precursor of the pheromone, 2,6 dimethyl-1,5 heptadien-3-ol acetate. Indian J. Chem. Sec. B. Organic Chem. Incl. Med. Chem. 21(6):542-544.
Used *Pseudococcus comstocki*.

**Sankaran, T., Nagaraja, H., & Narasimham, A. U. 1984.** On some South Indian armoured scales and their natural enemies. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 409-411.
Host & distribution for 16 coccoid spp. in 11 genera.

**Santas, L. A. 1980.** *Marchalina hellenica* (Gennadius) an important insect for apiculture in Greece. Proc. 27th Int. Congr. Apiculture (Athens, 1979). p. 419-422. Publ. by Apimondia Publ. House, Bucharest, Romania. 600 pp.

Host & distribution; life cycle; natural enemies.

**1983.** Insects producing honeydew exploited by bees in Greece. Apidologie 14(2):93-103. (French summary).
Discusses 6 coccoid spp.; host & distribution.

**Santorini, A. P. 1977.** Étude de quelques caracteres biologiques de *Planococcus citri* (Risso) en Grèce (Homoptera, Coccoidea, Pseudococcidae). Fruits 32(10):611-612. (English & Spanish summaries).
Hosts; natural enemies; control.

*See* Argyriou, L. C., & Santorini, A. P.

**Sáringer, G.**, *see* Balás, G., & Sáringer, G.

**Sarkisian, S. M.**, *see* Mkrtchian, L. P., & Sarkisian, S. M.; Mkrtchian, L. P., Sarkisian, S. M., & Sarkisov, R. N.; Mkrtchian, L. P., Sarkisov, R. N., & Sarkisian, S. M.; Sarkisov, R. N., & Sarkisian, S. M.; Sarkisov, R. N., Sarkisian, S. M., & Mkrtchian, L. P.; Sarkisov, R. N., Sarkisian, S. M., & Sevumian, A. A.; Sarkisov, R. N., Sevumian, A. A., Sarkisian, S. M., & Mkrtchian, L. P.; Sevumian, A. A., Sarkisian, S. M., Sarkisov, R. N., & Galstian, R. A.

**Sarkisov, R. N. 1975.** The problem of summer storage of Ararat cochineal insect eggs. Biol. Zhur. Armenii 28(11):86-88. (In Russian, Georgian summary).
*Porphyrophora hamelii*; artificial breeding for infesting host plants.

**1984.** The Ararat cochineal - biology, possibilities of maintenance and economic exploitation. Biol. Zhur. Armenii 37(11):916-925. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii*; rearing techniques; reproduction; abundance & distribution.

*See* Mkrtchian, L. P., Sarkisian, S. M., & Sarkisov, R. N.; Mkrtchian, L. P., Sarkisov, R. N., & Sarkisian, S. M.; Sevumian, A. A., Sarkisian, S. M., Sarkisov, R. N., & Galstian, R. A.; Sevumian, A. A., & Sarkisov, R. N.; Sevumian, A. A., Sarkisov, R. N., & Gandilian, P. A.

**Sarkisov, R. N. & Arutiunian, L. D. 1977.** Features of the emergence of the Ararat cochineal adult females on soil surface. Biol. Zhur. Armenii 30(9):58-62. (In Russian).
*Porphyrophora hamelii*; non-inseminated females repeatedly come out to soil surface, inseminated females stay in the soil.

**Sarkisov, R. N. & Khechoian, L. S. 1980.** The dependence of the number of adult females on the soil surface on sex ratio in the Ararat cochineal. Biol. Zhur. Armenii 33(3):289-293. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii*.

**Sarkisov, R. N. & Mkrtchian, L. P. 1981.** Digestive system of Ararat cochineal. Biol. Zhur. Armenii 34(6):633-636. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii*; description of digestive system; digestive canal at all developmental stages is described.

**Sarkisov, R. N., Mkrtchian, L. P., & Khechoian, L. S. 1981.** Parthenogenesis of the Ararat cochineal insect. Biol. Zhur. Armenii 34(1):46-49. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii*.

**1982.** Effect of starvation on the reproductivity of the Ararat cochineal, *Porphyrophora hamelii* Brandt. Biol. Zhur. Armenii 35(10):832-835. (In Russian, Armenian & English summaries).

Adults developed from starved nymphs are with reduced reproductive capacity.

**1983.** Effect of low temperature on the development of Ararat cochineal *Porphyrophora hamelii* Brandt (Homoptera, Coccoidea, Margarodidae). Acad. Sci. Armenian SSR, Inst. Zool., Zool. Papers 19:211-232. (In Russian, Armenian & English summaries).

**Sarkisov, R. N. & Sarkisian, S. M. 1979.** Rearing of the Ararat cochineal *Porphyrophora hamelii* Brandt (Homoptera, Coccoidea) in artificial condition. Biol. Zhur. Armenii 32(3):200-203. (In Russian, Armenian & English summaries).

Developed a breeding method to feed sp. on food plant grown in greenhouse.

**Sarkisov, R. N., Sarkisian, S. M., & Mkrtchian, L. P. 1980.** Dependence of biomass output of the Ararat cochineal on the collection method and the egg laying efficiency level of food plants. Biol. Zhur. Armenii 33(9):995-997. (In Russian).

*Porphyrophora hamelii*; raising in greenhouse compared with natural plant infestation; temperature; nutrition.

**Sarkisov, R. N., Sarkisian, S. M., & Sevumian, A. A. 1982.** Effect of starvation on the growth and development of Ararat cochineal, *Porphyrophora hamelii*. Biol. Zhur. Armenii 35(2):124-127. (In Russian).

Studied host plants; beginning of starvation produced no significant effect on the development of cochineal in cyst; the growth ends 2 weeks before pronymphs males & mature females emerge from the cyst.

**Sarkisov, R. N., Sevumian, A. A., & Mkrtchian, L. P. 1974.** Dependence of the average weight of female Ararat cochineal insects on the time of their emergence onto the ground surface. Biol. Zhur. Armenii 27(2):95-98. (In Russian).

*Porphyrophora hamelii*; give time sequence for emergence of large, average & small females.

**1978.** Albinism and colour variation in the Ararat cochineal insect, *Porphyrophora hamelii* Brandt (Homoptera: Coccoidea). Biol. Zhur. Armenii 31(9):927-930. (In Russian, Armenian & English summaries).

Ratio of albino & other females; fertility of eggs when albino females mated with normal males.

**Sarkisov, R. N., Sevumian, A. A., Sarkisian, S. M., & Mkrtchian, L. P. 1974.** Sex ratio of the Ararat cochineal (*Porphyrophora hamelii* B.). Biol. Zhur. Armenii 27(7):84-85. (In Russian).

Almost 1:1; number of females slightly higher.

**Sathiyanandam, V. K.**, *see* Shaukunthala, V. A., & Sathiyanandam, V. K.

**Sâvescu, A. 1983.** Espèces de coccidées nouvelles pour la science signalées en Roumanie. I. *Pulvinaria ampelopsidis* Sâvescu sp. n. et *Pulvinaria euonimicola* Sâvescu sp. n. (Homoptera - Coccidae). Bul. Acad. Sci. Agric. Forest. No. 12:43-50.

Description of several stages for both species.

**1984.** Espèces de coccoidées nouvelles pour la science, signalées en Roumanie. II. Espèces appartenant aux genres *Pseudococcus* Westw., *Phenacoccus* Ckll. et *Peliococcus* Borchs. (Homoptera, Pseudococcidae). Bul. Acad. Sci. Agric. Forest. 13:143-156.

Described 13 n. spp. from Romania.

**1985.** Espèces de coccoidées nouvelles pour la science signalées en Roumanie III. Espèces appartenant aux genres *Pseudococcus* Westw., *Phenacoccus* Ckll., *Paroudablis* Ckll., *Eupeliococcus* Sâvescu, *Heterococcus* Ferris, *Acanthococcus* Sign, *Luzulaspis* Ckll., *Pulvinaria*

Targ., *Diaspidiotus* Leon. et *Lepidosaphes* Shim. (Homoptera - Coccoidea). Bul. Acad. Sci. Agric. Forest. 14:103-130.
Described 20 n. spp. from Romania.

**Savino, V.**, *see* Rosciglione, B., Castellano, M. A., Martelli, G. P., Savino, V., & Cannizzaro, G.

**Sayed, M. T., Soliman, A. A., & Salama, H. S. 1962a.** On the developmental stages of *Planococcus vitis* Nied. and *Planococcus citri* Risso (Homoptera: Coccoidea - Pseudococcidae). Bul. Soc. Entomol. Egypte 46:449-457.
Effect of temperature & humidity; incubation period; egg hatching; nymphal mortality.

**1962b.** Further contributions to the biology of *Planococcus vitis* Nied., and *Planococcus citri* Risso with special reference to their number of generations. Bul. Soc. Entomol. Egypte 46:459-463.
Rate of development.

**Scarbrough, K., Hattman, S., & Nur, U. 1984.** Relationship of DNA methylation level to the presence of heterochromatin in mealybugs. Molecular Cell Biol. 4(4):599-603.
Used *Pseudococcus obscurus* & *calceolariae*.

**Scheurer, W.**, *see* Dimroth, O. von, & Scheurer, W.

**Schimitschek, E. 1980a.** *Cryptococcus fagi* Bärensp. und die Buchen-Rindennekrose. Anz. Schädlingskunde Pflanzenschutz und Umweltschutz 53(7):97-98. (English summary).
Bark tissue sucked by *C. fagi* showed distinct lesions & alterations but relationship was not provable.

**1980b.** Manna. Anz. Schädlingskunde Pflanzenschutz und Umweltschutz 53(8):113-121. (English summary).
Reviews history, clarifies term; discusses manna coming from insect *Trabutina mannipara* or from plants; mentions 3 other coccoid spp.

**Schmidt, L. 1973.** Scale insects and aphids on ornamental plants in Opatija and Rijeka. Poljoprivredna Znanstvena Smotra 40:439-453. (In Croatian, English summary).
Lists 25 coccoid spp., with hosts.

**Schmutterer, H. 1957b.** Untersuchungen über die Schildlausfauna einiger Botanischer Garten in Westdeutschland. Abt. Abteilung Naturwiss. 28:133-140. (Not seen).

**1965.** Zur Ökologie und wirtschaftlichen Bedeutung der *Physokermes* Arten (Homopt. Coccoidea). an Fichte in Süddeutschland. Ztschrt. f. Angew. Entomol. 56(4):300-325.
*P. piceae* & *hemicryphus*.

**1969.** Pests of crops in Northeast and Central Africa with particular reference to Sudan. Gustav Fischer Verlag, Stuttgart - Portland - U.S.A. 269 pp. (coccoids on p. 97-118).
Description, host & distribution, damage, economic importance, life history, natural enemies, control for 14 spp.; mentions several other coccoid spp.

**1972a.** Unterordnung Coccoidea, Schildläuse, scale insects, cochenilles. *In* Schwenke, W. "Die Forstschädlinge Europas," Paul Parey Publ. Hamburg - Berlin 1:387-391.
Lists 26 coccoid spp.

**1972b.** Überfamilie Neococcoidea. *In* Schwenke, W. "Die Forstschädlinge Europas," Paul Parey Publ. Hamburg - Berlin 1:405-422.

Coccidae (Lecaniidae), Kermesidae, Asterolecaniidae; description; biology; hosts & distribution; parasites; predators.

**1977.** *Planococcus citri*, *Coccus viridis*, *Aspidiotus destructor*, *in* chapter Leafhoppers, white flies, aphids, scale insects etc. *In* "Diseases, Pests and Weeds in Tropical Crops," edited by Kranz, J., Schmutterer, H., & Koch, W. Verlag Paul Parey, Berlin & Hamburg, John Wiley & Sons, Chichester, New York, Brisbane, Toronto. 666 pp. (coccoids on p. 346-370).
Host & distribution, economic importance, life cycle, ecology, natural enemies & control for 12 spp.; notes on 13 other spp.

**1980.** Zum Stand der Erforschung der Schildläuse (Homoptera, Coccoidea) in der Bundesrepublic Deutschland. Mitteilungen Deutsches Gesellschaft Allgemeine Angewandte Entomol. 2(1/2):49-56. (English summary).
Lists 108 coccoid spp. in 10 fam.; references to taxonomy, ecology, post-embryonic development, economic importance, control & future tasks.

*See* Kranz, J., Schmutterer, H., & Koch, W.

**Schmutterer, H., Pires, A., & Kelin Koch, C. 1978.** Zur Schädlingsfauna der Kapverdischen Inseln. Ztschrt. f. Angew. Entomol. 86(3):320-336. (English summary).
Treats 21 coccoid spp. in 18 gen.; hosts & distribution; natural enemies for some.

**Schneider, B., Podoler, H., & Rosen, D. 1983.** Population dynamics of the Florida wax scale, *Ceroplastes floridensis* on citrus. Phytoparasitica 11(2):117-141.
Paper presented at the 1st Conference on Agricultural Entomology (Bet Dagan, Israel, 1983).

**Schneider, R.**, *see* Gerson, U., & Schneider, R.

**Schuder, D. L. 1979.** Scale insects on shade trees and shrubs. Purdue Univ. Coop. Ext. Serv. Publ. E. 4 pp.
Damage, biological notes & control for 25 coccoid spp.

**Schultz, P. B. & Parnell, L. A. 1980.** Effect of the afternoon sea breeze on hatching of the wax scale, *Ceroplastes ceriferus* (Fabr.). Proc. Southern Nurserymen's Assoc. Res. Conf. 25th Annu. Rep. publ. by South. Nurserymen's Assoc. Nashville, Tenn. 280 pp. (this article p. 95-96).
Host; biology; control; authors credited delayed hatching to the marine sea breezes.

**Schuster, M. F.**, *see* Dean, H. A., & Schuster, M. F.; Williams, R. N., & Schuster, M. F.

**Schuster, M. F. & Dean, H. A. 1973.** Rhodesgrass scale resistance studies in rhodesgrass. J. Econ. Entomol. 66:467-469.
Tolerance is a resistance factor in rhodesgrass to *Antonina graminis*; surviving plants were selected from pastures of Southern Texas & inheritance was studied by using progeny of open pollinated maternal lines; parasite.

**Schuster, R. O.**, *see* Miller, D. R., Miller, J. F., Schuster, R. O., & Stover, C.

**Schvester, D. 1974.** Bio-écologie des *Matsucoccus* (Coccidae Margarodidae) en particulier de *Matsucoccus feytaudi* Duc. *In* "Écologie Forestière," 382 pp. edited by Pesson, P. Gauthier-Villars, Paris, Bruxelles, Montréal. p. 241-256.
Biological cycle; population dynamics; climatic factors; natural enemies.

**1982.** Incidence de *Matsucoccus feytaudi* Duc. sur *Pinus maritimus* de diverses provenances (*Pinus pinaster* Ait.) en Region Méditerranéenne. Compt. Rend. Seances Acad. Agric. France 68(17):1324-1333. (English summary).
Tested host reaction to infestation by *M. feytaudi*; discusses role of climatic factors & bark structures; identifies resistant varieties.

**1985.** Les insectes et la fôret Française. Rev. Forestière Française 37(special issue):45-64.
*Cryptococcus fagisuga* & *Matsucoccus feytaudi*; damage; natural enemy.

*See* Bonneau, M., Timbal, J., & Schvester, D.; Carle, P., & Schvester, D.

**Schvester, D. & Demolin, G. 1984.** Problems raised by insect pests of Mediterranean forests. Compt. Rend. Séances Acad. Agric. France 70(7):845-855. (In French, English summary). (Not seen).
*Matsucoccus feytaudi*; pest resistance; distribution; biological control.

**Schwartz, M.**, *see* Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Foster, H. S., Plimmer, J. R., & Devilbiss, E. D.; Bierl-Leonhardt, B. A., Moreno, D. S., Schwartz, M., Fargerlund, J., & Plimmer, J. R.

**Schwartz, P. H. & Klassen, W. 1981.** Estimate of losses caused by insects and mites to agricultural crops. *In* "Handbook of Pest Management in Agriculture," edited by Pimentel, D. CRC Press Inc., Boca Raton, Florida 1:597 pp. (coccoids on p. 15-77).
List 16 coccoid spp. by common name; hosts.

