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Oranges, flies, and ink: a bio-bibliography of Frank Raymond Cole (1892–1988)

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Abstract
A brief biography and complete bibliography are given for dipterist Frank Raymond Cole. An appendix lists genera and species he proposed as new.

INTRODUCTION

Frank Cole was not known for describing hundreds of new species of flies. And he did not propose any new classifications for them that could be tested and debated *ad nauseam* by others. But he was one of the more influential dipterists to inspire young students of dipterology, especially those in the western United States. Frank Cole was an avocational dipterist, publishing taxonomic papers only in his spare time. He was paid to do other things. He was probably better known in some circles for his illustrating, for which he was duly employed at various times. And it was his illustrations that inspired this author to go into scientific illustration when I was in college. Trying to emulate his illustrating skill, and study on the same flies he loved to work on—Bombyliidae—was what he inspired me to do. And many other dipterists past and present relied on his works as critical primary resources on Therevidae, Asilidae, and Acroceridae (the other families he spent most of his time watching, collecting, and describing). Yet, astonishingly little of his life is found in the literature. Only two small paragraphs on him and his work have seen the printed page (Osborn 1937; Stone 1980). He did not make Pam Gilbert's "A source book for biographical literature on [deceased] entomologists" (Gilbert 2007) only because there had been no notice in scientific journals of his passing some 20 years earlier in 1988. A local reporter who had known him for 35 years said this about him:

> I have known Frank Cole for 35 years and have always liked him. He is a combination of a down-to-earth farmer, raised on a family orange grove in the Mission District [of Redlands, California], and a scientist-scholar. He has a gentle sense of humor. We never chat for more than a minute without laughing about something. (Moore 1970: 16).

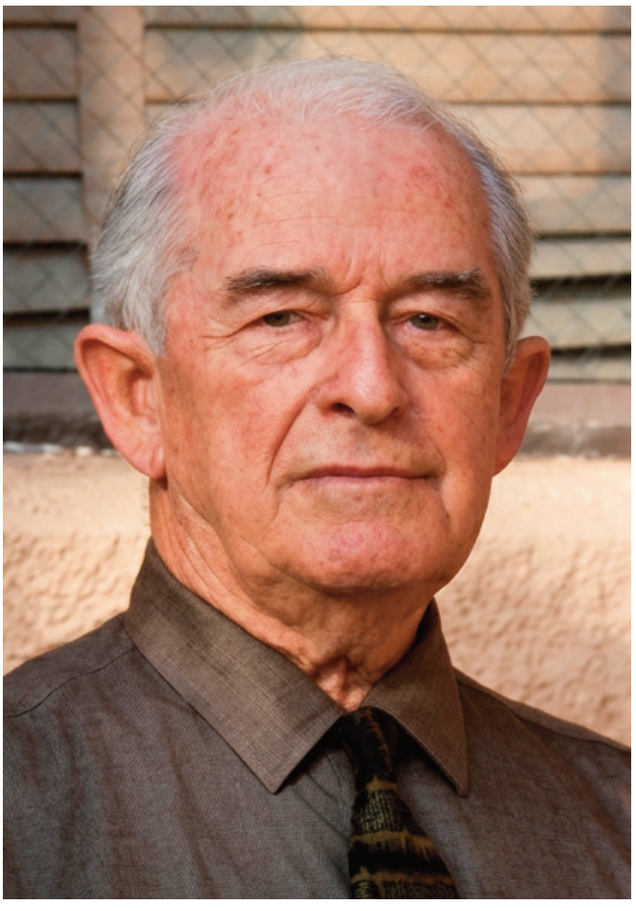


Figure 1. Frank Cole at University of California, Riverside. Date unknown but probably in the 1970s.

Cole was skilled at many things and had varied interests, which are evident in the diverse sources of his employment he had during his life. He was also an avid historian, especially of the Redlands area that was home to the Cole clan, and he made several presentations at local community affairs and contributed historical pieces to newspaper columns. And to top it off, he was a renowned philatelist, having an excellent collection of United States stamps, dating from the first issue in 1847, and including 900 different "Old Ironsides" covers (letters sent from various ports during the famous world voyage of the ship *Old Ironsides* from 1844–1846) (Anonymous 1936b).

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Figure 2. Frank Cole, Pomona College, 1913.



Figure 3. Frank Cole, Redlands, 1936.

It is hoped this short biography, gathered mainly from archival and newspaper sources, helps to give Frank R. Cole his due and fill that enormous gap in knowledge about this extraordinary person.

Early Life and Schooling

Frank Raymond Cole (Figs. 1–3) was born on 29 June 1892, in the Mission district of Redlands, California, the son of Joseph Morrison Cole (1865–1938), an orange grower, and Mary Emile Cram (1870–1940), who was from one of the oldest families in the Redlands area, which is said to have planted the first orange trees there. He had one younger sister, Florence Irene Lloyd (née Cole) (1894–1986), who was an illustrator of children's books.

Frank's grandfather, James Alfred Cole (1831–1888) and his family, made the trip overland from the Midwest to Utah and then on to southern California in 1859 by covered wagon. His great-grandfather on his mother's side (the Cram clan) came over in 1858 in another covered wagon train taking a more southerly route through the Southwest, and with a much more harrowing tale, surviving Indian raids of their pack horses, party members succumbing to malaria, and loss of water and supplies in the southwestern deserts. Both clans eventually made it to southern California and each eventually settled in Redlands. After farming walnuts, the Cole family began also growing oranges, and James's son Joseph (Frank's father) would soon follow suit. The Coles could trace their ancestry back to another James Cole who landed at Plymouth Rock in 1630 and, as Frank said to a reporter, "having missed the boat for the notable landing of 1620" (Moore 1970: 16).

During his life, Frank followed the family interest in the citrus industry: at various times, he served on committees and councils related to citrus (some with his father); entered his oranges at the National Orange Show in nearby San Bernardino; and during his years of work for the U.S.D.A.'s Bureau of Entomology, researched ways to control citrus pests. Frank had an inescapable interest in insects as a child, since these were what were ravaging every citrus grove in the region, including his father's. When he left the Bureau to move back to Redlands, it is presumed he did so to help manage the family orange growing business with his aging father. Cole said that his interest in the various varieties of citrus dated back to his Pomona College days in the early 1910s and pointed to his teacher then, agronomist and entomologist Charles Fuller Baker (1872–1927) (Cole 1934).

The Cole family's orange growing business was, as it was for so many others in the citrus industry in southern California during the first half of the 20th century, a very lucrative one. Redlands was known colloquially as "the Navel Capital of the World" for its oranges, but also "the city of millionaires", named for the wealthy investors in the citrus industry who moved there from the East Coast during the orange-growing boom of the early 1900s. The Cole family was well-known in the Redlands area and newspapers regularly gave notice of their doings. No doubt the resulting relatively comfortable financial situation of the Coles had an influence on the life and career(s) of Frank, choosing what he enjoyed and not being forced into anything just to make a living. And the family's position in the socially privileged class would extend to Frank and his family whenever he was residing in or visiting his Redlands birthplace, with notices in the local papers whenever he threw a party in town or at his "mountain" cabin in nearby Mill Creek[1] (e.g., Anonymous 1936a), when he was intending to visit relatives, along with other social announcements.

After graduating from Redlands Union High School in 1909, Frank matriculated at Pomona College in nearby Claremont. It was not long after (in 1911) that Frank began his study of flies, saying to one reporter:

[1] This cabin was lost in the flood of 1938 that washed out many structures along Mill Creek in the San Bernardino Mountains but. based on label data giving elevations on his specimens collected at Mill Creek, it is estimated that it was probably near Mountain Home, where he often collected.



Figure 4. Laguna Marine lab team, summer 1911. Entomologist C.F. Baker at extreme left; Frank Cole, third from left, seated on steps.

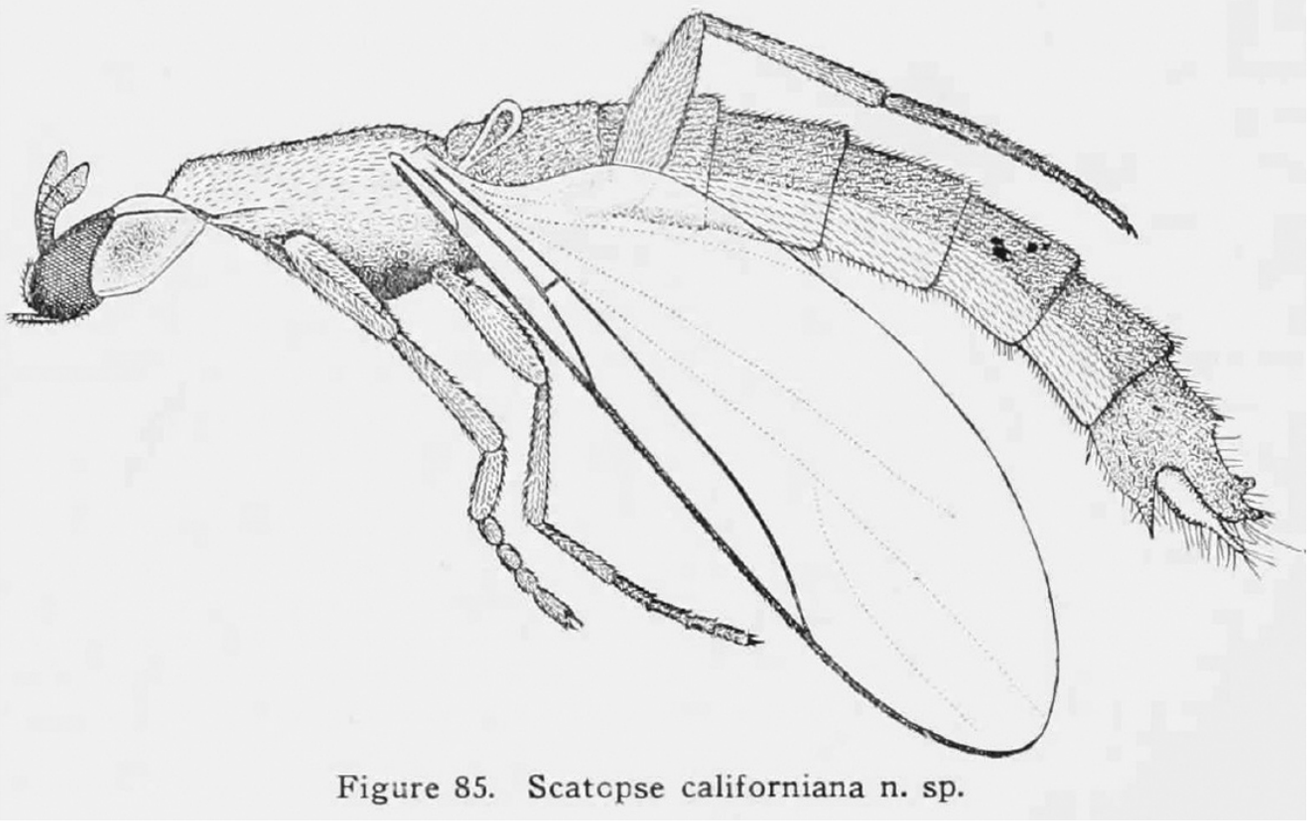


Figure 5. *Scatopse californiana* Cole, illustration by Cole from Cole (1912), an example of an early illustration completed without a camera lucida, and showing rather simplistic morphological depiction, e.g., no thoracic sclerites shown, and no coxae and only four tarsi drawn in some legs.