**Scott, J. K.**, *see* Collins, L., & Scott, J. K.; Dolva, J. M., & Scott, J. K.

**Scudder, G. G. E. 1978.** 35. Hemiptera. *In* "Canada and its Insect Fauna," edited by Danks, H. V. Mem. Entomol. Soc. Canada No. 108:329-348.
Estimates 66 coccoid spp. in 8 fam. known from Canada.

**Scudder, S. H. 1890.** The Tertiary insects of North America. U.S. Geol. Survey of the Territories 13: (Coccoidea on p. 241-242). (Not seen).
Record on coccoid fossil.

**Seghatoleslami, H. 1977.** List of scale insects (fam. Diaspididae) of Iran. J. Entomol. Soc. Iran 4(1/2):5-19.
Lists 93 spp. in 53 gen.; hosts & distribution.

**1980.** Some complementary studies on San Jose scale in Bandar Anzali (Guilan Province). Entomol. Phytopathol. Appl. 48(2):149-154. (In Persian, English summary).
*Aspidiotus perniciosus*; biology; population density; hosts.

**Seki, H.**, *see* Ogiwara, T., Nozawa, T., Hirata, K., Amakawa, E., Oishi, M., & Seki, H.

**Seki, M. & Tsuru, H. 1970.** Studies on the forecasting of the arrow-head scale. 7. Relationship between period and quantity of larval appearance. Proc. Kyushu. Assoc. Plant Prot. 16:70-71. (In Japanese).
*Unaspis yanonensis*.

**Seryi, N. I. 1971.** The insect fauna of the grape vine in Moldavia. *In* "Injurious Insects of Moldavia," edited by Yaroshenko, M. F. 128 pp. Akad. Nauk. Moldavian SSR. p. 87-107. (In Russian).
*Parthenolecanium corni* & *Pulvinaria betulae* both first recorded.

**Seshagiri, R. G.**, *see* Raju, K., & Seshagiri, R. G.

**Seugé, J. 1970.** Influence des conditions d'élevage sur la détermination du sexe de *Pseudaulacaspis pentagona* (Targ.) (Coccidés, Diaspines). Compt. Rend. Acad. Sci. Paris Ser. D. 270:1258-1260.
Result summarized in a table.

**1971.** Influence sur la détermination du sexe de *Pseudaulacaspis pentagona* (Cochenille diaspine) de substances organiques ajoutées au milieu de culture artificielle des germes de pomme de terre. Compt. Rend. Acad. Sci. Paris Ser. D. 273(23):2264-2266.
Nutrition influenced sex determination.

**1972.** Déterminisme du sexe de *Pseudaulacaspis pentagona* (Coccidae, Diaspine) élevée tubercules de pommes de terre et sur leurs germes cultivés artificiellement: influence de l'état physiologique du matériel végétal. Compt. Rend. Séances Soc. Biol. 166(4/5):530-534.

**Seugé, J. & Vuillaume, M. 1970.** Détermination du sexe chez *Pseudaulacaspis pentagona* (Homoptères, Coccidées, Diaspines): isolement et étude du pigment orangé caractéristique du mâle adulte. Compt. Rend. Séances Soc. Biol. 164(3):525-527.

**Sevumian, A. A.**, *see* Sarkisov, R. N., Sarkisian, S. M., & Sevumian, A. A.; Sarkisov, R. N., Sevumian, A. A., & Mkrtchian, L. P.; Sarkisov, R. N., Sevumian, A. A., Sarkisian, S. M., & Mkrtchian, L. P.

**Sevumian, A. A., Sarkisian, S. M., Sarkisov, R. N., & Galstian, R. A. 1974.** Comparative evaluation of food plants of the Ararat cochineal scale (*Porphyrophora hamelii*). Biol. Zhur. Armenii 27(11):96-98. (In Russian).
Primary & secondary plants; degree of infestation under natural conditions; compared weight, length, width & fecundity of females on food plants.

**Sevumian, A. A. & Sarkisov, R. N. 1976.** Larval growth characteristics of the Ararat cochineal in relation to zone attachment to food plants. Biol. Zhur. Armenii 29(12):93-95. (In Russian, Armenian summary).
*Porphyrophora hamelii*; life history; host & distribution; biomass.

**1981.** Effect of soil moisture content on Ararat cochineal distribution. Biol. Zhur. Armenii 34(7):756-758. (In Russian, Armenian summary).
*Porphyrophora hamelii*; field investigation on 3 different sites; authors state the drier the soil the more Ararat cochineals there are.

**1983a.** Influence of the chemical nature of soil on the production of biomass by the Ararat cochineal. Biol. Zhur. Armenii 36(6):529-530. (In Russian).
*Porphyrophora hamelii*.

**1983b.** Biomass of the Ararat cochineal inhabiting weeds of various ecotypes. Biol. Zhur. Armenii 36(9):795-796. (In Russian).
*Porphyrophora hamelii*.

**1983c.** The influence of some ecological factors on the output of the biomass of *Porphyrophora hamelii* Brandt (Homoptera, Coccoidea, Margarodidae). Acad. Sci. Armenian SSR, Inst. Zool., Zool. Papers 19:234-251. (In Russian, English summary).
Studied influence of biotic and abiotic factors.

**1984.** Effect of weeding and loosening of the soil on the Ararat cochineal biomass yield. Biol. Zhur. Armenii 37(7):578-581. (In Russian, Armenian & English summaries).
*Porphyrophora hamelii*; ground weeding & soil loosening increase the biomass yield of the Ararat cochineal 2-2.5 times due to rise of food plant quantity, weight, linear size & degree of shrub cover.

**Sevumian, A. A., Sarkisov, R. N., & Gandilian, P. A. 1977.** Population of the Ararat cochineal on varieties of *Aelurops* Trin. Biol. Zhur. Armenii 30(6):90-93. (In Russian, Armenian summary).
*Porphyrophora hamelii.*

**Shafee, S. A.**, *see* Avasthi, R. K., & Shafee, S. A.

**Shaheen, A. A.**, *see* Swailem, S. M., Awadallah, K. T., & Shaheen, A. A.

**Shanouni, Y.**, *see* Gerson, U., Halperin, J., Shanouni, Y., & Eyal, O.

**Sharma, V. C.**, *see* Ayanru, D. K. G., & Sharma, V. C.

**Shaukunthala, V. A. & Sathiyanandam, V. K. 1983.** Occurrence of a new scale-insect on sugarcane in Cauvery Delta in Tamil Nadu. Madras Agric. J. 70(8):545-547.
*Marsipococcus* sp. new record; also *Melanaspis glomerata.*

**Shaw, J. G.**, *see* Moreno, D. S., Carman, G. E., Fargerlund, J., & Shaw, J. G.; Moreno, D. S., Carman, G. E., Rice, R. E., Shaw, J. G., & Bain, N. S.; Moreno, D. S., Fargerlund, J., & Shaw, J. G.

**Sheldeshova, G. G.**, *see* Saakyan-Baranova, A. A., Sugonyaev, E. S., & Sheldeshova, G. G.

**Shenoi, M. M.**, *see* Anjaneyulu, S., Singh, S. K., Shukla, V. D., & Shenoi, M. M.

**Shiao, S. N. 1979.** Morphology, life history and bionomics of the palm scale *Hemiberlesia cyanophylli* (Homoptera, Diaspididae) in northern parts of Taiwan. Bul. Plant Prot. 21(3):267-276. (In Chinese).
Host; damage.

**Shinano, K., Terada, T., & Imanishi, M. 1976.** The frequency of generations of *Pseudaulacaspis pentagona* on tea plants. Nara Agric. Expt. Sta. Bul. No. 7:47-52. (In Japanese, English summary).
Two generations at Nara at average temperature 12.7°C & 3 generations at Norinsho at average temperature 14.6°C.

**Shioyama, K. 1977.** Shellac. Natural resin produced by *Laccifer lacca.* Kagaku To Kogyo 51(9):356-361. (In Japanese).
Chemical components.

**Shiyomi, M.**, *see* Korenaga, R., Hirosaki, S., & Shiyomi, M.; Korenaga, R., Shiyomi, M., Hirosaki, S., Nakamura, K., Ito, S., Kimura, Y., & Uemura, M.; Uemura, M., & Shiyomi, M.

**Shiyomi, M. & Hirosaki, S. 1984.** Pest density prediction using a multiple regression model under a 2-stage sampling schedule. Japanese J. Appl. Entomol. Zool. 28(4):237-243. (In Japanese, English summary).
Used *Unaspis yanonensis.*

**Shmelev, G. P. 1971.** A new Coccidae species *Rhizopulvinaria saxosa* Shmelev sp. n. (Homoptera, Coccoidea, Coccidae) from western Pamir. Dokl. Akad. Nauk Tadzh. SSR 14(11):61-63. (Tadzhik summary).
Host *Dianthus* sp.

*See* Bazarov, B. B., & Shmelev, G. P.

**Shorey, H. H.**, *see* Rotundo, G., Gaston, L. K., & Shorey, H. H.

**Short, D. E. & Mullins, D. E. 1975.** Ground pearl research. Proc. South. Nurserymen's Assoc. Res. Conf. Annu. Rep. 20:81.
*Eumargarodes laingi*; hosts; damage.

**Shortle, W. C.**, *see* Ostrofsky, W. D., Shortle, W. C., & Blanchard, R. O.

**Shtundyuk, A. V.**, *see* Danzig, E. M., & Shtundyuk, A. V.

**Shukla, G. S.**, *see* Tripathi, N., & Shukla, G. S.

**Shukla, G. S. & Tripathi, N. 1979.** Studies on the preference of crawlers of sugarcane scale insect, *Melanaspis glomerata* (Green) (Hemiptera: Coccidae) in relation to the age of the internodes of sugarcane. Indian Sugar 29(8):535-536.
*M. glomerata* prefers to settle on internodes with soft rind & partially open leaf sheets; distribution; mention 6 other coccoid spp.

**1981.** Studies on the survival of sugarcane scale insect *Melanaspis glomerata* (Green) crawlers after emergence. Indian Sugar 31(2):101-102.
Settling on host; longevity.

**1983.** Life-history and seasonal history of sugarcane scale-insect, *Melanaspis glomerata* (Green) (Homoptera: Coccidae), in Eastern Uttar Pradesh. Indian J. Agric. Sci. 53(3):160-162.
Influence of temperature & humidity; duration of generations.

**Shukla, V. D.**, *see* Anjaneyulu, A., Singh, S. K., Shukla, V. D., & Shenoi, M. M.

**Shutova, N. N. 1970.** *Pseudococcus comstocki* Kuw. *In* "Handbook of Quarantine and Other Dangerous Pests, Diseases and Weedy Plants," edited by Shutova, N. N. Publ. "Kolos," Moscow. p. 81-84. (In Russian).
Description; biology; hosts & distribution; natural enemies.

**Siddaramegowda, T. K.**, *see* Rajagopal, D., Siddaramegowda, T. K., & Rajagopal, B. K.

**Siewniak, M. 1969.** Über eine Schildlaus der Gattung *Matsucoccus* als neuer, weitverbreiteter Schadfaktor der sog. "Kiefernsterbens." Arch. f. Forstwesen 18(9/10):1043-1047.
*Matsucoccus pini*.

**1970a.** *Matsucoccus pini* (Margarodidae, Coccoidea) als neuer weitverbreiteter Schädling von *Pinus silvestris*. Morphologie und Bionomie des Schädlings; Art und Umfang der Schädigung. Thesis, Tharandt/ German Dem. Rep. (Not seen).

**1970b.** *Matsucoccus mugo* n. sp. (Homoptera, Coccoidea: Margarodidae). Entomol. Berichten 14(11):168-172. (English summary).
Description; comparison & key to other spp. from western Palearctic.

**1971.** Damage done to the Scots pine (*Pinus silvestris*) by *Matsucoccus pini* Green 1925 (Margarodidae, Coccoidea). Sylwan 115(12):35-41. (In Polish, English summary).
Distribution.

**1972a.** Distribution of *Matsucoccus pini* Green 1925 (Margarodidae, Coccoidea) in Poland. Przeg. Zool. 16(2):205-207. (In Polish, English summary).
Distribution; population dynamics shows that *M. pini* is a seriously detrimental, monophagous & stenotopic sp.

**1972b.** On the need for taking into consideration the phenomenon of feed-back in entomological studies on the parasite-host system. Wiad. Ekol. 18(1):29-37. (In Polish, English summary).
*Matsucoccus pini*.

**1976.** Zur Morphologie und Bionomie der Kiefernborkenschildlaus *Matsucoccus pini* (Green) (Hom., Coccoidea: Margarodidae). Ztschrt. f. Angew. Entomol. 81(4):337-362. (English summary).
Describes all stages of male; distribution; biology; natural enemies; taxonomic notes.

**1983a.** Untersuchungen über Abundanz, Wirt-Parasitbeziehungen sowie Populationsdynamik der Kiefernborkenschildlaus *Matsucoccus pini* (Homoptera, Coccoidea: Margarodidae). Folia Forestalia Polonica Ser. A. 25:49-77. (Polish & Russian summaries).
Detailed study; author states that *M. pini* is a link in the so-called disease succession of pine.

**1983b.** Die Schadwirkung der Kiefernborkenschildlaus (*Matsucoccus pini*, Homoptera, Coccoidea: Margarodidae) auf *Pinus silvestris*. Folia Forestalia Polonica Ser. A. 25:79-93. (Polish & Russian summaries).
Detailed study; presents table showing which part of the host is damaged by different *Matsucoccus* spp.

**Sigwalt, B. 1971.** Demographic studies of Diaspine scales. Applications to three species noxious for orange trees in Tunisia. Particular case of a species with overlapping generations *Parlatoria ziziphi* Lucas. Ann. Zool. Ecol. Animale 3(1):5-15.
*Chrysomphalus dictyospermi* & *Lepidosaphes beckii*; biology.

**Silva, A. B., Magalhaes, B. P., & Costa, M. S. 1981.** Insects and mites injurious to cassava in Amazonia. Bol. Pesquisa No. 31:35 pp. (In Portuguese, English summary).
Brief information on external morphology & biology; damage & control of 6 coccoid spp.

**Silva, C. G. & Parra, J. R. P. 1982.** Biology and damage by *Coccus viridis* (Green, 1889) (Homoptera, Coccidae) on coffee plants (*Coffea* spp.). Anais Soc. Entomol. Brasil 11(2):181-195. (In Portuguese, English summary).
Laboratory study to determine the number of instars, pre-oviposition, oviposition & post-oviposition period, mean longevity of adults & the ability for oviposition.

**Silva, T. L. de**, *see* Corseuil, E., & Silva, T. L. de.

**Simbwa-Bunnya, M. N.**, *see* Rogers, P. F., Simbwa-Bunnya, M. N., & Early, M. P.

**Simmonds, F. J.**, *see* Herting, B., & Simmonds, F. J.

**Simpson, B. J.**, *see* Crocker, R. L., Simpson, B. J., & Hamon, A. B.

**Sinacori, A.**, *see* Mineo, G., & Sinacori, A.

**Singh, A. N., Mhaskar, V. V., & Dev, S. 1978.** Chemistry of lac resin. Part VIII. Synthesis of jalaric ester-1 possible key compound in the elaboration of lac resin by *Laccifer lacca* Kerr. Tetrahedron 34(5):595-598.
Detailed study.

**Singh, S. 1971.** Morphology of the head of Homoptera (Hem.). Res. Bul. Punjab. Univ. 22(3/4):261-316.
Studied *Perissopneumon tectonae* along with other spp.

**Singh, S. K.**, *see* Anjaneyulu, S., Singh, S. K., Shukla, V. D., & Shenoi, M. M.

**Singh-Chandra, J. P. 1969.** Pests of citrus and their control. Labdev J. Sci. Tech. 7-B(1):8-20.
*Aonidiella aurantii*, *Nipaecoccus vastator* & *Pseudococcus filamentosus*; short description; damage; life history; control; natural enemies.