Figure 6. Staff of the California Academy of Sciences, in front of North American Hall, 1923. Entomologist E.P. Van Duzee, back row, extreme left. Frank Cole standing next to him. Photo: ©California Academy of Sciences. Used with permission.

> My introduction to flies came in the summer of 1911 at the first beach laboratory held at Laguna Beach by Pomona College. Dr. Charles [Baker] started me out with centipedes. I hated these things. Every time I turned over a rock I'd step on one. 'If you don't like centipedes, why don't you try flies?' he said. I did. I've been hooked ever since (Moore 1970: 16).

The beach laboratory that Frank referred to above was established in 1911. For many years Pomona College biology students made annual short visits to Deadman's Island at San Pedro. The college had wanted to spend longer summers on the coast and, after surveying potential sites, selected Laguna Beach for their laboratory, renting a house which served as their lab and domicile, to which they added a few tents (Fig. 4). Daily routines are outlined in the following:

> Every day [...] to the end of summer was full. Low tide hours were used for collecting and work on the beach, and this often took a party out at five a. m. or earlier. Every foray yielded loads of valuable material that required all the remaining hours for study and preservation. Every day was rich in discovery and incident, and every nightfall marked substantial progress in the work of everyone connected with the laboratory. An hour given every day to plunge in the surf kept the health of all in prime condition (Baker 1912: 6).

Although most of the students attended the laboratory the entire summer, Frank showed up late and left early (after staying only a couple of weeks). However, with enough successful collecting and observations, he had his first scientific publication in the first annual report of the laboratory, which contains seven new species in a listing of 23 families of Diptera (Cole 1912) that were collected by him. It is accompanied by his own illustrations depicting the habitus of many of the flies he listed in the paper. His aptitude for scientific illustration is already evident in these drawings (e.g., Fig. 5) (although fairly simple—he claimed in his 1927 work on Diptera terminalia to not use a camera lucida—his later illustrations that used the camera lucida showed more detail and accuracy) and it was a skill that would serve to employ him in the future.

Bureau of Entomology

Cole obtained his A.B. degree from Pomona College in 1913 and the next year found employment with the U.S.D.A. Bureau of Entomology in Washington, D.C., where he was a Scientific Assistant in the Truck Crop and Stored Product Insect Investigations Division under F.H. Chittenden. He spent only a short time there and then was transferred in 1917 to Hood River, Oregon where he was soon hired as an illustrator for entomologist Cecil W. Creel, who ran the U.S.D.A. Bureau of Entomology's Cereal and Forage Insect Station in Forest Grove, Oregon. Some of Cole's illustrations for Creel can be seen in Creel & Rockwood (1917). A number of Diptera specimens were collected by Cole at the Forest Grove locality. Although being drafted 1917, Cole and others in the Hood River area were exempted from being called up to service during World War I (Anonymous 1917).

While working at the Hood River station, Cole met Arthur Lester Lovett (1885–1924), who was a state agricultural entomologist working out of the experiment station at what is now Oregon State University. While employed to research more effective use of insecticide sprayers, Lovett was also a specialist on Syrphidae (Hatch 1949). Seeing that both had an interest in Diptera, they apparently hit it off and worked together on a list of Oregon Diptera (Cole & Lovett 1921). This checklist inspired Cole to think more broadly about doing the same sort of checklist of Diptera, but for a much larger geographical area. He spent the next 50 years working toward that goal.

Although employed as an economic entomologist, and often in supporting roles there and not publishing, Cole's heart was in fly taxonomy, which he admitted was an avocation for him for almost all his life, until the late 1950s, when he devoted himself full-time to finishing

his *The Flies of Western North America*. Thus, despite having full-time jobs doing non-taxonomy, he would still find the time to visit and examine museum collections, and to collect, describe, illustrate, and publish on various families of Diptera, mostly asiloid brachycerans. Truly a man of endless energy.

In 1919, Cole took a break from his U.S.D.A. work after receiving a scholarship to attend Stanford University, and was awarded a Master's degree from there in 1921. He immediately received yet another scholarship to continue his graduate research and received his PhD from Stanford just one year later in 1922 with the thesis "A study of the terminal abdominal structures of male Diptera (two-winged flies)," which was formally published five years later (Cole 1927), replete with his illustrations of the male genitalia of dozens of families of Diptera. During this time, he was associated with the California Academy of Sciences as shown in this 1923 group photo (Fig. 6)

After receiving his PhD, Cole continued his work for the Bureau of Entomology in Washington, D.C. and in 1924 was reassigned to its citrus experimental station in Orlando, Florida, where he began focusing on citrus pest control, something he had a vested interest in. Again, although it was his paid job, few papers came out from the Florida stint, most on the natural enemies of the citrus aphid (e.g., Yothers & Cole 1924; Cole 1925). It should be mentioned that during his brief time in Washington, D.C. in 1922 and 1923, he availed himself of the excellent collections of the United States National Museum (USNM) and one of the results of his research there was his revision of the Therevidae (Cole 1923), which was based on his Master's Thesis, and improved upon with reference to the USNM collections.