**Sinha, P. K.**, *see* Srivastava, U. S., & Sinha, P. K.

**Slowiak, D.**, *see* Robertson, G., & Slowiak, D.

**Smetnik, A. I.**, *see* Bichina, T. I., Kovalev, B. G., Smetnik, A. I., & Vaganova, L. D.

**Smithers, C.**, *see* Healy, A., & Smithers, C.

**Smolanoff, J.**, *see* Meinwald, J., Smolanoff, J., Chibnall, A. C., & Eisner, T.

**Snowball, G. J. 1971.** Scale insects. Austral. Nat. Hist. 17(3):93-96.
Biology of coccoids; illustrated *Aonidiella aurantii* & *Gascardia destructor*.

**Soleimani, P.**, *see* Adeli, E., & Soleimani, P.

**Soliman, A. A.**, *see* Sayed, M. T., Soliman, A. A., & Salama, H. S.

**Solomon, J. D., McCracken, F. I., Anderson, R. I., Lewis, R., Jr., Oliveria, F. L., Filer, T. H., & Barry, P. J. 1980.** Oak pests: a guide to major insects, diseases, air pollution and chemical injury. U.S. Dept. Agric. Forest Serv. State & Private Forestry Southeastern Area, Southern Forest Expt. Sta. General Report SA-GR11:69 pp.
*Lecanium* spp., *Asterolecanium* spp., *Kermes* spp. & *Melanaspis obscura*.

**Sonnet, P. E.**, *see* Heath, R. R., Doolittle, R. E., Sonnet, P. E., & Tumlinson, J. H.

**Southwood, R.**, *see* Strong, D. R., Lawton, J. H., & Southwood, R.

**Speight, M. & Nicol, M. 1984.** Horse chestnut scale - a new urban menace? New Scientists 101(1404):40-42.
*Pulvinaria regalis*; life-cycle; economic importance; host & distribution; natural enemies.

**Sprackling, M. T. & Twigg, J. 1980.** Dislocations in microtubular bundles within spermatozoa of the coccid insect *Neosteingelia texana*. J. Theoretical Biol. 85(3):561-567.
A quantitative discussion of a biological material.

**Squire, F. A. 1972.** Entomological problems in Bolivia. PANS 18(3):249-268.
Lists 15 coccoid spp.; hosts, distribution, natural enemies, damage, control if any.

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Mentions *Coccus axin*.

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Illustration of 2 types of antennae: margarodes & coccoid type (p. 186); leg of *Pseudococcus* (p. 188); tarsal end of *Chaetococcus* (p. 189); abdominal end of *Antonina*-type Homoptera (p. 190).

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Description; hosts; damage; control.

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*Dysmicoccus brevipes* & *cryptus*.

**Stover, C.**, *see* Miller, D. R., Miller, J. F., Schuster, R. O., & Stover, C.

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*See* Beardsley, J. W., Jr., Su, T. H., McEwen, F. L., & Gerling, D.

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Detailed study; authors concluded that resin acids & abietic-type acid contents were positively related to severity of attack by *M. matsumurae*.

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**Sugonyaev, E. S.**, *see* Danzig, E. M., & Sugonyaev, E. S.; Saakyan-Baranova, A. A., Sugonyaev, E. S., & Sheldeshova, G. G.

**Summy, K. R.**, *see* Meyerdirk, D. E., Chandler, L. D., Summy, K. R., & Hart, W. G.

**Sun, G. X.**, *see* Hu, Y. Y., Sun, G. X., Zhang, J. G., & Sun, H. J.

**Sun, H. J.**, *see* Hu, Y. Y., Sun, G. X., Zhang, J. G., & Sun, H. J.

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*L. tapley* is an important pest in Egypt; description of adult & immature stages; life history; damage; hosts.

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Biology; population density; natural enemies.

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*See* Abul-Nasr, S., Swailem, S., & Dawood, M. Z.

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Detailed study.

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Life cycle of sp. was similar on the 3 varieties studied; parasite.

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First record from Japan.

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**Takagi, K.**, *see* Kawai, S., & Takagi, K.

**Takagi, S. 1970.** Diaspididae of Taiwan based on material collected in connection with the Japan-U.S. Cooperative Science Programme, 1965 (Homoptera: Coccoidea). Pt. II. Insecta Matsumurana 33:146 pp.
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Generic characters; key to spp.; *H. uniolae* n. sp.; 1 n. comb.; taxonomic notes; hosts.

**1974.** An approach to the *Hemiberlesia* problem (Homoptera: Coccoidea). Insecta Matsumurana (n.s.) 3:1-33.
The Japanese spp. of *Diaspidiotus* & *Quadraspidiotus* revised and 3 species groups formed; *Clavaspidiotus apicalis* & *Diaspidiotus hydrangeae* n. spp.; *Clavaspidiotus* & *Comstockaspis* revised.

**1975a.** Coccoidea collected by the Hokkaido University expedition to Nepal Himalaya, 1968 (Homoptera). Insecta Matsumurana (n.s.) 6:1-33.
Data on 22 spp. in 14 gen.; 5 n. spp.; first records; *Coccus formicarii* redescribed; description of second instar male of *Pseudaulacaspis takahashii*; taxonomic notes on 5 spp.; faunistic remarks.

**1975b.** The Horii-group of *Fiorinia* associated with rhododendrons in East Asia (Homoptera: Coccoidea: Diaspididae). Insecta Matsumurana (n.s.) 6:35-61.
*F. hymenanthis*, *odaiensis* & *sikokiana* n. spp.; description of the 5 Japanese spp.; second instar males described for 2 spp.; taxonomic characters; relationships.

**1977.** Five species of Diaspididae associated with Pinaceae in Central Nepal (Homoptera: Coccoidea). Insecta Matsumurana (n.s.) 11:1-30.
*Aleucaspis* n. gen.; *A. salla*, *Parlatoria abieticola* & *tsugicola* & *Lepidosaphes tsugaedumosae* n. spp.; second instar males of 3 spp. described.

**1979.** A further study on the Horii-group of *Fiorinia* (Homoptera: Coccoidea: Diaspididae). Insecta Matsumurana (n.s.) 16:32 pp.
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**1980a.** An interpretation of second instar male characters in the systematics of the Diaspididae. Israel J. Entomol. 14:99-104.
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**1980b.** Role of morphoclinal analysis in systematics as a branch of natural science. 16th Int. Congr. Entomol. (Kyoto, Japan 1980) (Insect Integrated Taxonomy). p. 20.
Detailed discussion.

**1981.** The genus *Megacanthaspis*, a possible relic of an earlier stock of the Diaspididae (Homoptera: Coccoidea). Insecta Matsumurana (n.s.) 25:1-43.
Position & significance of the genus; *M. leucaspis* & *langtangana* n. spp.; n. comb.; key to & relationship among spp.; tables for morphological characters of spp.

**1983a.** The scale insect genus *Smilacicola*, with particular reference to atavistic polymorphism in the second instar (Homoptera: Coccoidea: Diaspididae). Insecta Matsumurana (n.s.) 27:1-36.
Taxonomic position of the genus; relationship among spp. of *Smilacicola*; *S. crenatus* n. sp.; n. comb.; discusses also other diaspidids.

**1983b.** Addendum and corrigenda to "The scale insect genus *Megacanthaspis*, a possible relic of an earlier stock of the Diaspididae (Homoptera: Coccoidea)," Insecta Matsumurana (n.s.) 25, 1981. Insecta Matsumurana (n.s.) 27:107.
New distribution record for *M. leucaspis*; correction of citation for *M. phoebia*.

**1984.** Some aspidiotine scale insects with enlarged setae on the pygidial lobes (Homoptera: Coccoidea: Diaspididae). Insecta Matsumurana (n.s.) 28:69 pp.
*Metaspidiotus* synonymized with *Octaspidiotus*; *O. tripurensis* n. sp.; notes on 8 other *Octaspidiotus* spp.; key; n. combs.; n. syns.; *Oceanaspidiotus* n. gen.

**1985.** The scale insect genus *Chionaspis*: a revised concept (Homoptera: Coccoidea: Diaspididae). Insecta Matsumurana (n.s.) 33:77 pp.
Detailed study; *Narayanaspis* n. gen.; 9 n. spp; n. name; list of *Chionaspis* spp.

*See* Ben-Dov, Y., & Takagi, S.; Howell, J. O., & Takagi, S.; Nakao, S., Takagi, S., Tachikawa, T., & Wongsiri, T.

**Takagi, S. & Howell, J. O. 1977.** The genus *Quernaspis*, a possible Asio-American element in scale insect biogeography (Homoptera: Coccoidea). Insecta Matsumurana (n.s.) 11:31-59.
Discuss 3 North American & 3 East Asian spp., including 3 n. spp.; key to adult males & second instar males; relationship among spp.; taxonomic notes.

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*Rhizoecus advenoides* & *sasae* n. spp.; group placement; systematic notes; tabulation of characters for type sp. of 5 gen.

**1973.** Discovery of *Protancepaspis* in Japan, with a review of the genus (Homoptera: Coccoidea). Kontyu 41:44-52.
*P. torreyae* n. sp.; taxonomic relation between *Protancepaspis* & *Ancepaspis* is discussed; boundary between Diaspididae & Phoenicococcidae is also discussed; definition of the genus *Protancepaspis*; host & distribution; *P. torreyae* & *bidentata* compared.

**Takagi, S. & Tang, F. T. 1982.** A new scale insect of the *Quernaspis* group (Homoptera, Coccoidea, Diaspididae) from China. Kontyu 50(1):100-103.
*Sinoquernaspis* n. gen.; *S. gracilis* n. sp.

**Takagi, S. & Tippins, H. H. 1972.** Two new species of the Diaspididae occurring on Spanish moss in North America (Homoptera: Coccoidea). Kontyu 40:180-186.
*Epidiaspis tillandsiae* & *Quadraspidiotus tillandsiae* n. spp.; hosts & distribution; discuss the scale formation & body shape in the female Diaspididae.

**Takagi, S. & Yamamoto, M. 1974.** Two new banana-infesting scale insects of *Hemiberlesia* or *Abgrallaspis* from Equador (Homoptera: Coccoidea). Insecta Matsumurana (n.s.) 3:35-42.
*Hemiberlesia musae* & *ocellata* n. spp.; description; illustration; distribution.

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Major constituents are wax esters; free fatty acids & hydrocarbon components were also identified.

**Takemoto, T.**, *see* Miyamoto, F., Naoki, H., Takemoto, T., & Naya, Y.; Naya, Y., Miyamoto, F., & Takemoto, T.

**Taketani, A. 1972.** Studies on a margarodid scale, *Matsucoccus matsumurae* (Kuwana) (Hemiptera, Coccoidea) I. Bionomics. Bul. Gov. Expt. Sta. (Tokyo) 246:1-9. (In Japanese, English summary).
*M. matsumurae* attacks 4 spp. of pine in Western Japan where the insect is bisexual & bivoltine; larval & adult feeding habits & reproductive capacity described; distribution; life cycle.

**Talbot, P. H. B.**, *see* Coles, R. B., & Talbot, P. H. B.

**Talerico, R. L., McComb, C. W., & Garrett, W. T. 1967.** *Fiorinia externa* Ferris, a scale insect of hemlock. U.S. Dept. Agric. Forest Pest Leaf. 107:4 pp.
Short description; life history; damage; natural enemies; hosts & distribution.

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Description, biology, control & natural enemies for 15 coccoid spp.

**1975a.** Contributions to the knowledge of almond pests in East Mediterranean countries. II. *Didesmococcus unifasciatus* (Arch.). Ztschrt. f. Angew. Entomol. 78(4):409-414.
Biology; natural enemies.

**1975b.** Citrus pests throughout the world. Technical Monograph, Ciba-Geigy Ltd. Basle, Switzerland No. 4:21-23.
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*Didesmococcus unifasciatus.*

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*See* Negishi, T., Uchida, M., Tamaki, Y., Mori, K., Ishiwatari, T., Asano, S., & Nakagawa, K.

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*Porphyrophora hamelii*; presents data on rare & disappearing insect spp.

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Description of 112 coccoid spp. in 7 fam. & 63 gen.; 4 n. gen.; 13 n. spp.; keys to fam., subfam., tribes & gen.

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*M. liaoningensis.*

**1980.** Three new species of Diaspididae (Coccoidea, Homoptera) from China. Acta Entomol. Sinica 23(2):202-206. (In Chinese & English).
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**1984b.** Discovery of a new species of *Idiococcus* and discussion on the systematic status of this genus. *In* "The scale insects of horticulture and forest of China," by Tang, F. T. Shanxi Agric. Univ. Press Taigu, Shanxi, China Res. Publ. 2(2):116-121. (In Chinese & English). Also published in the Proc. 10th Int. Symp. Central European Entomofaunistics (Budapest, Hungary, Aug. 1983). p. 393-399.
*I. maanshanensis*; comparison of characters of 4 spp.

**1984c.** Observation on the scale insects injurious to forestry of North China I. Shanxi Agric. Univ. Press Taigu, Shanxi, China Res. Publ. 2(2):122-133.
A list of 183 coccid spp. in 79 gen.; host & distribution; n. records.

*See* Takagi, S., & Tang, F. T.

**Tao, C. C. C. (Tao, C. C.) 1978.** Check list and host plant index to scale insects of Taiwan, Republic of China. J. Agric. Res. China 27(2):77-141.
Records 314 coccoid spp. in 101 gen. & 12 fam.; syns.; hosts & distribution.

*See* Chang, Y. C., Tao, C. C. C., & Wong, C. Y.

**Tao, C. C. C. & Wong, C. Y. 1982.** Description of a new genus and species of bamboo scale *Chuaspis shuichuensis* (Homoptera: Coccoidea: Diaspididae) from Taiwan, China. Quart. J. Taiwan Mus. 35(1/2):123-125.
*Chuaspis* n. gen.; taxonomic note; host & distribution.

**Tao, C. C. C., Wong, C. Y., & Chang, Y. C. 1983.** Monograph of Coccidae of Taiwan, Republic of China (Homoptera: Coccoidea). J. Taiwan Mus. 36(1):57-107.
Description; host & distribution of 38 coccoid spp. in 22 gen.; 5 n. gen.; 3 n. syns.; 1 n. sp.; keys; host index.

**Tashiro, H.**, *see* Gieselmann, M. J., Moreno, D. S., Fargerlund, J., Tashiro, H., & Roelofs, W. L.; Roelofs, W. L., Gieselmann, M. J., Cardé, A. M., Tashiro, H., Moreno, D. S., Henrick, C. A., & Anderson, R. J.

**Tassen, R. L.**, *see* Hagen, K. S., & Tassen, R. L.

**Tawfik, M. F. S.**, *see* Awadallah, K. T., Ammar, E. D., Tawfik, M. F. S., & Rashad, A.; Hafez, M., Tawfik, M. F. S., & Raouf, A.

**Tazoe, S.**, *see* Ohgushi, R., Nishino, T., Tazoe, S., & Gamo, Y.

**Teesdale, M. J. 1897.** The manna of the Israelites. Science-Gossip (n.s.) 3(33):229-233.
*Coccus manniparus*.

**Tempesta, M. S.**, *see* Pawlak, J. K., Tempesta, M. S., Iwashita, T., Nakanishi, K., & Naya, Y.

**Tempesta, M. S., Iwashita, T., Miyamoto, F., Yoshihara, K., & Naya, Y. 1983.** A new class of sesterterpenoids from the secretion of *Ceroplastes rubens* (Coccidae). J. Chem. Soc., Chem. Commun. No. 20:1182-1183.

Detailed study.

**Tenckhoff, V.**, *see* Köhler, G., Tenckhoff, V., & Motte, G.

**Teotia, T. P. S.**, *see* Chauhan, N. S., & Teotia, T. P. S.

**Terada, T.**, *see* Shinano, K., Terada, T., & Imanishi, M.

**Teran, A. L. 1973.** Entomofauna del Dominio Subandino. I. Las "cochinillas" (Hom., Coccoidea) de *Larrea divaricata* y *L. cuneifolia* (Zygophyllaceae). Acta Zool. Lilloana 30:189-206. (English summary).
Description, biology, hosts & distribution of 8 coccoid spp.