While in Florida, Cole met Dorothy Gray Stonnell (1900–1993) and the two were married in Orlando on 12 December 1925. The wedding was described in detail in several newspaper accounts, both in Florida and in Cole's hometown of Redlands. Their union produced three children: Richard Stonnell Cole (1928–1989); Lewis Fillmore Cole (1932–1947); and James Morrison Cole (1930–2020). After their marriage, they made their home in Orlando but only stayed a short time before Frank was reassigned to Santa Cruz, California, in 1927. While in the Bay area, Cole was also appointed as Associate Curator in dipterology at the California Academy of Sciences. After a short stint in Santa Cruz, the government closed the station there and Cole was transferred once again in 1929—this time to a newly built Bureau of Entomology Station in Whittier in southern California (Anonymous 1929). Essentially an insect laboratory, this station's primary purpose was control of the citrus red scale and other citrus pests. There, Cole would devote the remainder of his time with the Bureau until he left Whittier and the Bureau of Entomology in 1933 to go home to Redlands.

Community Involvement

Back in his hometown, Frank immediately involved himself in community affairs and moved up the ladder in the local Elks Club, eventually attaining the top spot ("exalted ruler") in 1946–1947, while occupying various positions in the local lodge over the years including grand organist. He was also involved in the Rotary Club, of which he was president from 1933 to 1936.

Because his father was aging (he passed away only four years after Frank's return), Frank came back to Redlands to help with the family citrus business. There are several newspaper accounts of his attending numerous citrus business functions and entering and winning prizes for his oranges at the National Orange Show. In 1940, Cole was hired as Technical Advisor for the Citrus Pest Control District at the yearly salary of US$3,000 [= ca. $72,000 in 2026 currency value] (Anonymous 1940). He was employed in the citrus industry until 1954.

Keeping a focus on his community, Frank Cole served on the Redlands school board in the 1940s (and as President in 1947 and 1948) and was often seen giving lectures on the history of the Redlands area or providing little tidbits of historical information to local reporters who wrote about Redlands history.

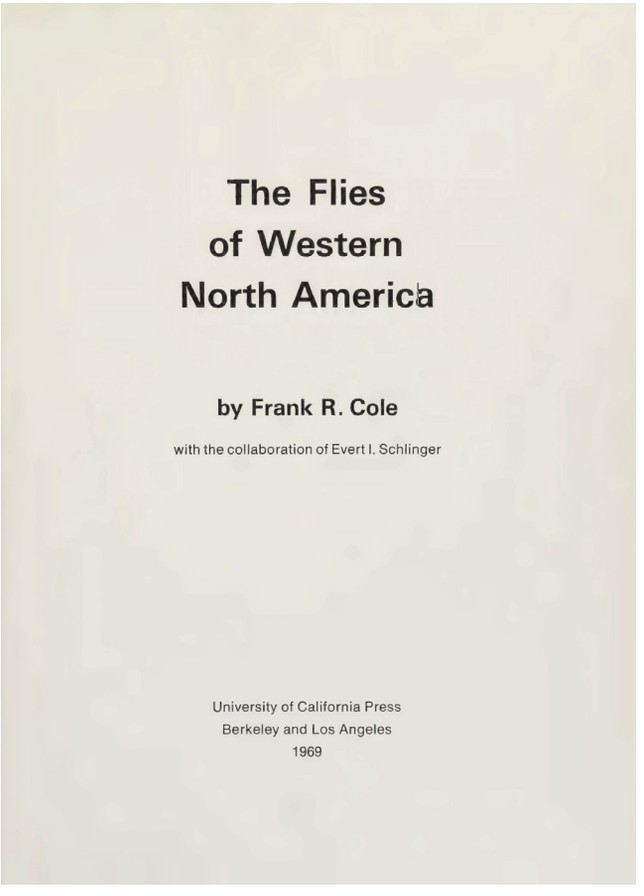


Figure 7. Title page of *Flies of Western North America*.

After attaining high scores in a competition for the position, in 1954, Cole was appointed as an illustrator with the U.S. Naval Engineering Laboratory at Port Hueneme near Oxnard, California (Anonymous 1954). Although he must have provided drawings for various Navy publications, I could not find specific examples of any.

Flies of Western North America

In 1957, Frank and his wife moved to the Bay area, living in Richmond, near the University of California at Berkeley (UCB) campus, to allow Frank to devote his time to finishing his book on western North American flies. Frank was considered as an "entomological consultant" at UCB. His sister Florence also lived in the Bay area at the time, so the move was not as harsh as it might have been without family nearby. But by this time, Frank had also made the acquaintance and friendship of many colleagues, many of whom lived or worked in the Bay area. Two of these colleagues, Evert Irving Schlinger (1928–2014) and Arthur Earl Pritchard (1915–1965), who taught in the University of California system (Schlinger at Riverside and Pritchard at Berkeley), would be immensely helpful to Frank in finishing his book project. Both had been planned at various times to co-author with Cole, but Pritchard had passed away before the book was finished. He is credited in the book as author for the Cecidomyiidae. Schlinger is listed on the title page as "with the collaboration of Evert I. Schlinger". He read the entire manuscript and revised and rewrote the Acroceridae section.

As mentioned above, the book was inspired by the Oregon checklist of Cole & Lovett (1921). It was then extended to become a checklist of West Coast Diptera, which began in 1927 and a manuscript was finished in 1932, but without funds to publish. It languished until such time that Cole could devote enough time to update and finish it; and it came with the help of National Science Foundation funding of $25,000 in 1958 plus an $8,000 extension.

The long-awaited book, Cole's *magnum opus*, finally came out



Figure 8. Grave of Frank Cole, resting alongside his wife Dorothy and their son Lewis.

in November 1969 (Fig. 7), totaling almost 700 pages including 180 illustrations provided by Cole. It dealt with ca. 8,400 species of flies found west of the Rocky Mountains. The book's publication resulted in laudatory newspaper reports announcing it, but it got mixed reviews in scientific journals, the latter of which were no doubt a great disappointment to Cole. He had spent most of his life gathering details on taxonomy, and biology, and making illustrations for so many families and species, into one work, only to have his bubble burst by reviewers who listed the many inconsistencies and typographical errors they came upon. After presenting a double-column page-long list of errors, one such reviewer, Curt Sabrosky, carefully couched his final words and gave the following:

> Many of the above criticisms are of course those of an experienced cataloguer of Diptera and nomenclaturist, and no doubt a hypercritical one [...] Nevertheless, "Flies of Western North America" is a work of magnitude, and well illustrated, and undoubtedly will stimulate much more work on the group. (Sabrosky 1970).

At 77 years of age, and with his lifelong work now behind him, Cole turned off the fly taxonomy spigot of productivity, not publishing another paper on them. As one reporter said: "When he [Cole] leaves Redlands on Sunday [23 November 1969], he'll be retiring to a quiet apartment in San Mateo — away from the flies." (Hein 1969). With his wife Dorothy, he moved across San Francisco Bay to San Mateo, where their oldest son Richard lived, and where Cole spent the next 20 years of retired life.

Frank Cole passed away, at age 95, on 13 April 1988. His gravestone (Fig. 8) is shared with the names of his wife Dorothy, and one of his sons, Lewis, who died tragically in 1947, becoming lost in the woods after walking from school and going missing. His son's remains were found three years later (Anonymous 1950). Although several newspapers across the country noted Cole's passing (e.g., Anonymous 1988a–e), incredibly, not a single obituary or notice of his passing could be found that appeared in a scientific journal written by his colleagues.

ACKNOWLEDGMENTS

I thank the late Eric Fisher for long ago answering my query if Cole was still alive. He sent me one newspaper obituary and the color photo (Fig. 1). Thanks also to archivist Seth Cotterell, California Academy of Sciences, who located the 1923 photo of Cole (Fig. 6), and for permission to use it here.

REFERENCES

Anonymous. 1917. Hood River exempt on first call. *Hood River Glacier* **1917**(26 July): 5.

Anonymous. 1929. Entomological unit moved to Whittier. *Oakland Tribune* **1929**(26 May): 45.

Anonymous. 1936a. Frank R. Cole fetes group at mountains. *The San Bernardino County Sun* **1936**(25 January): 12.

Anonymous. 1936b. Interesting stamp collection shown. Frank R. Cole of Redlands brings six albums to meeting here. *Redlands Daily Press* **1936**(6 May): 7.

Anonymous. 1940. Project gets good support from growers. Dr. Frank R. Cole gets job as Technical Advisor, will be paid $3,000 per year. *San Bernardino County Sun* **1940**(21 June): 15.

Anonymous. 1950. Bones may be those of lost Redlands boy. *Long Beach Press-Telegram* (California) **1950**(15 July): 2.

Anonymous. 1954. Cole appointed illustrator for the U.S. Navy. *Redlands Daily Facts* **1954**(20 July): 5.

Anonymous. 1988a. Obituaries. Frank R. Cole entomologist. *San Francisco Examiner* **1988**(3 May): 21.

Anonymous. 1988b. Deaths elsewhere. Frank R. Cole. *The Sacramento Bee* **1988**(5 May): 47.

Anonymous. 1988c. Frank R. Cole, 95, noted entomologist. *Delaware County Daily Times* (Pennsylvania) **1988**(5 May): 40.

Anonymous. 1988d. Frank R. Cole, entomologist. *The Flint Journal* (Michigan) **1988**(5 May): 8.

Anonymous. 1988e. Passages. Frank R. Cole. *News-Pilot* (San Pedro, California) **1988**(5 May): 2.

Baker, C.F. 1912. Prologue. *Annual Report of the Laguna Marine Laboratory* **1**: 5–9.

Cole, F.R. 1912. Some Diptera of Laguna Beach. *Annual Report of the Laguna Marine Laboratory* **1**: 150–162.

Cole, F.R. 1923. A revision of the North American two-winged flies of the family Therevidae. *Proceedings of the United States National Museum* **62**(4), 140 pp., 13 pls.

Cole, F.R. 1925. The natural enemies of the citrus aphid, *Aphis spiraecola* (Patch). *Journal of Economic Entomology* **18**(1): 219–223.

Cole, F.R. 1927. A study of the terminal abdominal structures of male Diptera (two-winged flies). *Proceedings of the California Academy of Sciences* (4) **16**: 397–499.

Cole, F.R. 1934. Citrus grown around the world. Many countries compete with California. *Redlands Daily Facts* **1934**(27 December): 4.