**Teran, A. L. & Claps, L. 1983.** Una nueva plaga de los citricos de Tucuman, Argentina: la cochinilla "serpeta fina," *Insularis gloverii* (Packard). Homoptera, Coccoidea, Diaspididae. Rev. Invest. Cirpon 1(1):33-37.
Adults of both sexes briefly described; damage.

**Teran, A. L. & Guyot, N. H. 1969.** La cochinilla del delta, *Lecanium deltae* (Lizer) (Hom., Coccoidea), en Tucuman. Acta Zool. Lilloana 24:135-149. (English summary).
Biology; damage; description of nymphal & adult stages; biotic & abiotic factors; mortality; natural enemies.

**Tereznikova, E. M. 1970.** Morphological adaptation of scale insects under habitat conditions in the USSR. Akad. Nauk Ukrainskoi SSR Inst. Zool. 120 pp. (In Russian).
Adaptation to host plants; study of 8 fam.; morpho-ecological types of coccids; descriptions.

**1975a.** Coccoids. *In* the "Fauna of Ukraine." Akad. Nauk Ukrainskoi SSR Inst. Zool. 20 (Pt. 18):295 pp. (In Ukrainian).
Includes spp. in the fam. Ortheziidae, Margarodidae & Pseudococcidae; key to fam. & spp.; description; hosts & distribution; natural enemies.

**1975b.** About the synonymy of two coccoid species. Vestnik Zool. No. 4:32. (In Russian)
*Puto pannosus* Borchs. syn. of *P. pilosellae* Sulc; *Gueriniella decorata* Borchs. syn. of *G. serratulae* Fabr.

**1977a.** Two new species of Eriococcidae from the genus of *Acanthococcus* Sign. (Homoptera, Coccoidea, Eriococcidae). Akad. Nauk Ukrainskoi RSR Dopovidi Ser. B. 6:568-571. (In Ukrainian, English summary).
*A. zernae* & *coronillae*.

**1977b.** The species *Ortheziola veydovskyi* Sulc (Homoptera: Coccoidea: Ortheziidae) new for USSR fauna. Dokl. Akad. Nauk Ukrainskoi SSR, Ser. B. 9:857-859. (In Ukrainian, English & Russian summaries).
Description of adult female & larva; distribution.

**1979.** New species in the genus *Euripersia* Borchs. (Homoptera, Coccoidea, Pseudococcidae). Akad. Nauk SSSR Trans. All-Union Entomol. Soc. 61:49-51. (In Russian).
*E. caulicola*.

**1981.** Coccoids. *In* the "Fauna of Ukraine." Akad. Nauk Ukrainskoi SSR Inst. Zool. 20 (Pt. 19):215 pp. (In Ukrainian).
Includes spp. in the fam. Eriococcidae, Kermesidae, Asterolecaniidae & Coccidae; key to fam., gen. & spp.; *Rhizopulvinaria ucrainica* n. sp.; description; hosts & distribution; natural enemies.

**1982.** Key to the coccoid pests of agricultural and forest crops in the Ukraine. Naukova Dumka, Kiev. 73 pp. (In Russian).
General morphology; key to 6 fam., 3 subfam., 36 gen. & 62 spp.

**1983.** Cactus mealybug (Homoptera Pseudococcidae) in greenhouses of Kiev. Vestnik Zool. No. 1:74-76. (In Russian).
*Pseudococcus mamillariae*; description & size of sp.; host.

*See* Konstantinova, G. M., Kozár, F., Jasnosh, V. A., Matesova, G., Tereznikova, E. M., Bazarov, B., Benke, Gy., Gummel, E., Gura, N. A., & Knyazatova, V. J.

**Ter-Grigorian, M. A. 1973.** Soft and armored scales (Coccoidea) mealybugs (Pseudococcidae). *In* "Fauna of Armenian SSR." Izv. Akad. Nauk Armianskoi SSR Erevan. 246 pp. (In Russian).
Discusses 82 spp.; keys; description; biology; hosts & distribution; list of spp. & hosts.

**1975.** Data on distribution of the Ararat scale insects. Akad. Nauk Armianskoi SSR. Biol. Zhur. Armenii 28(4):89-90. (In Armenian, Russian summary).
Degree of existence; survivability; survey conducted in 26 regions located on the left bank of the River Araks; map.

**1976a.** On the life-history of *Porphyrophora hamelii* Brandt (Homoptera, Coccoidea, Margarodidae). Entomol. Obozr. 55(2):300-307. (In Russian). Entomol. Rev. 55(2):24-29. (In English).
Detailed study; host; parasite.

**1976b.** Morphology of Mount Ararat scale insect - *Porphyrophora hamelii* Brandt (Homoptera, Coccoidea, Margarodidae). Akad. Nauk Armianskoi SSR. Biol. Zhur. Armenii 29(3):59-66. (In Russian, Armenian summary).
Describes all stages of female.

**1978.** On the representatives of the fauna of the family Margarodidae (Homoptera, Coccoidea) in Armenia. Akad. Nauk Armianskoi SSR. Biol. Zhur. Armenii. 31(9):931-939. (In Russian, Armenian & English summaries).
*Margarodes*, *Neomargarodes* & *Porphyrophora*; *Neomargarodes setosus*, *Porphyrophora hamelii*, *monticola* & *tritici*; keys; morphological description of *P. monticola* endemic to Armenia.

**1980.** Species of the genus *Rhizopulvinaria* (Homoptera, Coccoidea, Coccidae) in Armenia and Nakhichevan Autonomous Republic. Akad. Nauk Armianskoi SSR. Biol. Zhur. Armenii 33(3):265-270. (In Russian, Armenian & English summaries).
Lists 8 spp.; key; hosts & distribution; natural enemies.

**1983.** On the fauna of the felt scales (Homoptera, Coccinea, Eriococcidae) in Armenia. Akad. Nauk Armianskoi SSR. Biol. Zhur. Armenii 36(10):876-883. (In Russian, Armenian & English summaries).
Records 20 spp. of Eriococcidae, 5 spp. for the first time in Armenia.

**Teui, S. Y.**, *see* Wang, T. C., Yao, T. F., Teui, S. Y., & Liang, Z. J.

**Tewary, P.**, *see* Tripathi, S. R., & Tewary, P.

**Timbal, J.**, *see* Bonneau, M., Timbal, J., & Schvester, D.

**Timlin, J. S. 1964.** The biology, bionomics, and control of *Parlatoria pittospori* Mask. (Hemiptera, Diaspididae): a pest on apples in New Zealand. New Zeal. Agric. Res. 7(4):536-550.

**Tippins, H. H. 1970a.** A new species of *Pseudoparlatoria* (Homoptera: Diaspididae) from Georgia. Ann. Entomol. Soc. Amer. 63(3):818-819.
*P. tillandsiae*; description; host & distribution.

**1970b.** The second instar males of three species of *Fiorinia* (Homoptera: Diaspididae). J. Georgia Entomol. Soc. 5(2):94-99.
*F. externa*, *pinicola* & *theae*.

**1977.** An armored scale insect pest of ornamentals new to Georgia. J. Georgia Entomol. Soc. 12(1):84.
*Lepidosaphes yanagicola* on white basswood, *Tilia heterophylla*, in Central Georgia.

*See* Beshear, R. J., & Tippins, H. H.; Beshear, R. J., Tippins, H. H., & Howell, J. O.; Ellis, H. C., Horton, D. L., Howell, J. O., & Tippins, H. H.; Howell, J. O., & Tippins, H. H.; Oetting, R. D., Coleman, V. R., Stacey, A. L., & Tippins, H. H.; Takagi, S., & Tippins, H. H.

**Tippins, H. H. & Beshear, R. J. 1970a.** The armored scale insects (Homoptera: Diaspididae) of Cumberland Island, Georgia. J. Georgia Entomol. Soc. 5(1):7-12.
Annotated list of 41 spp.; some undescribed spp.; syns.; hosts; n. records for Georgia; apparently first North American record for *Fiorinia pinicola*.

**1970b.** A new species of *Quernaspis* (Homoptera: Diaspididae). Ann. Entomol. Soc. Amer. 63(3):808-809.
*Q. quercicola*.

**1970c.** A new species of *Chionaspis* (Homoptera: Diaspididae) from *Betula nigra*. Ann. Entomol. Soc. Amer. 63(4):1022-1023.
*Chionaspis betulae*; 2 forms described; taxonomic notes.

**1971a.** *Aspidiotus* n. sp. (Homoptera: Diaspididae) from saw grass, *Mariscus jamaicensis*. J. Georgia Entomol. Soc. 6(2):85-86.
*A. marisci*.

**1971b.** On the habitat of *Haliaspis spartinae* (Comstock) (Homoptera: Diaspididae). Entomol. News 82(6):165.
Biological note.

**1972.** Additional scale insects from grasses. J. Georgia Entomol. Soc. 7(4):286-288.
List 17 spp. of grass-infesting scale insects; the number of spp. known from grasses in Georgia increased to 33.

**1974.** A new name for a specific homonym in *Chionaspis* (Homoptera: Diaspididae). J. Georgia Entomol. Soc. 9(3):146.
*C. triformis* proposed as new name for *C. betulae*; additional collection record.

**1975.** Scale insects associated with Spanish moss. J. Georgia Entomol. Soc. 10(1):49-50.
List 8 coccoid spp.

**1978.** Some new records of scale insects from grasses in Georgia. J. Georgia Entomol. Soc. 13(1):12-14.

List 22 spp. of grass-infesting scale insects; the number of spp. known from grasses in Georgia increased to 55.

**1983.** Notes on the mealybug *Ferrisia floridana* (Ferris). J. Georgia Entomol. Soc. 18(4):452-454.
New host & distribution records; short description; discussion of measurements of sp.

**Tippins, H. H., Clay, H., & Barry, R. M. 1977.** Peony scale: a new host and biological information. J. Georgia Entomol. Soc. 12(1):68-71.
*Pseudaonidia paeoniae* on *Buxus microphylla*; data of egg-hatch & mean temperature presented in 2 tables.

**Tippins, H. H. & Dupree, M. 1970.** An unusual infestation of white peach scale in soybeans. J. Econ. Entomol. 63(4):1333-1334.
Notes on *Pseudaulacaspis pentagona* on *Glycine max* in Georgia.

**Tippins, H. H. & Howell, J. O. 1973.** A new genus and species of Diaspididae (Homoptera: Coccoidea) from Georgia. Ann. Entomol. Soc. Amer. 66(2):399-403.
*Geodiaspis* n. gen. assigned to the tribe Diaspidini, subtribe Diaspidinae; type-species *G. arundinariae* n. sp.; biology.

**1983.** Morphology and systematics of the first instars of North American *Pseudaulacaspis*. J. Georgia Entomol. Soc. 18(2):195-200.
*P. pentagona*, *cockerelli* & *major*; key to first instars; description of first stage females.

**Tippins, H. H., Howell, J. O., & Beshear, R. J. 1981.** Some immature stages of *Pseudaonidia paeoniae* (Homoptera: Coccoidea, Diaspididae) J. Georgia Entomol. Soc. 16(3):356-361.
First & second instars of both sexes described & illustrated.

**Tippins, H. H. & Martin, P. B. 1982.** Seasonal occurrence of Bermudagrass scale. J. Georgia Entomol. Soc. 17(3):319-321.
*Odonaspis ruthae*; hosts & distribution.

**Tocker, M. F.**, *see* Deitz, L. L., Hall, G., & Tocker, M. F.; Deitz, L. L., & Tocker, M. F.

**Toro, J. C.**, *see* Lozano, J. C., Toro, J. C., Castro, A., & Bellotti, A.

**Torregrossa, J. P.**, *see* Panis, A., Ferran, A., & Torregrossa, J. P.

**Tourneur, J. C. & Lecoustre, R. 1975.** Cycle de developpement et tables de vie de *Parlatoria blanchardi* Targ. (Homoptera: Diaspididae) et de son predateur exotique en Mauritanie, *Chilocorus bipustulatus* L., var. *iranensis* (Coleoptera: Coccinellidae). Fruits 30(7/8):481-497.
Detailed study; used Birch method for calculations.

**Tourneur, J. C. & Vilardebo, A. 1975.** Estimation du "degre d'infestation" du palmier-dattier par *Parlatoria blanchardi* Targ. (Hemiptera-Diaspididae). Fruits 30(10):631-640. (English, German, Russian & Spanish summaries).
A visual scoring technique is described.

**Tranfaglia, A. 1973.** Study on the Homoptera Coccoidea I. On the discovery of *Pseudococcus obscurus* Essig in Campania, first record for the Italian fauna. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 30:294-299. (In Italian, English summary).
Distinctive characters for *P. obscurus* & *maritimus*; hosts & distribution; *P. obscurus* reported for the first time in Italy.

**1974a.** Study on the Homoptera Coccoidea II. Biological note on *Asterolecanium arabidis* (Signoret) on *Hedera helix* L. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 31:54-60. (In Italian, English summary).

Description of adult female; hosts; natural enemy; distinguishing characters between *A. fimbriatum* & *thesii*.

**1974b.** Study on the Homoptera Coccoidea III. A new coccoid (*Coccus aegaeus* De Lotto) of citrus in Italy. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 31:141-144. (In Italian, English summary).

Description of male; distinguishing characters between *C. hesperidum* & *aegaeus*; biology; host & distribution; natural enemies.

**1976.** Study on the Homoptera Coccoidea IV. On some coccoid species new and little known in Italy. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 33:128-143. (In Italian, English summary).

Records 8 coccoid spp.; morphological characters of female; biological & taxonomic notes; hosts; n. syn.; n. records; *Coccus aegaeus* synonymized with *C. pseudomagnoliarum*.

**1977.** Étude des espèces de *Saissetia* dans le Bassin Méditerranéen (Homoptera, Coccoidea, Coccidae). Fruits 32(9):545-547. (English & Spanish summaries). Also in Fruits 32(3):182 (1977).

Hosts & distribution of *S. oleae*.

**1978.** Considerations on the morphological affinities between *Planococcus citri* (Risso) and *Planococcus ficus* (Signoret) (Homoptera: Coccoidea). Proc. XI Italian Natl. Congr. Entomol. (Portici-Sorrento, 1976). 470 pp. (p. 91-93). (In Italian).

Discusses microscopic morphological characters for the differentiation of the 2 spp.

**1980.** Morphological observations on the Chinese wax scale (*Ceroplastes sinensis* Del Guercio). Fruits 35(11):701-704.

Presents histograms with 50 data on stigmatic setae & table for measurements; host & distribution.

**1981.** Study on the Homoptera Coccoidea V. Morpho-systematic notes on some coccoid species with the description of three new species of Pseudococcidae. Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 38:3-28. (In Italian, English summary).

*Peliococcus vivarensis*, *Spilococcus salviae* & *Vryburgia rimariae* n. spp.; notes on 23 other spp.

**1983.** Some Pseudococcidae and Coccidae (Homoptera: Coccoidea) new for the Italian fauna. Proc. XIII Italian Natl. Congr. Entomol. (Sestriere-Torino, 1983). p. 453-458. (In Italian, English summary).

Host & distribution for 12 coccoid spp.

*See* Kozár, F., Tranfaglia, A., & Pelizzari, G.; Marotta, S., & Tranfaglia, A.; Roberti, D., & Tranfaglia, A.; Tremblay, E., Rotundo, G., & Tranfaglia, A. Tremblay, E., Tranfaglia, A., Rotundo, G., & Iaccarino, F. M.

**Tranfaglia, A. & Esposito, A. 1985.** Study on the Homoptera Coccoidea. VII. The Italian species of the genus *Eriococcus* Targioni-Tozzetti, 1869. Bol. Lab. Entomol. Agr. "Filippo Silvestri" 42:113-134. (In Italian, English summary).

Keys & descriptions for 8 spp.; *E. rosannae* n. sp.

**Tranfaglia, A. & Marotta, S. 1982.** Study on the Homoptera Coccoidea VI. Two new South-African scale insects on cultivated geranium (*Pelargonium* spp. & *Geranium* spp.). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 39:53-58. (In Italian, English summary).

*Allococcus euphorbiae* & *Inglisia lounsburyi*.

**1985.** Study on the Homoptera Coccoidea. IX. On the validity of *Asphodelococcus* Morrison, 1945, (Pseudococcidae) with description of a new species. Bol. Lab. Entomol. Agr. "Filippo Silvestri" 42:161-165. (In Italian, English summary).
Separated this genus from *Brevennia* & *Heterococcus*; *A. meoconcitae* n. sp.

**Tranfaglia, A., Pellizzari, G., & Marotta, S. 1985.** Records on Coccoidea of Italian fauna. Proc. XIV Italian Natl. Congr. Entomol. p. 119-126. (In Italian, English summary).
Systematics; host plants.

**Tranfaglia, A. & Tremblay, E. 1982.** A morphological comparison between *Planococcus citri* (Ris.), *Planococcus ficus* (Sign.) and their $F_1$ hybrids (Homoptera: Coccoidea: Pseudococcidae). Entomotaxonomia 4(1/2):1-5. (Chinese summary).
Detailed study on crosses between 2 sympatric & related spp.

**1984.** Faunistic and systematic studies on Italian scale insects. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 372-374.
New records; host & distribution; taxonomic notes on some; list 16 coccoid spp.

**Tranfaglia, A. & Viggiani, G. 1978.** Mealybugs. Recommendation for their control. L'Italia Agricola 115(11/12):113-117. (In Italian).
*Planococcus citri* is distinguished from *P. ficus*; biology & control.

**Trantescu, G. & Rogojanu. V. 1970.** Studies on *Parthenolecanium corni* Bouché in the Black Locust Forest. Rev. Padurilor 85(6):313-317. (In Romanian).
Descriptive notes; distribution; hosts; biology; ecology; parasites & predators.

**Tremblay, E. 1972.** Cariology in the systematics of scale insects. Proc. IX Italian Natl. Congr. Entomol. (Siena, 1972). p. 295-311. (In Italian, English summary).
Systematics of Coccoidea can utilize male & female morphological and chromosome systems, which may lead to a more complete view of the whole group.

**1977.** Advances in endosymbiont studies in Coccoidea. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:23-33.
Discusses endosymbiosis & systematics; histochemical details; groups lacking endosymbiosis.

**1979.** Paul Buchner (1886-1978). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 36:285-296. Also in "Centro di Studi su l'Isola d'Ischia" 1980, "Ricerche Contributi & Memorie" 2:183-193. (In Italian).
Obituary; list of publications.

*See* Iaccarino, F. M., & Tremblay, E.; Rotundo, G., & Tremblay, E.; Rotundo, G., Tremblay, E., & Giacometti, R.; Rotundo, G., Tremblay, E., & Papa, P.; Tranfaglia, A., & Tremblay, E.

**Tremblay, E. & Caltagirone, L. E. 1972.** Fate of polar bodies in insects. Annu. Rev. Entomol. 18:421-444.
Discuss the role of polar bodies in parthenogenesis & gynandromorphism, in endosymbiosis & in endoparasitism; mention 17 coccoid spp.

**Tremblay, E. & Rotundo, G. 1975.** The pheromones of the Coccoidea and their possible use in integrated control. VIII Int. Plant Prot. Congr. (Moscow). Reports & Information Section V - Biological & Genetic Control. p. 195-200.

Studied 4 spp.; used 2 methods for extraction.

**1978.** Specificity of pheromone mechanism as reproductive isolation in some scale insects. Proc. XI Italian Natl. Congr. Entomol. (Portici-Sorrento, 1976). p. 135-138. (In Italian, English summary).
*Aonidiella aurantii* & *citrina*, *Planococcus citri* & *ficus*; female sex attractants show species specificity; discuss morphological similarity among spp.

**Tremblay, E., Rotundo, G., & Tranfaglia, A. 1980.** A case of speciation in *Planococcus citri* (Ris.) and *Planococcus ficus* (Sign.). Proc. XII Italian Natl. Congr. Entomol. (Rome, 1980). 2:435-438. (In Italian, English summary).
Observed sympatric speciation; sexual isolation was broken with sex pheromone extracts.

**Tremblay, E., Tranfaglia, A., Rotundo, G., & Iaccarino, F. M. 1977.** Comparative observations on some pseudococcid spp. (Homoptera Coccoidea). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 34:113-135. (In Italian, English summary).
*Planococcus citri*, *Pseudococcus calceolariae*, *obscurus* & *longispinus*; evaluated degree of affinity through morphological & serological comparisons; similarity index.

**Tremblay, E. & Tripodi, G. 1980.** Ultrastructural data on pseudococcid endosymbiots (Homoptera, Coccoidea). *In* "Endocytobiology, Endosymbiosis and Cell Biology," edited by Schwemmler, W. & Schenk, H. E. A. vol. 1. Publ. Walter de Gruyter & Co., Berlin - New York. p. 419-423.
Compared the optical shape of normal symbionts of 4 mealybugs & examined the ultrastructure of the so-called "hunger or starvation form" of 2 spp.

**Tripathi, N.**, *see* Shukla, G. S., & Tripathi, N.

**Tripathi, N. & Shukla, G. S. 1982.** Effect of temperature on the establishment and development of crawlers of sugarcane scale insect, *Melanaspis glomerata* (Green) (Hemiptera: Coccidae). Comp. Physiology & Ecol. 7(2):83-84.
Effect of temperature shown in a table, maximum establishment at 26°C, minimum at 15°C.

**Tripathi, S. R. & Tewary, P. 1984.** Biology of the sugarcane scale insect, *Melanaspis glomerata* (Diaspididae: Coccoidea). J. Adv. Zool. 5(2):68-78.
Laboratory study in 1980-1981.

**Tripodi, G.**, *see* Tremblay, E., & Tripodi, G.

**Tsai, H. L.**, *see* Huang, P. K., Tsai, H. L., Lin, L. F., & Kuo, W. I.

**Tsuru, H.**, *see* Seki, M., & Tsuru, H.

**Tubbert, M. A. & Berlowitz, L. 1974.** Chromatin and histones in mealybug spermatogonia. Expt. Cell Res. 85:205-211.
Used *Planococcus citri*.

**Tumlinson, J. H.**, *see* Heath, R. R., Doolittle, R. E., Sonnet, P. E., & Tumlinson, J. H.; Heath, R. R., McLaughlin, J. R., Tumlinson, J. H., Ashley, T. R., & Doolittle, R. E.

**Tuncyürek, M. 1975.** Observations sur la bioecologie de *Saissetia oleae* Bern. dans les vergers de la Région Egeénne. Fruits 30(3):163-165. (English summary).
Biology; host & distribution; natural enemy.

*See* Öncüer, C., & Tuncyürek, M.

**Tuncyürek-Soydanbay, M. (Tuncyürek, M.) & Erkin, E. 1981.** Studies on the population fluctuations of the citrus armored-scale insects and the activity of their parasites. Bitki Koruma Bul. 21(4):173-196. (In Turkish, English summary).
*Aonidiella citrina* & *aurantii* & *Chrysomphalus dictyospermi*.

**Tuncyürek-Soydanbay, M. & Yalcin, E. 1979.** Investigation on the population fluctuations, and the factors affecting them, of the black olive scale (*Saissetia oleae* Bern.) causing damage in orange orchards in the Aegean Region. Bitki Koruma Bul. 19(2):57-78. (In Turkish, English summary).
Biology; temperature; natural enemies; mention 4 other coccoid spp.

**Twigg, J.**, *see* Sprackling, M. T., & Twigg, J.

**Tzalev, M. (Stanev, Tsalev, Zalev) 1966.** Contribution to the morphology, biology and control of *Rhodococcus bulgariensis* Wunn (Homoptera, Coccoidea) in Bulgaria. Plant Sci. (Sofia) 3(7):3-14. (In Bulgarian, English summary).
Hosts & distribution; natural enemies.

**1968.** Contribution to the scale insect fauna (Homoptera, Coccoidea) of the park and ornamental plants in Bulgaria. Acad. Bulg. Sci., Bul. Inst. Zool. & Mus. 28:205-218. (In Bulgarian, German summary).
Lists 89 spp. in 8 fam.; first record for 55 spp.; hosts.

*See* Kozár, F., Tzalev, M., Viktorin, R. A., & Horváth, J.

**Uchida, M.**, *see* Negishi, T., Asano, M., Uchida, M., & Nakagawa, K.; Negishi, T., Uchida, M., Tamaki, Y., Mori, K., Ishiwatari, T., Asano, S., & Nakagawa, K.

**Uchida, M., Nakagawa, K., Negishi, T., Asano, S., & Mori, K. 1981.** Synthesis of 2,6 dimethyl-1,5 heptadien-3-ol acetate, the pheromone of the Comstock mealybug, *Pseudococcus comstocki* Kuwana and its analogs. Agric. Biol. Chem. 45(2):369-372.
Compared synthesized sex pheromone with natural one.

**Ueckert, D. N.**, *see* Foster, D. E., Ueckert, D. N., & Deloach, C. J.

**Ueda, M.**, *see* Hashimoto, A., & Ueda, M.

**Uematsu, H. 1978.** Bionomics of *Aonidiella taxus* Leonardi (Homoptera: Diaspididae). Sci. Bul. Fac. Agric., Kyushu Univ. 33(1):25-31. (In Japanese, English summary).
Hosts; biology of male & female.

**1979.** Studies on life table for an armored scale insect, *Aonidiella taxus* Leonardi (Homoptera: Diaspididae). Sci. Bul. Fac. Agric., Kyushu Univ. 33(2/3):79-86. (In Japanese, English summary).
Development of first & second generation nymphs; mortality; hosts; natural enemies.

**Uemura, M.**, *see* Korenaga, R., Shiyomi, M., Hirosaki, S., Nakamura, K., Ito, S., Kimura, Y., & Uemura, M.

**Uemura, M. & Shiyomi, M. 1975.** Distribution patterns of the number of *Unaspis yanonensis* individuals between trees and within a tree. Japanese J. Appl. Entomol. Zool. 19(2):97-104. (In Japanese, English summary).
Density of *U. yanonensis* between trees changed according to a gamma distribution; number of individuals within a tree changed according to a negative binomial distribution; biological implications discussed; mathematical models constructed for estimating population density.

**Ueno, H. 1971.** Studies on the scale insects that attack the Japanese persimmon *Diospyros kaki* L. II. Interrelationships between overwintered larvae of the Japanese wisteria cottony mealybug, *Planococcus kraunhiae* Kuwana, and the elongate cottony scale, *Phenacoccus pergandei* Cockerell, in the orchard. Japanese J. Appl. Entomol. Zool. 15(4):211-214. (In Japanese, English summary).
Frequency distribution of immature individuals appeared to correspond to a concentrated distribution.

**Ugolini, A. & Brussino, G. 1977.** An adverse factor against Chinese gooseberry: *Pseudaulacaspis pentagona* (Targ.). Informatore Fitopatol. 27(2):11-12. (In Italian, English summary).
First record on this food plant in Italy.

**Ullah, G. M. R.**, *see* Chowdhury, S. H., & Ullah, G. M. R.

**Ullah, G. M. R. & Chowdhury, S. H. 1984.** *Saccharicoccus sacchari* (Cockerell) a new coccoid from Bangladesh attacking sugarcane. Bangladesh J. Zool. 12(2):117-119.
Taxonomic & descriptive notes.

**Umesawa, K.**, *see* Kawai, S., Matsubara, Y., & Umesawa, K.

**United Kingdom, Ministry of Agriculture, Fisheries & Food. 1977.** Scale insects on fruit trees. Ministry Agric. Fish. Food, Advisory Leaf. No. 88:7 pp.
Gives note on the morphology, life history, hosts, natural enemies & chemical control of 7 coccoid spp.

**Uno, K.**, *see* Yamada, S., Noda, N., Hayakawa, J., Mikami, E., & Uno, K.

**Urias Lopez, M. A. & Carillo Sanches, J. 1983.** Plagas principales de la yuca, *Manihot esculenta* Crantz, en la sabana de Huimanguillo, Tabasco. Agric. Tecnica Mexico 9(1):65-83. (English summary).
List 8 coccoid spp.; natural enemies; damage; control.

**Vaganova, L. D.**, *see* Bichina, T. I., Kovalev, B. G., Smetnik, A. I., & Vaganova, L. D.

**Valentine, E. W.**, *see* Boer, J. A. de, & Valentine, E. W.

**Valle, N. del**, *see* Grillo, M., Valle, N. del, & Alvarez, M.

**Van Duyn, J. & Murphey, M. 1971.** Life history and control of white peach scale, *Pseudaulacaspis pentagona* (Homoptera: Coccoidea). Florida Entomol. 54(1):91-95.
Biology & habits in Florida; hosts; dispersal.

**Van Heurn, W. C. 1923.** The insect pests of rice in Java. Mededeelingen Inst. Plantenziekten 61:42-43. (In Dutch).
*Ripersia sacchari*.

**Van Liefferinge, M.**, *see* Bareth, C., & Van Liefferinge, M.

**Vappula, N. A. 1965.** Pests of cultivated plants in Finland. Acta Entomol. Fennica 19:239 pp. (coccoids on p. 31, 89, 112, 138, 151, 170). (In Finnish).
Records 17 coccoid spp.

**Vargas, O. 1978.** The white scale (*Aonidomytilus albus* Ckll.) on cassava. Proc. Cassava Prot. Workshop (Cali, Colombia 1977) CIAT. 244 pp. (coccoids on p. 199-202).
Damage; biology; control recommendation; natural enemies; list of scale insects attacking cassava family.

**Varjas, L.**, *see* Kozár, F., & Varjas, L.

**Varshney, R. K. 1970.** Lac literature. A bibliography of lac insects & shellac. Publ. Shellac Export Promotion Council, Calcutta, India. 216 pp.
Cites 2606 articles; subject index includes references in taxonomy.

**1976.** Taxonomic studies on lac insects of India (Homoptera: Tachardiidae). Oriental Insects Suppl. No. 5:1-97.
Revised fam. Tachardiidae; keys to subfam., gen. & spp.; 4 n. spp.; 1 n. ssp.; 2 n. syns.; 3 spp. reinstated; check-list of world spp. in 8 gen.

**1978.** Composition of the honeydew excreted by the lac insect *Kerria lacca* (Kerr) (Homoptera: Coccoidea) II. Carbohydrates. Bul. Zool. Survey India 1(2):95-98.
Detected 4 carbohydrates & 1 oligosaccharide by means of paper partition chromatography.

**1979.** Aspects of intraspecific diversity in relation to the lacca complex of Indian lac insect (Homoptera: Tachardiidae). Proc. Symp. Zool. Survey India (Calcutta) 1:1-12.
Discusses morphological, biological, physiological & genetic variations.

**1982a.** On some pseudococcids from the Andaman Islands (Homoptera: Pseudococcidae). Records Zool. Survey India 80(1/2):107-109.
First report of *Maconellicoccus hirsutus*, *Rastrococcus iceryoides* & *Cataenococcus* sp.

**1982b.** *Ferrisia lobdellae*, a new name for *Ferrisia setosa* (Lobdell, 1930) (Homoptera: Pseudococcidae). Proc. Entomol. Soc. Wash. 84(4):857-858.
Taxonomic note.

**1983.** Amino-acid constituents of the plant-sap of some common, occasional and non-hosts of the Indian lac insect *Kerria lacca* (Kerr) (Tachardiidae: Homoptera). Proc. Symp. Host. Environ. Zool. Survey India. p. 5-15.
Detailed study.

**1984a.** Biogeography of the coccoids of the Indian subcontinent. Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 370-371.
More than 600 coccoid spp. recorded from the subcontinent in 15 fam.; 8 spp. mentioned by scientific names.

**1984b.** New records of host-plants and distribution of some coccoids from India (Homoptera: Coccoidea). Bul. Zool. Survey India 6(1/3):137-142.
Reports 7 new hosts & 14 new localities for 12 coccoid spp.