Cole, F.R. & Lovett, A.L. 1919. New Oregon Diptera. Proceedings of the California Academy of Sciences (4) **9**: 221–255.

Cole, F.R. & Lovett, A.L. 1921. An annotated list of the Diptera of Oregon. *Proceedings of the California Academy of Sciences* (4) **11**: 197-344.

Creel, C.W. & Rockwood, L.P. 1917. The control of the clover-flower midge. *United States Department of Agriculture, Farmer's Bulletin* **971**: 1–9.

Evenhuis, N.L. & Pape, T. (eds). 2026. Systema Dipterorum. Version 7.4. Available from: http://diptera.org/nomenclator (Accessed 12 November 2026).

Gilbert, P. 2007. *A source book for biographical literature on entomologists*. Backhuys Publishers, Leiden. vii + 694 pp.

Hatch, M.E. 1949. *A century of entomology in the Pacific Northwest*. University of Washington Press, Seattle. 43 pp.

Hein, E.S. 1969. Dr. Frank Cole's lifelong study of flies published. *Redlands Daily Facts* **1969**(21 November): 4.

Moore, F. 1970. 'With a grain of salt' by Frank and Bill Moore. *Redlands Daily Facts* **1970**(14 May): 16.

Osborn, H. 1937. *Fragments of entomological history including some personal recollections of men and events*. Published by the author, Columbus, Ohio. 394 pp.

Stone, A. 1980. History of Nearctic Dipterology. *Flies of the Nearctic Region* **1**(1): 1–62.

Yothers, W.W. & Cole, F.R. 1924. The citrus aphid—*Aphis spiraecola* Patch. *The Citrus Industry* **5**(10): 6–8, 18.

BIBLIOGRAPHY OF FRANK RAYMOND COLE

Accurate dates of publication are given for as many publications as possible. For those dates where only the month is known, the last day of the month is given suffixed "+", e.g., "[1912.05.31+]". If only the year is known, the last day of the year is given suffixed with "++", e.g., "[1926.12.31++]". Co-authors are listed at the end of the citation where those senior to Cole are indicated by being underlined, e.g., "[with Van Duzee, M.C. & Aldrich, J.M.]". Annotations in square brackets below the citation are given explaining outside sources of dating.

1912

Some Diptera of Laguna Beach. *Annual Report of the Laguna Marine Laboratory* **1**: 150–162. [1912.05.31+]

Notes on the Diptera of Laguna Beach. *Journal of Entomology and Zoology* **4**: 837–840. [1912.12.31+]

1915

[Note of *Siphona plusiae* Coq. as a parasite of the cabbage looper.] *Journal of Economic Entomology* **8**(6): 556. [1915.12.10]

1916

New species of Asilidae from southern California. *Psyche* **23**: 63–69, 3 pls. [1916.07.05]

A new species of *Exoprosopa* (Dip.). *Entomological News* **27**: 463. [1916.12.06]

1917

Notes on Osten Sacken's group '*Poecilanthrax*,' with descriptions of new species. *Journal of the New York Entomological Society* **25**: 67–80, 5 pls. [1917.03.31+]

1918

A new genus of Cyrtidae from South America (Dip.). *Entomological News* **29**: 61–64. [1918.02.02]

1919

The cyrtid genera *Thyllis* and *Megalybus*. *The Canadian Entomologist* **51**: 54–62, pl. 2. [1919.03.31]

The dipterous family Cyrtidae in North America. *Transactions of the American Entomological Society* **45**: 1–79, 15 pls. [1919.04.10]

A new Japanese species of the cyrtid genus *Opsebius*. *The Canadian Entomologist* **51**: 94–95. [1919.04.28]

New Oregon Diptera. *Proceedings of the California Academy of Sciences* (4) **9**: 221–255. [1919.08.26] [with Lovett, A.L.]

A new genus in the dipterous family Cyrtidae from South America. *Entomological News* **30**: 271–274, pl. 11. [1919.12.20]

1920

Notes on the lunate onion fly *Eumerus strigatus* (Syrphidae). *Entomological News* **31**(2): 31–35. [1920.02.07]

1921

The dipterous genus *Dolichopus* Latreille in North America. *United States National Museum, Bulletin* **116**: 1–304, 16 pls. [1921.03.31+] [with Van Duzee, M.C. & Aldrich, J.M.]

Insects of the Pribilof Islands, Alaska. Diptera from the Pribilof Islands, Alaska. *Proceedings of the California Academy of Sciences* (4) **11**: 169–177. [1921.11.02]

An annotated list of the Diptera of Oregon. *Proceedings of the California Academy of Sciences* (4) **11**: 197–344. [1921.12.14] [with Lovett, A.L.]

1922

A study of the terminal abdominal structures of male Diptera (two-winged flies). Unpublished PhD thesis, Stanford University, Palo Alto, California. iii + 80 pp., 21 pls. [1922.05.31+]

Notes on California Bombyliidae with descriptions of new species. *Journal of Entomology and Zoology* **15**[1923]: 21–26. [1922.10.02]

[Reprint received by E.E. Austen on this date; the journal issue has "June, 1923" printed on the cover.]

A contribution to the knowledge of the Hippoboscidae (Diptera Pupipara). *Parasitology* **14**: 178–205. [1922.06.30+] [with Ferris, G.F.]

1923

Notes on the dipterous family Cyrtidae. *Psyche* **30**: 46–48. [1923.04.??]