**1984c.** A review of the family Tachardiidae (Kerriidae) in the Orient (Homoptera: Coccoidea). Oriental Insects 18:361-384.
Key to subfamilies, genera & subgenera; *Kerria* (*Chamberlinia*) n. subgenus; list of spp.; taxonomic notes; information on occurrence, diagnostic characters, nomenclature & classification of the family.

**1985a.** Outbreak of giant mealybug, *Drosicha stebbingi* (Green), in West Rajasthan (Hemiptera: Margarodidae). Current Sci. 54(17):884.

New host record; presence of sp. seems to be the western periphery of its range in India; biological note.

**1985b.** A review of Indian coccoids (Homoptera: Coccoidea). Oriental Insects 19:1-101.
Lists 15 families, 208 genera & 624 spp.; key; gives information on faunistics, taxonomy, morphology, host plants & control studies.

*See* Ganguly, G., & Varshney, R. K.

**Vasconcellos, H. de O., Cruz, C. de A. da, & Oliveira, A. M. de. 1980.** Evaluation of the reproductive capacity of *Orthezia praelonga* Douglas, 1891, in the laboratory and insectary environment. Anais Soc. Entomol. Brasil 9(2):189-197. (In Portuguese, English summary).
Development of ovisacs; cyclical pattern of reproduction.

**Vecchio, M. C. del**, *see* Gabriel, D., Vecchio, M. C. del, Muniz, J. P., & Ramiro, Z.

**Velce, D. & Rupais, A. 1979.** Records on the sucking pests of ornamental plants in Latvia. Latvijas Entomol. 22:50-56. (In Latvian, German summary).
Notes on 6 coccoid spp.; hosts.

**Venezian, A.**, *see* Ben-Dov, Y., & Venezian, A.

**Venkataraman, K.**, *see* Mehendale, A. R., Rama-Rao, A. V., & Venkataraman, K.

**Verghese, A.**, *see* Srivastava, R. P., & Verghese, A.

**Vernalha, M. M. 1970.** A new pest of coffee in Paraná. Arq. Biol. Tecnol. Curitiba 13(3):29-32. (In Portuguese).
*Orthezia praelonga*; description of adult female; host; damage.

**Vernalha, M. M., Gabardo, J. C., & Da Silva, R. P. 1975.** Coccids of Brazil V.- Coccidae *Ceroplastes* (*Octoceroplastes*) *hempeli* Lizer, 1919. Acta Biol. Parana 3(1/4):127-132. (In Portuguese, English summary).
New status; *C. grandis hempeli* = *C. hempeli*.

**Vernalha, M. M., Gabardo, J. C., & Rocha, M. A. L. da. 1970.** New pest of *Ficus elastica* Roxb. Arq. Biol. Tecnol. Curitiba 14(6):41-43. (In Portuguese).
First record of *Chrysomphalus dictyospermi* in Curitiba County, State of Paraná; description; host; damage.

**Vernalha, M. M., Rocha, M. A. L. da, Gabardo, J. C., & Da Silva, R. P. 1971.** A new pest of *Araucaria excelsa* R. Brown in the State of Paraná, *Eriococcus araucariae* Maskell, 1878 - Homoptera - Dactylopiidae. Floresta 3(1):37-42. (In Portuguese).
Describe adult female.

**Victor, R. 1984.** Humidity reactions in two species of pseudococcid mealybugs *Phenacoccus manihoti* Matile-Ferrero and *Phenacoccus madeirensis* Green (Homoptera: Pseudococcidae). Rev. Zool. Africaine 98(2):229-242.
Both closely related spp. exhibited reaction to different humidity alternatives; *P. madeirensis* is more sensitive to humidity differences than *P. manihoti*.

**Vidano, G.**, *see* Arzone, A., & Vidano, G.

**Videira Barreto, A. 1971.** Contribution to the study of some coccoids found in Mozambique. Publ. Inform. Divulgacao, Inst. Invest. Cien. Mocambique No. 9:1-11. (In Portuguese).
*Aonidomytilus albus* & *Antonina indica*.

**Vieira, R. M. da S., Carmona, M. M., & Pita, M. de S. 1983.** On the coccoids of the Madeira Archipelago (Homoptera - Coccoidea). Bol. Mus. Municipal Funchal 35(153):81-162.
List 79 coccoid spp. in 8 fam.; new records; host & distribution; damage; economic importance.

**Viggiani, G. 1970.** Morpho-biological observations on the entomophagous enemies of *Evallaspis ampelodesmae* - News. - (Homoptera Diaspididae). Bol. Portici Lab. Entomol. Agr. "Filippo Silvestri" 28:61-76. (In Italian, English summary).
Biology & natural enemies of *E. ampelodesmae*.

*See* Tranfaglia, A., & Viggiani, G.

**Vikberg, V. 1985.** *Coccura comari* Künow (Coccoidea: Pseudococcidae), new for Finland. Notulae Entomol. 65(4):161. (In Finnish).
On *Rubus chamaemorus*.

**Viktorin, R. A.**, *see* Kozár, F., Tzalev, M., Viktorin, R. A., & Horváth, J.; Kozár, F., & Viktorin, R. A.

**Vilardebo, A. 1974.** Les cochenilles des agrumes, dans l'Ouest Africain. Répartition et développement en relation avec la climatologie. Bul. SROP 3:67-78.
Lists 15 coccoid spp.; detailed account for 5 spp. natural enemies.

*See* Tourneur, J. C., & Vilardebo, A.

**Villiers, E. A. de** see De Villiers, E. A.

**Vinis, G. 1977.** The spindle-berry scale, *Unaspis euonymi* (Comst.) in Hungary. Növényvédelem 13(1):5-10. (In Hungarian; English, German & Russian summaries).
Description; biology; hosts; natural enemy; economic importance; control.

**1981a.** *Acanthomytilus hungaricus* sp. n. and some new scale insects in the Hungarian fauna (Homoptera: Coccoidea). Folia Entomol. Hungarica (n.s.) 34(1):203-207.
Reports 3 other coccoid spp.

**1981b.** On the juniper scale, *Carulaspis juniperi* (Bouché) (Homoptera, Coccoidea, Diaspididae). Növényvédelem 17(2):62-66. (In Hungarian; English, German & Russian summaries).
Description; host & distribution; damage; economic importance; natural enemies; control.

*See* Bognár, S., & Vinis, G.; Kozár, F., & Vinis, G.

**Vinis, G. & Kozár, F. 1981.** Polymorphism in the male of *Polystomophora ostiaplurima* Kiritchenko, 1940 (Homoptera: Coccoidea), description of all stages and biology. Folia Entomol. Hungarica (n.s.) 34(1):209-221.
Detailed study.

**Vlainic, A.**, *see* Kozarzhevskaya, E. F., & Vlainic, A.

**Vorontsov, A. I. & Kozarzhevskaya, E. F. 1972.** Pests of conifer species in principal botanical garden of USSR. Akad. Nauk SSSR Glav. Bot. Sad Zashch. Rast. Vredit. i Bodez. 1:27-36. (In Russian).
*Physokermes piceae*, *Parthenolecanium pomeranicum* & *fletcheri* & *Pseudococcus vovae*.

**Vuillaume, M.**, *see* Seuge, J., & Vuillaume, M.

**Waddill, V.**, *see* Pena, J. E., & Waddill, V.

**Wainhouse, D. 1979.** Dispersal of the beech scale (*Cryptococcus fagi* Baer.) in relation to the development of beech bark disease. Proc. IUFRO Conf. (Zürich, Switzerland 1978). 226 pp. (p. 181-183). Also in Mitteilungen Schweizerischen Entomol. Gesellschaft 52(2/3):125-132.
Discusses air currents, wind speed, densities, mean distance, tree diameter, size of adult population & number of progeny.

**1980.** Dispersal of first instar larvae of the felted beech scale, *Cryptococcus fagisuga*. J. Appl. Ecol. 17(3):523-532.
Studied dispersal using suction & sticky traps; dispersal under & above canopy; terminal velocity; vertical aerial density; *Nectria* sp.

**1983.** Interaction between beech and beech scale. U.S. Dept. Agric. Forest Serv. General Tech. Rep. Wo. 37:31-32. (Paper presented at the IUFRO working party conference - Hamden, Connecticut, Sept. 1982). (French & German summaries).
*Cryptococcus fagisuga*; host; disease resistance; conclusion: greater susceptibility to attack by beech scale due in part to the absence of co-evolved defense mechanism.

**Wainhouse, D. & Deeble, R. 1980.** Variation in susceptibility of beech (*Fagus* spp.) to beech scale (*Cryptococcus fagisuga*). Ann. Sci. For. 37(4):279-289.
Abundance; relationship among sp. & tree diameter & graft type.

**Wainhouse, D. & Howell, R. S. 1983.** Intraspecific variation in beech scale populations and in susceptibility of their host *Fagus sylvatica*. Ecol. Entomol. 8(3):351-359.
*Cryptococcus fagisuga*.

**Waiyaki, J. N. 1973.** White scale of sugarcane. (Tanzania). FAO Plant Prot. Bul. 21(2):42-46.
*Aulacaspis tegalensis*; distribution; biology; parasites; predators; control.

**Waku, Y. & Foldi, I. 1984.** The fine structure of insect glands secreting waxy substances. *In* "Insect Ultrastructure," edited by King, R. C. & Akai, H. Plenum Publ. Corp. 2:303-322.
Mention 15 coccoid spp. as examples.

**Waku, Y. & Manabe, Y. 1981.** Fine structure of the wax gland in a scale insect, *Eriococcus lagerstraemiae* Kuwana (Homoptera: Eriococcidae). Appl. Entomol. Zool. 16(2):94-102.
Used electron microscope; showed homology of cell types in the wax glands of *Eriococcus*, *Coccus* & *Aonidiella*.

**Walker, A. K. & Deitz, L. L. 1979.** A review of entomophagous insects in the Cook Islands. New Zeal. Entomol. 7(1):70-82.
List 8 coccoid spp.; natural enemies.

**Walstad, J. D., Nielsen, D. G., & Johnson, N. E. 1973.** Effect of the pine needle scale on photosynthesis of scots pine. For. Sci. 19(2):109-112.
The stylets of *Phenacaspis pinifoliae* enter the needle through stomata & terminate in the mesophyll tissue; chlorotic bands result from this feeding & photosynthesis is reduced.

**Walter, G. H.**, *see* Hartley, A. H., Walter, G. H., & Morrison, J. F.; Moran, V. C., Gunn, B. H., & Walter, G. H.

**Walter, J.**, *see* Kozár, F., & Walter, J.

**Walton, G. 1979.** Beech honeydew honey - a vast potential. New Zeal. Beekeeper 40(6):6-9.
*Ultracoelostoma assimile* is the most important sp. to secrete honeydew; assessed actual & potential honeydew honey yield from a survey result.

**Wan, M.**, *see* Wan, S. Y., Wan, M., & Young, B. L.

**Wan, S. Y., Wan, M., & Young, B. L. 1985.** Studies on a new pest of medicinal herb, *Mallococcus vitecicola* Young, n. sp. (Homoptera: Coccoidea: Lecaniodiaspididae). Contr. Shanghai Inst. Entomol. 5:267-274. (In Chinese, English summary).
Description; damage; bionomics; natural enemies; prognosis; control.

**Wang, D. W.**, *see* Huang, L. L., Wang, D. W., Zhang, Q., & Zhu, W.

**Wang, L. Y.**, *see* Hu, H. L., & Wang, L. Y.

**Wang, M. Z.**, *see* Qi, Y. T., Fu, W. J., Xu, S. F., & Wang, M. Z.

**Wang, S. F. 1976.** A study on the spermatogenesis of *Laccifer lacca* (Kerr). Acta Entomol. Sinica 19(2):194-198. (In Chinese, English summary).
Discusses diploid chromosome number, chromosome behavior, meiosis, sperm bundles & production of sperm.

**Wang, S. Z.**, *see* Chen, X. Z., Zhang, F. F., & Wang, S. Z.

**Wang, T. C. 1974.** Two new species of *Eriococcus* (Homoptera: Cocciodea). Acta Entomol. Sinica 17(3):332-337. (In Chinese, English summary).
*Eriococcus deformis* & *trispinatus* n. spp.; description; hosts & distribution.

**1976.** Two new species of coccids on tea bush (Homoptera: Coccoidea). Acta Entomol. Sinica 19(3):342-344. (In Chinese & English).
*Amonostherium prionodes* & *Euphilippia monticola*.

**1978.** A new coccid of *Paraputo* (Homoptera: Coccoidea). Acta Entomol. Sinica 21(4):415-416. (In Chinese, English summary).
*P. comantis*.

**1979a.** New species of scale insects from Xizang. Acta Zootaxonomica Sinica 4(3):270-272. (In Chinese & English).
*Pedronia acanthodes* & *Chnaurococcus globosus* n. spp.

**1979b.** Description of a new species of *Paroudablis* (Homoptera: Coccoidea). Acta Entomol. Sinica 22(4):460-461. (In Chinese, Russian summary).
*P. arctophilus*.

**1980.** Handbook for the determination of the common coccoid. Chinese Acad. Sci., Science Publ. 252 pp. (In Chinese).
Discusses 117 spp. in 77 gen. & 10 fam.; *Asterococcus atratus* n. sp.; key to fam., gen. & spp.; syns.; hosts & distribution; control.

**1981a.** Homoptera: Coccoidea. Insects of Xizang 1(10):283-294. (In Chinese, English summary).
Lists 62 spp. in 9 fam. & 45 gen.; hosts.

**1981b.** A mounting method for Coccoidea. Insect Knowledge 18(2):91. (In Chinese).
Describes procedures.

**1982a.** Description of a new genus and a new species of Lecanodiaspididae (Homoptera: Coccoidea). Acta Entomol. Sinica 25(1):85-88. (In Chinese, English summary).
*Crescoccus* n. gen.; *C. candidus* n. sp.

**1982b.** A study on the Chinese *Paraputo* and *Heliococcus* with description of new species (Homoptera: Coccoidea: Pseudococcidae). Acta Entomol. Sinica 25(3):315-320. (In Chinese, English summary).
*P. speciosus* & *gasteris* & *H. lingnaniae* n. spp.; key to spp. of *Paraputo* & *Heliococcus*.

**1982c.** A new species *Eriococcus* from Zhejiang, China (Homoptera: Coccoidea). Acta Entomol. Sinica 25(4):441-442. (In Chinese, English summary).
*E. rugosus*.

**1982d.** The scale insects of agriculture regions from China (Homoptera: Coccoidea). Agric. Publ. House, Peking, China. 276 pp. (In Chinese).
Description, host & distribution for 184 spp. in 88 gen. & 8 fam.; keys to gen. & spp.; economic importance; wax producing spp.; chemical & biological control.

**1985.** A new species of *Formicococcus* Takahashi from China (Homoptera: Pseudococcidae). Acta Entomol. Sinica 28(1):444-446.
*F. eriobotryae* n. sp.

**Wang, T. C., Yao, T. F., Teui, S. Y., & Liang, Z. J. 1982.** A new species of *Laccifer*, with preliminary studies on the biological characteristics (Homoptera: Coccoidea: Lacciferidae). Sci. Silvae Sinicae 18(1):53-57. (In Chinese, English summary).
*L. ruralis*.

**Wang, Y. D.**, *see* Ou, B. R., Hong, G. J., Yang, X. C., & Wang, Y. D.

**Wang, Z. Q. 1982.** Economic insect fauna of China (Homoptera: Pseudococcidae). Sci. Press, Beijing, China 24:119 pp. (In Chinese).
Keys to 18 fam. & 44 gen.; description; syns.; hosts & distribution for 100 spp.; also keys to some spp.; 2 n. spp.

**Ward, R. 1890.** Notes on scale and other parasitical insects. Timehri: being J. Roy. Agric. & Commercial Soc. British Guiana, Demerara (n.s.) 4:302-311.
Discusses general appearance, damage and hosts for 10 spp.

**Warrell, E. 1979.** Citrus scale: a most successful pest. Shell Public Health & Agric. News (London) 22(1):26-27. (French, German & Spanish summaries).
*Saissetia oleae*, *Lepidosaphes beckii* & *gloverii* & *Chrysomphalus ficus*; damage; biology; development; control measures; natural enemies.

**Washburn, J. O. & Frankie, G. W. 1981.** Dispersal of a scale insect, *Pulvinariella mesembryanthemi* (Homoptera: Coccoidea) on iceplant in California. Environ. Entomol. 10(5):724-727.
Assessed the effectiveness of small rodents, birds, humans, dogs & wind in dispersing first instar nymphs, ovisacs and eggs of *P. mesembryanthemi*.

**Washburn, J. O., Frankie, G. W., Hagen, K. S., & Koehler, C. S. 1982.** Ecology and biological control of iceplant scale, in California. Calif. Univ. Berkeley; Federal Highway Administration, Sacramento, Calif., Calif. Div. Rep. No. FHWA/CA-31982: 38 pp.

*Pulvinariella mesembryanthemi* & *delottoi*.

**Washburn, J. O. & Washburn, L. 1984.** Active aerial dispersal of minute wingless arthropods: Exploitation of boundary-layer velocity gradients. Science 223:1088-1089.
*Pulvinariella mesembryanthemi*.

**Washburn, L.**, *see* Washburn, J. O., & Washburn, L.

**Waterman, P. G.**, *see* Newbery, D. M., Hill, M. G., & Waterman, P. G.

**Watson, J. K.**, *see* Lambdin, P. L., & Watson, J. K.

**Wearing, C. H. 1976.** San Jose scale, *Quadraspidiotus perniciosus* (Comstock), life cycle. DSIR (Dept. Sci. & Indust. Res. Wellington, New Zealand) Inform. Ser. No. 105/121:2 pp.
Color chart for illustration of male & female life cycles; hosts; damage; distribution.

**Weber, H.**, *see* Ossiannilsson, F., Russell, L. M., & Weber, H.

**Weglarska, B.**, *see* Bielenin, I., & Weglarska, B.

**Weidhaas, J. A., Jr.**, *see* Hilburn, D. J., & Weidhaas, J. A., Jr.

**Weidner, H. 1970.** Masseninvasion der Schildlaus *Rhizoecus halophilus* (Hardy, 1860) in einem Wohnhaus auf Sylt. Anz. Schädlingskunde & Pflanzenschutz 43(8):117-119.
Nymphal description & figures; taxonomic notes; distribution; hosts.

**1974.** Schildlausgallen an Eucalyptusbäumen in Australien. Entomol. Mitteilungen Hamburg 4(85):438-464.
Morphology & biology of the gallforming scale insects belonging to the genera *Apiomorpha*, *Ascelis* & *Brachyscelis*.

**Wernerowna, H. 1963.** Report on *Porphyrophora polonica* (L.) and the uses of its dye. Przeg. Zool. 7:185-186.

**1971.** Distribution of the Polish cochineal, *Porphyrophora polonica* (L.) (Homoptera, Coccoidea) in Poland and the neighboring countries. Przeg. Zool. 15(3):287-291. (In Polish, English summary).
*P. polonica* occurs in 81 localities, thus apparently in the entire country except in Wyzyna Lubelska & in the mountainous regions.

*See* Kawecki, Z., & Wernerowna, H.

**Wescott, C. 1973.** The gardener's bug book, 4th edition. Publ. Doubleday & Co., Inc. Garden City, New York. 689 pp. (coccoids on p. 313-320, 385-426).
Discusses 203 coccoid spp., short description; hosts & distribution; biology, natural enemies and control for many spp.

**Wessels, D.**, *see* Holm, E., & Wessels, D.

**Westigard, P. H.**, *see* Hoyt, S. C., Westigard, P. H., & Rice, R. E.; Jorgensen, C. D., Rice, R. E., Hoyt, S. C., & Westigard, P. H.

**Wetzel, Th. 1971.** Tierische Schädlinge. *In* Mühle, E. S. "Krankheiten und Schädlinge der Futtergräser," Hirzel Verlag, Leipzig 1971. p. 226-368. (coccoids on p. 297-298).

Includes notes on *Heterococcus graminicola* & *Phenacoccus hordei*; survey of literature; hosts.

**White, A. H.**, *see* Cameron, D. W., Feutrill, G. I., Patti, A. F., Raston, C. L., Raverty, W. D., & White, A. H.

**Whitehead, G. B.**, *see* Bradford, B., Whitehead, G. B., & Altona, R. E.

**Wilkey, R. F. 1977.** How to make professional microslide mounts of insects and other arthropods. Publ. by R. F. Wilkey, Bluffton, Indiana. 4 pp.
Slidemounts; step by step procedure; formulae.

**Willard, J. R. 1972a.** Studies on the rates of development and reproduction of California red scale, *Aonidiella aurantii* (Mask.) (Homoptera: Diaspididae) on citrus. Austral. J. Zool. 20(1):37-47.
Rates of development measured at 4 temperatures using the leaf disc method; unfertilized females lived & could be fertilized up to 16 weeks after the second molt.

**1972b.** The rhythm of emergence of crawlers of California red scale, *Aonidiella aurantii* (Mask.), (Homoptera: Diaspididae). Austral. J. Zool. 20(1):49-65.
The existence of a rhythm of emergence controlled by light & temperature is confirmed.

**1973a.** Wandering time of the crawlers of California red scale, *Aonidiella aurantii* (Mask.) (Homoptera: Diaspididae), on citrus. Austral. J. Zool. 21:217-229.
The distribution of times of emergence & settling ensures that most wandering occurs in the late morning when wind velocities are most favorable for dispersal.

**1973b.** Survival of crawlers of California red scale, *Aonidiella aurantii* (Mask.) (Homoptera: Diaspididae). Austral. J. Zool. 21:567-573.
Crawlers could withstand transport by wind over long distances even during hot, dry summer weather.

**1974.** Horizontal and vertical dispersal of California red scale, *Aonidiella aurantii* (Mask.) (Homoptera: Diaspididae). Austral. J. Zool. 22(4):531-548.
Importance of morphological form in dispersal; only crawlers & mature males are active; experiments with sticky traps; analysis of both dispersals.

**1976.** Leaf disc method for rearing California red scale *Aonidiella aurantii* (Maskell) (Homoptera: Diaspididae). J. Austral. Entomol. Soc. 15:7-11.
Gives table for mean survival time & duration of development.

**Williams, D. J. 1970a.** The mealybugs (Homoptera, Coccoidea, Pseudococcidae) of sugar-cane, rice and sorghum. Bul. Entomol. Res. 60(1):109-188.
Discusses taxonomy of 39 spp. of mealybugs; describes 27 spp., 8 of them as new; key to the 39 spp.; host & distribution; syns.; n. combs.

**1970b.** Two of T. D. A. Cockerell's early articles on scale insects. Entomol. Monthly Mag. 106(1268/1270):33.
Quotation of Cockerell articles in Jamaica Post, 1891 & 1892 describing n. spp.; validation of name.

**1970c.** Key to the families of Coccoidea known in Australia - nymphs and females. *In* "The Insects of Australia," edited by Waterhouse, D. F. Melbourne Univ. Press. 1029 pp. (coccoids on p. 426-427).
Includes 10 families.

**1971a.** On the taxonomy of two Diaspididae (Homoptera, Coccoidea) from Hong Kong. Bul. Entomol. Res. 60(3):447-452.
*Thysanofiorinia leei* n. sp.; redescription of *Insulaspis pinea*; host & distribution; taxonomic notes; key to *Insulaspis* spp. on conifers.

**1971b.** A new species of *Abgrallaspis* Balachowsky (Homoptera, Coccoidea, Diaspididae) from a nursery in England causing leaf-spotting on orchids. Bul. Entomol. Res. 60(3):453-455.
*A. pictor*.

**1971c.** Synoptic discussion of *Lepidosaphes* Shimer and its allies with a key to genera (Homoptera, Coccoidea, Diaspididae). Bul. Entomol. Res. 61(1):7-11.
Distribution; taxonomic & nomenclatural notes.

**1973a.** Scale insects (Homoptera: Coccoidea) on macadamia. J. Austral. Entomol. Soc. 12:81-91.
*Lepidosaphes macella* & *macadamiae*, *Pseudaulacaspis brimblecombei* & *Eriococcus ironsidei* n. spp.; description; hosts & distribution; damage; lists 25 spp. recorded on macadamia.

**1973b.** Two cactus-feeding mealybugs from Argentina (Homoptera, Coccoidea, Pseudococcidae). Bul. Entomol. Res. 62(4):565-570.
*Pedronia festeriana* transferred to *Hypogeococcus* & redescribed; key; hosts & distribution; *Pseudococcus eriocerei* n. sp. described; hosts & distribution; damage.

**1974.** The type-species of *Lindingaspis* MacGillivray (Homoptera: Coccoidea: Diaspididae). J. Entomol. (B) 42(2):217-220.
*Melanaspis samoana*, the type-species of *Lindingaspis* is redescribed & illustrated; lectotype selected; key.

**1977.** A new species of *Exaeretopus* Newstead (Homoptera: Coccidae) attacking wheat in Iraq. Bul. Entomol. Res. 67(2):281-284.
*E. tritici*.

**1978a.** The anomalous ant-attended mealybugs (Homoptera: Pseudococcidae) of South-East Asia. Bul. British Mus. (Nat. Hist.) Entomol. Ser. 37(1):72 pp.
Morphology, habit & taxonomy of 13 mealybugs; Allomyrmococcini new tribe; 4 n. spp.; distribution map; keys to gen. & spp.

**1978b.** Taxonomy of mealybugs on cassava. Proc. Int. Workshop on the Cassava Mealybug, *Phenacoccus manihoti* Mat.-Ferr. (Pseudococcidae) (Zaire, 1977). p. 47-52.
Key to external morphological characters of 6 spp. on cassava in West Africa, & to microscopic characters of 10 spp. known on cassava in the world; method for preparation of Pseudococcidae.

**1980a.** *Andaspis dasi* Williams identical with *A. numerata* Brimblecombe (Hemiptera: Diaspididae), a species found on tea and associated with the fungus *Septobasidium*. Bul. Entomol. Res. 70(2):259-260.
Hosts & distribution.

**1980b.** The identity of *Lecanium krugeri* Zehntner (Hemiptera: Coccidae) and its distribution on sugar-cane in southern Asia. Bul. Entomol. Res. 70(3):435-437.
*L. krugeri* redescribed & transferred to the new genus *Saccharolecanium*; key for *Saccharolecanium* & related genera; new records.

**1981.** New records of some important mealybugs (Hemiptera: Pseudococcidae). Bul. Entomol. Res. 71(2):243-245.

*Palmicultor palmarum*, *Planococcus lilacinus* & *Pseudococcus microadonidum*.

**1982a.** The distribution and synonymy of *Coccus celatus* De Lotto (Hemiptera: Coccidae) and its importance on coffee in Papua, New Guinea. Bul. Entomol. Res. 72(1):107-109.
*C. consimilis* synonymized with *C. celatus*; hosts.

**1982b.** *Pulvinaria iceryi* (Signoret) (Hemiptera: Coccidae) and its allies on sugarcane and other grasses. Bul. Entomol. Res. 72(1):111-117.
Detailed notes & key to 5 *Pulvinaria* spp.; n. syn.

**1982c.** The distribution of the mealybug genus *Planococcus* (Hemiptera: Pseudococcidae) in Melanesia, Polynesia and Kiribati. Bul. Entomol. Res. 72(3):441-445.
*P. citri*, *pacificus*, *lilacinus* & *dioscoreae*.

**1982d.** The scale insect *Arctorthezia cataphracta* (Olafsen) (Hemiptera, Coccoidea) in the Museum and Art Gallery, Perth, and a discussion of E. Olafsen's Reise Igiennèm Island. Entomol. Monthly Mag. 118(1412/1415):27-28.
Taxonomic notes.

**1984a.** Some aspects of the zoogeography of scale insects (Homoptera: Coccoidea). Proc. 10th Int. Symp. Central European Entomofaunistics (SIEEC) (Budapest, Hungary, Aug. 1983). p. 331-333.
Discusses the different dispersal of scale insects, their distributions & hosts in 17 families.

**1984b.** Two new species of *Eurycoccus* (Hemiptera: Pseudococcidae) on tamarix from Pakistan. Bul. Entomol. Res. 74(3):535-540.
*E. cuniculorum* & *tamariscus* n. spp.

**1984c.** Two injurious mealybugs new to Britain (Hem., Homoptera, Coccoidea, Pseudococcidae). Entomol. Monthly Mag. 120:227-228.
*Chorizococcus brevicruris* & *Planococcus vovae*.

**1985a.** Australian mealybugs. British Museum (Natural Hist.). 431 pp.
Complete classificatory review of Australian Pseudococcidae including 196 spp. (132 new) in 61 gen. (27 new); recognition keys; description; n. syns.; n. combs.; lectotype designations; also discussion on biology, economic importance, history, systematics & morphology; host-plant list.

**1985b.** T. D. A. Cockerell's scale insects (Homoptera: Coccoidea) in the British Museum (Natural History). Folia Entomol. Hungarica 46(1):215-240.
Lists 207 of nearly 500 spp. described by Cockerell; data from original description & current assignment of spp.

**1985c.** Some scale insects (Hom., Coccoidea) from the Island of Nauru. Entomol. Monthly Mag. 121(1448/1451):53.
Lists 8 coccoid spp. in 4 families; all new records; hosts.

**1985d.** Scale insects (Homoptera: Coccoidea) of Tresco, Isles of Scilly. Entomol. Gaz. 36(2):135-144.
Redescription of *Eulepidosaphes pyriformis* & *Leucaspis podocarpi*; n. syn.; lists 8 other coccoid spp. with hosts; new record.

**1985e.** Hypogeic mealybugs of the genus *Rhizoecus* (Homoptera: Coccoidea) in India. J. Nat. Hist. 19(2):233-242.
Key to genera; *R. cocois* n. sp.; redescription of *R. amorphophalli* & *cynodontis*.

**1985f.** Some South American scale insects (Homoptera: Coccoidea) on *Nothofagus*. J. Nat. Hist. 19(2):249-258.
Key to genera of Conchaspididae; *Hemiberlesia nothofagi* n. sp.; redescription of 2 other spp.

**1985g.** A new species of *Ferrisia* (Hemiptera: Pseudococcidae) on cassava (*Manihot esculenta*) from Paraguay and on ragweed (*Ambrosia tanuifolia*) from Argentina. Bul. Entomol. Res. 75(2):255-257.
*F. meridionalis*.

**1985h.** *Pseudococcus mandio* sp. n. (Hemiptera: Pseudococcidae) on cassava roots in Paraguay, Bolivia and Brazil. Bul. Entomol. Res. 75(3):545-547.
Description of adult female.

**1985i.** The British and some other European Eriococcidae (Homoptera: Coccoidea). Bul. British Mus. (Nat. Hist.) Entomol. Ser. 51(4):347-393.
Key to genera & spp.; 11 indigenous spp. redescribed; *Eriococcus cantium* n. sp.; discusses other introduced spp.; the genera *Greenisca* & *Kaweckia* are syns. of *Eriococcus*.

**1985j.** Mealybugs of the genus *Rhizoecus* (Hemiptera: Pseudococcidae) on African violets (*Saintpaulia* spp.) with a description of a new species from Thailand. Bul. Entomol. Res. 75(4):621-624.
Mealybugs mentioned affect only potted plants; key; *R. saintpauliae* n. sp.

*See* Banks, H. J., & Williams, D. J.; Ben-Dov, Y., & Williams, D. J.; Boratynski, K., & Williams, D. J.; Cox, J. M., & Williams, D. J.; Davies, R. G., & Williams, D. J.; Miller, D. R., Gill, R. J., & Williams, D. J.; Miller, D. R., & Williams, D. J.; Williams, J. R., & Williams, D. J.

**Williams, D. J., Blair, B. W., & Khasimuddin, S. 1985.** *Phenacoccus solani* Ferris infesting tobacco in Zimbabwe (Homoptera, Coccoidea, Pseudococcidae). Entomol. Monthly Mag. 121(1448/1451):87.
New record; damage; biological & morphological note.