A revision of the North American two-winged flies of the family Therevidae. *Proceedings of the United States National Museum* **62**(4), 140 pp., 13 pls. [1923.05.10]

Corrections to the "Annotated list of the Diptera (flies) of Oregon". *Entomological News* **34**: 205–209. [1923.07.05]

Expedition of the California Academy of Sciences to the Gulf of California in 1921. The Bombyliidae (bee flies). *Proceedings of the California Academy of Sciences* (4) **12**: 289–314. [1923.07.10]

Expedition of the California Academy of Sciences to the Gulf of California in 1921. Diptera from the islands and adjacent shores of the Gulf of California. II. General report. *Proceedings of the California Academy of Sciences* (4) **12**: 457–481. [1923.11.06]

1924

Notes on Diptera of the syrphid genus *Sphegina*. *Entomological News* **35**: 39–44, 1 pl. [1924.02.07]

Notes on the dipterous family Asilidae, with descriptions of new species. *The Pan-Pacific Entomologist* **1**: 7–13. [1924.06.25]

The citrus aphid—*Aphis spiraecola* Patch. *The Citrus Industry* **5**(10): 6–8, 18. [1924.10.31+] [with Yothers, W.W.]

1925

The natural enemies of the citrus aphid, *Aphis spiraecola* (Patch). *Journal of Economic Entomology* **18**(1): 219–223. [1925.02.28+]

Notes on the dipterous family Therevidae. *The Canadian Entomologist* **57**: 84–88. [1925.04.28]

The control of the citrus aphid by its natural enemies. *Proceedings of the Annual Meeting of the Florida Horticultural Society* **38**: 153–158. [1925.12.31++]

1926

New facts about the citrus aphid and its natural enemies. *Proceedings of the Annual Meeting of the Florida Horticultural Society* **39**: 156–168. [1926.12.31+]

1927

A study of the terminal abdominal structures of male Diptera (two-winged flies). *Proceedings of the California Academy of Sciences* (4) **16**: 397–499. [1927.04.27]

Note on western bulb flies. *Pan-Pacific Entomologist* **4**(1): 29. [1927.09.16]

1929

Fumigation with calcium cyanide for the control of greater and lesser bulb flies. *Journal of Economic Entomology* **22**(1): 236–237. [1929.02.01]

1931

How the Whittier Laboratory can be of service to the avocado industry. *California Avocado Association Yearbook* **1931**: 100–101. [1931.12.31+]

1932

New developments in treating pecan rosette with chemicals. *Proceedings of the National Pecan Association* **31**: 71–76. [1932.12.31++]

Chemical treatment of pecan rosette. *Phytopathology* **22**(7): 595–601. [1932.07.31+]

New developments in treating pecan rosette with chemicals. *Phytopathology* **22**(12): 979–981. [1932.12.31+]

1933

Natural control of the citrus mealybug. *Journal of Economic Entomology* **26**(4): 855–864. [1933.08.01]

A comparative study of the species of *Eumerus* known as the lesser bulb flies. *Monthly Bulletin of the California Department of Agriculture* **22**: 142–152. [1933.12.31+] [with Latta, R.]

1934

Citrus grown around the world. Many countries compete with California. *Redlands Daily Facts* **1934**(27 December): 4. [1934.12.27]

1938

The genera *Lasiopogon* Loew and *Alexiopogon* Curran in North America (Diptera-Asilidae) [part]. *Entomologica Americana* **18**: 1–40. [1938.08.10] [with Wilcox, J.]

The genera *Lasiopogon* Loew and *Alexiopogon* Curran in North America (Diptera-Asilidae) [concl.]. *Entomologica Americana* **18**: 41–90, 3 pls. [1938.08.12] [with Wilcox, J.]

1952

New bombyliid flies reared from anthophorid bees (Diptera: Brachycera). *The Pan-Pacific Entomologist* **28**: 126–130. [1952.07.31]

1957

New bombyliid flies from Chiapas, Mexico (Diptera). *The Pan-Pacific Entomologist* **33**: 200–202. [1957.12.09]

1959

A new name proposed in the genus *Thereva* (Diptera: Therevidae). *The Pan-Pacific Entomologist* **35**: 148. [1959.08.18]

1960

Stiletto-flies of the genus *Furcifera* Kröber (Diptera: Therevidae). *Annals of the Entomological Society of America* **53**: 160–169, 2 pls. [1960.03.31]

New names in Therevidae and Bombyliidae (Diptera). *The Pan-Pacific Entomologist* **36**: 118. [1960.08.09]

1964

The genus *Mallophora* and related asilid genera in North America. *University of California Publications in Entomology* **36**(2): 43–100. [1964.12.31++] [with Pritchard, A.E.]

History of the Redlands Elks Lodge No. 583: Golden Anniversary. Privately published/Lodge Records, Redlands, California. [1964.12.31++]

1965

Family Therevidae. *In*: Stone, A., Sabrosky, C.W., Wirth, W.W., Foote, R.H. & Coulson, J.R., A catalog of the Diptera of America north of Mexico. *United States Department of Agriculture, Agricultural Handbook* **276**: 348–354. [1965.08.23]

1968

Two new species of *Spilomyia* Meigen (Syrphidae: Diptera). *The Pan-Pacific Entomologist* **44**: 211–214. [1968.10.21] [with Nayar, J.L.]