**Williams, D. J. & Boer, J. A. de. 1973.** The taxonomy of some New Zealand Pseudococcidae (Homoptera: Coccoidea). Trans. Roy. Entomol. Soc. London 125:227-252.
*Paraferrisia* & *Sarococcus* n. gen.; *Trionymus wisei* n. sp.; 8 pseudococcids redescribed & illustrated; n. comb.; n. syns.; hosts & distribution.

**Williams, D. J. & Cox, J. M. 1984.** Notes on the distribution of *Phenacoccus parvus* Morrison = *P. surinamensis* Green syn. n. (Hem., Pseudococcidae). Entomol. Monthly Mag. 120:139-140.
*P. parvus* distributed in Central & South America, including West Indies; probably introduced to Galapagos Islands & New Caledonia.

**Williams, D. J., Cox, J. M., & Yaseen, M. 1981.** The cassava mealybug and its parasites in Paraguay and Bolivia. Biocontr. News & Inform. 2(2):88.
*Phenacoccus manihoti*; discuss differences in appearance & biology between the African & South American spp.

**Williams, D. J. & Edland, T. 1985.** *Lepidosaphes newsteadi* (Sulc, 1895) (Hom., Diaspididae), a scale insect new to Norway. Fauna Norvegica, B 32(1):45.
First record; host & distribution; distinguished from *L. pallida*.

**Williams, D. J. & Miller, D. R. 1985.** *Phenacoccus avenae* Borchsenius (Hemiptera: Pseudococcidae) from the Netherlands and Turkey, intercepted at quarantine on bulbs, corms and rhizomes of ornamental plants. Bul. Entomol. Res. 75(4):671-674.
Redescription of adult female; lectotype designation; new records.

**Williams, D. J. & Nakahara, S. 1980.** *Rhizoecus pritchardi* McKenzie, a junior synonym of *R. dianthi* Green (Homoptera: Pseudococcidae). Proc. Entomol. Soc. Wash. 82(2):336-337.
Hosts & distribution; selection of lectotype.

**Williams, D. J., Radunz, L. A. J., & Brookes, H. M. 1981.** The rice mealybug *Brevennia rehi* (Lindinger) now recorded from Australia and Papua, New Guinea (Hemiptera: Coccoidea: Pseudococcidae). J. Austral. Entomol. Soc. 20(1):46.
Host & distribution.

**Williams, J. R. 1970.** Studies on the biology, ecology and economic importance of the sugar-cane scale insect, *Aulacaspis tegalensis* (Zhnt.) (Diaspididae), in Mauritius. Bul. Entomol. Res. 60(1):61-95.
Hosts; description; plant-insect relations; natural enemies; control.

**1977.** *Aulacaspis tegalensis* (Zhnt.) *in* chapter: Leafhoppers, white flies, aphids, scale insects etc. *In* "Diseases, Pests and Weeds in Tropical Crops," edited by Kranz, J., Schmutterer, H., & Koch, W. Verlag Paul Parey, Berlin & Hamburg; also by John Wiley & Sons, Chichester, New York, Brisbane, Toronto. 666 pp. (coccoids on p. 346-370).
Host & distribution; economic importance; life cycle; ecology; natural enemies & control for 12 spp.; notes on 13 other spp.

**1978.** Report on the "pou a poche blanche" *Pulvinaria iceryi* (Sign.). Mauritius Sugar Ind. Res. Inst. 37 pp.
Hosts & distribution; history; damage; patterns of infestation; "wilt complex"; life cycle; natural enemies; control.

**1980.** The biology of soft scale insect *Pulvinaria iceryi* (Sign.). Proc. Int. Soc. Sugarcane Technologists 17(2):1843-1854.
Detailed study; life cycle & development; fecundity; reproduction; host & distribution; natural enemies; diseases & disorders; damage.

*See* Dove, H., & Williams, J. R.

**Williams, J. R. & Williams, D. J. 1980.** Excretory behaviour in soft scales (Hemiptera: Coccidae). Bul. Entomol. Res. 70(2):253-257.
Liquid excrement which often accumulates as honeydew can be harmful to insects that produce it; dispersal important, methods of it described; ant attendance helpful.

**Williams, M. L. 1977.** Scale insects of the Galapagos Islands. Va. Polytech. Inst. & State Univ. Res. Div. Bul. 127:85-98.
Lists 35 known & 3 undescribed spp. in 27 gen. & 7 families with their hosts; 24 spp. recorded for first time.

*See* Ben-Dov, Y., Williams, M. L., & Ray, C. H.; Gill, R. J., Nakahara, S., & Williams, M. L.; Hamon, A. B., & Williams, M. L.; Howell, J. O., & Williams, M. L.; Howell, J. O., Williams, M. L., & Kosztarab, M.; Muse, B. J., & Williams, M. L.; Ray, C. H., & Williams, M. L.; Ray, C. H., Jr., Williams, M. L., & Daniels, I. E.

**Williams, M. L. & Kosztarab, M. 1970.** A morphological and systematic study of the first instar nymphs of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 52:1-96.

Description of nymphs of 26 spp., 2 of which described for the first time; full descriptions of 24 spp.; key to spp.

**1972.** Morphology and systematics of the Coccidae of Virginia with notes on their biology (Homoptera: Coccoidea). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 74:215 pp.

Studied 32 spp. in 11 gen.; *Toumeyella virginiana* n. sp.; 9 spp. first recorded in Virginia; 4 spp. first recorded for North America; keys; hosts & distribution; laboratory procedures discussed.

**Williams, R. N. & Schuster, M. F. 1970.** Rhodesgrass scale, *Antonina graminis* in Brazil. Pt. I. Distribution and host plants. Pesquisa Agropecuaria Brasil 5:215-218. Also in IRI Res. Inst. Inc. 39:15-24.

List of 92 spp. of grasses infested by *A. graminis*, with both scientific & common Brazilian names.

**Willink, M. C. G. de. 1978.** Contribucion al estudio de las cochinillas harinosas (Homoptera: Pseudococcidae) en citricos de la Provincia de Tucuman. J. Fitosan. Argentina 1:125-160. (English summary).

Description, biology, hosts & key for 4 coccoid spp.; first records; natural enemies.

**Willoughby, P. A. & Kosztarab, M. 1974.** Morphological and biological studies on two species of *Chionaspis* (Homoptera: Coccoidea: Diaspididae). Va. Polytech. Inst. & State Univ. Res. Div. Bul. 92:83 pp.

*C. americana* & *kosztarabi*; detailed description of adult female, first instar nymphs, second instar male & female; male prepupa & pupa, adult male; hosts & distribution; natural enemies.

**Wingate, D. B.**, *see* Challinor, D. & Wingate, D. B.

**Wise, K. A. J. 1977.** A synonymic checklist of the Hexapoda of the New Zealand sub-region. Bul. Auckland Inst. & Mus. 11:145 pp. (coccoids on p. 95-114).

Lists 248 coccoid spp. in 8 families & 77 genera.

**Wolk, J. L., Goldschmidt, Z., Dunkelblum, E., & Ben-Dov, Y. 1985.** Synthesis and activity of (+)-cis-planococcyl acetate, sex pheromone of the citrus mealybug, *Planococcus citri*. Phytoparasitica 13:149-150.

**Womersley, J. S.**, *see* Szent-Ivany, J. J. H., & Womersley, J. S.

**Wong, C. Y.**, *see* Chang, Y. C., Tao, C. C. C., & Wong, C. Y.; Tao, C. C. C., & Wong, C. Y.; Tao, C. C. C., Wong, C. Y., & Chang, Y. C.

**Wongsiri, T.**, *see* Nakao, S., Takagi, S., Tachikawa, T., & Wongsiri, T.

**Wood, T. G.**, *see* Popov, G. B., Wood, T. G., & Haggis, M. J.

**Woodward, T. E., Evans, J. W., & Eastop, V. F. 1970.** Hemiptera (bugs, leafhoppers, etc.). *In* "The Insects of Australia," edited by Waterhouse, D. F. Melbourne Univ. Press. 1029 pp. (coccoids on p. 425-431).

Development, life cycle and coccoids in general; key to 10 fam. (by D. J. Williams); hosts & distribution; parasites.

**Wu, D. S.**, *see* Young, B. L., & Wu, D. S.; Young, B. L., Wu, D. S., & Yao, H. R.

**Wu, S. J. 1983a.** A new species of the genus *Bambusaspis* (Homoptera: Coccoidea). Acta Entomol. Sinica 26(2):209-211. (In Chinese, English summary).
*B. jubatus.*

**1983b.** A new species of *Bambusaspis* (Homoptera: Coccoidea). Acta Entomol. Sinica 26(4):428-430. (In Chinese, English summary).
*B. rutilan.*

**1984.** A new species of *Serrolecanium* (Homoptera: Coccoidea). Acta Entomol. Sinica 27(2):226-228. (Not seen).
*S. jiuhaensis.*

**Wu, Z. Q.**, *see* Chen, F. G., Wu, Z. Q., & Su, D. K.

**Wysoki, M. 1977.** Insect pests of macadamia in Israel. Phytoparasitica 5(3):187-188.
*Aspidiotus nerii* & *Hemiberlesia lataniae* already reported; *Planococcus citri* new record; no economic importance.

**Xie, G. L.**, *see* Hu, J. L., Xie, G. L., & Yan, A. J.

**Xie, G. L. & Yan, A. J. 1983.** Studies on the bamboo scale *Nesticoccus sinensis* Tang. Acta Entomol. Sinica 26(3):268-277. (In Chinese, English summary).
Biology; control; host & distribution.

**Xie, X. X. 1985.** A preliminary study on *Eulecanium gigantea* Shinji. Sci. Silvae Sinicae 21(1):44-52. (In Chinese, English summary).
On *Robinia pseudoacacia* & *Sophora japonica* at Lanzhou with 1 generation per year; second instars overwinter; average 2888 eggs per female; controls.

**Xu, G. T. 1981a.** A new species of *Paralepidosaphes* on garden trees from China (Homoptera: Diaspididae). Entomotaxonomia 3(2):133-135. (In Chinese, English summary).
*P. ulmicola.*

**1981b.** Study on *Insulaspis pini* (Mask.) (Homoptera: Diaspididae). Sci. Silvae Sinicae 17(3):314-316. (In Chinese, English summary).
Morphological characters of adult female, nymph & egg; biology; bionomics; control measures; host.

**Xu, S. F.**, *see* Qi, Y. T., Fu, W. J., Xu, S. F., & Wang, M. Z.

**Yadava, R. L. 1967b.** Circulatory system of the female *Saccharicoccus sacchari* (Pseudococcidae: Homoptera). Indian Sugar 16(11):821-826.
Circulatory system consists of median dorsal vessel, dorsal diaphragm & a more or less obliterated dorsal sinus.

**1971.** Note on the immature stages of *Saccharicoccus sacchari* Cockerell (Pseudococcidae: Homoptera). Indian J. Agric. Sci. 41(11):1020-1022.
Host; description; field & laboratory study in Agra.

**Yalcin, E.**, *see* Tuncyürek-Soydanbay, M., & Yalcin, E.

**Yamada, S., Noda, N., Hayakawa, J., Mikami, E., & Uno, K. 1985.** Analysis of natural dye in foods 2. Determination of cochineal color utilizing methylation with diazomethane. Eisei Kagaku 31(3):179-185. (In Japanese).

TLC & high performance liquid chromatography were used for the determination of a natural red dye from the scale insect *Coccus cacti* in various foods.

**Yamamoto, M.**, *see* Takagi, S., & Yamamoto, M.

**Yan, A. J.**, *see* Hu, J. L., Xie, G. L., & Yan, A. J.; Xie, G. L., & Yan, A. J.

**Yang, C. K. 1979.** Studies on Margarodidae (Homoptera: Coccoidea). Entomotaxonomia 1(1): 35-48.

Description of *Neomargarodes gossypii*, *Porphyrophora ningxiana*, *xinjiangana* & *yemenica* n. spp.

**Yang, M. D.**, *see* Qi, Y. T., Yang, M. D., & Zhao, F. G.

**Yang, P. L.** same as Young, B. L.

**Yang, P. L. 1982.** Synopsis of Chinese scale insects. Shanghai Sci. & Tech. Publ. Co. 425 pp. (In Chinese).

Hosts & distribution for 960 spp. in 204 gen. & 14 fam.; description of adult females of each gen.; keys to fam., subfam., tribes, gen., & to some spp.; *Megapulvinaria* n. gen.; indices given to taxa & hosts.

**Yang, X. C.**, *see* Ou, B. R., Hong, G. J., Yang, X. C., & Wang, Y. D.

**Yao, H. R. 1985.** Ultrastructure of spermatozoa in Diaspididae and its potential contribution to taxonomy (Homoptera: Coccoidea). Contr. Shanghai Inst. Entomol. 5:333-345. (In Chinese, English summary).

The ultrastructure of spermatozoa of 2 subfamilies, 17 gen. & 20 spp. have been studied.

*See* Young, B. L., Wu, D. S., & Yao, H. R.

**Yao, T. F.**, *see* Wang, T. C., Yao, T. F., Teui, S. Y., & Liang, Z. J.

**Yardeni, A.**, *see* Ravid, M., & Yardeni, A.

**Yaseen, M.**, *see* Williams, D. J., Cox, J. M., & Yaseen, M.

**Yasnosh, V. A.** see Jasnosh, V. A.

**Yasuda, S. 1979.** Microscopic observations on the external morphology of *Pseudaulacaspis pentagona* and on mulberry tissues inserted with its stylet. Japanese J. Appl. Entomol. Zool. 23(2):61-68. (In Japanese, English summary).

Examined perivulvar pore, marginal dorsal duct, grand spine & genital opening through scanning electron microscope.

**1981.** Reproduction of *Pseudaulacaspis pentagona* Targioni (Hemiptera: Diaspididae). Japanese J. Appl. Entomol. Zool. 25(1):39-46. (In Japanese, English summary).

Parasitism; copulation; lipid secretion; oviposition; mortality.

**1983a.** Effect of fertilization in mulberry plants on the sex ratio of eggs of the mulberry scale, *Pseudaulacaspis pentagona* (Targioni). J. Sericult. Sci. Japan 52(1):9-12.

Sex ratios of adults of *P. pentagona* varied depending on the proportion of the fertilizer elements in the blends; with increased proportion of nitrogenous & phosphatic fertilizer, the rates of adult females became higher than those of the males.

**1983b.** Effects of thermal conditions on the sex ratio of *Pseudaulacaspis pentagona* (Targioni) (Hemiptera: Diaspididae), at the early stage of ovogenesis and egg batch size. J. Sericult. Sci. Japan 52(2):106-109. (Japanese summary).
Effects of temperature; relationship between egg batch size & sex ratio; changing temperature of 15-25°C resulted in a higher male rate.

**Yonce, C. E. & Jacklin, S. W. 1974.** Life history of the white peach scale in Central Georgia. J. Georgia Entomol. Soc. 9(4):213-216.
*Pseudaulacaspis pentagona*; control; parasites & predators.

**Yoon, J. K. & Lee, J. W. 1974.** Studies on the bionomics and control methods of *Pseudococcus comstocki*. Rural Development Rev. 8:1-15. (In Korean, detailed English summary).
Life cycle; damage; chemical & biological control.

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3. Yang, S. P., and M. Kosztarab. 1967. A morphological and taxonomical study on the immature stages of *Antonina* and of the related genera (Homoptera: Coccoidea). p. 1-73.

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    II. Howell, J. O., P. L. Lambdin and M. Kosztarab. Morphology and systematics of three species in the Eucalypti group of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). p. 31-51.

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I. Miller, D. R. Introduction. p. iii.

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III. Rosen, D. and P. DeBach. Use of Scale-Insect Parasites in Coccoidea Systematics. p. 5-21.

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VIII. Williams, M. Scale Insects of the Galapagos Islands. p. 85-98.

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128. Studies of the Morphology and Systematics of Scale Insects No. 10--Lambdin, P. L., and M. Kosztarab. 1977. Morphology and systematics of the adult females of the genus *Cerococcus* (Homoptera: Coccoidea: Cerococcidae). p. 1-252.

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