1969

Carreraomyia, new name for *Carreraia*. *Journal of the Kansas Entomological Society* **41**[1968]: 543. [1969.01.10]

A new species of *Criorhina* Meigen from California (Diptera: Syrphidae). *The Pan-Pacific Entomologist* **44**[1968]: 285–286. [1969.01.11] [with Nayar, J.L.]

A new species of *Mallota* from North America (Diptera: Syrphidae). *The Pan-Pacific Entomologist* **44**[1968]: 287–289. [1968.01.11] [with Nayar, J.L.]

Two new species of *Eristalis* Latreille from western North America (Diptera: Syrphidae). *The Pan-Pacific Entomologist* **44**[1968]: 294–296. [1968.01.11] [with Nayar, J.L.]

The flies of western North America. Berkeley & Los Angeles. xii + 693 pp. [1969.11.21*] [with Schlinger, E.I.]
[Date noticed in *The Redlands Daily Facts* newspaper.]

APPENDIX I. New taxa of Diptera proposed by Frank R. Cole

Cole proposed ten new genera in four families with 80% validity and he proposed 220 new species in 25 families with 75.91% validity. All taxa listed below are as originally proposed giving taxon, authorship and year. Families are in boldface; genera in bold italics; species in italics. Families follow current classification (Evenhuis & Pape 2026).

GENERA - 10

Acroceridae - 2
Camposella Cole, 1919
Villalus Cole, 1918

Asilidae - 4
Carreraia Cole & Pritchard, 1964
Carreraomyia Cole, 1969
Parataracticus Cole, 1924
Promachella Cole & Pritchard, 1964

Scenopinidae - 1
Caenotus Cole, 1923

Therevidae - 3
Chromolepida Cole, 1923
Epomyia Cole, 1923
Pherocera Cole, 1923

SPECIES - 220

Acroceridae - 17
Acrocera
arizonensis Cole, 1919
convexa Cole, 1919
hubbardi Cole, 1919
Camposella
insignata Cole, 1919
melanderi Cole, 1919
Ocnaea
coerulea Cole, 1919
loewi Cole, 1919
schwarzi Cole, 1919
Ogcodes
albicinctus Cole, 1919
borealis Cole, 1919
marginatus Cole, 1919
niger Cole, 1919
rufoabdominalis Cole, 1919
Opsebius
hyalinus Cole, 1919
nipponensis Cole, 1919
Pterodontia
johnsoni Cole, 1919
Villalus
chilensis Cole, 1918

Asilidae - 56
Ablautus
squamipes Cole, 1924
Carreraia
acapulquensis Cole & Pritchard, 1964
alpuyeca Cole & Pritchard, 1964
Chrysoceria
pollenia Cole, 1919
Cophura
cyrtopogona Cole, 1919
highlandica Cole, 1916
Cyrtopogon
anomalus Cole, 1919
auratus Cole, 1919
infuscatus Cole, 1919
nitidus Cole, 1924
perspicax Cole, 1919
thompsoni Cole, 1921
Dioctria
vertebrata Cole & Lovett, 1919
Holopogon
atrifrons Cole, 1924
Lasiopogon
albidus Cole & Wilcox, 1938
aridus Cole & Wilcox, 1938
atripennis Cole & Wilcox, 1938
californicus Cole & Wilcox, 1938
canus Cole & Wilcox, 1938
carolinensis Cole & Wilcox, 1938
chaetosus Cole & Wilcox, 1938
cinereus Cole, 1919
coloradensis Cole & Wilcox, 1938
currani Cole & Wilcox, 1938
dimicki Cole & Wilcox, 1938
drabicolum Cole, 1916
gabrieli Cole & Wilcox, 1938
hinei Cole & Wilcox, 1938
littoris Cole, 1924
martinensis Cole & Wilcox, 1938
oklahomensis Cole & Wilcox, 1938
olympia Cole & Wilcox, 1938
pacificus Cole & Wilcox, 1938
pugeti Cole & Wilcox, 1938
puyallupi Cole & Wilcox, 1938
shermani Cole & Wilcox, 1938
slossonae Cole & Wilcox, 1938
testaceus Cole & Wilcox, 1938
willametti Cole & Wilcox, 1938
yukonensis Cole & Wilcox, 1938
zonatus Cole & Wilcox, 1938
Leptogaster
aridus Cole, 1919
Lestomyia
montis Cole, 1916
redlandae Cole, 1916
Lissoteles
vanduzeei Cole, 1923
Mallophorina
brunnea Cole, 1964
durangoensis Cole & Pritchard, 1964
flavida Cole, 1964
lascrucensis Cole, 1964
martinorum Cole, 1964
willistoni Cole, 1964
Metapogon
pictum Cole, 1916
setigerum Cole, 1919
Nicocles
lomae Cole, 1916

Parataracticus
rubidus Cole, 1924
Stenopogon
mexicanus Cole, 1923

Bombyliidae - 50
Acreotrichus
maculipennis Cole, 1922
Amphicosmus
vanduzeei Cole, 1922
Anthrax
autumnalis Cole, 1917
californicus Cole, 1917
cintalapa Cole, 1957
macula Cole, 1919
mexicanus Cole, 1957
nidicola Cole, 1952
nigripennis Cole, 1917
pilosa Cole, 1917
signatipennis Cole, 1917
Aphoebantus
argentifrons Cole, 1923
borealis Cole & Lovett, 1921
marginatus Cole, 1923
Bombylius
flavipilosus Cole, 1923
pendens Cole, 1919
silvus Cole & Lovett, 1919
Eclimus
celer Cole & Lovett, 1919
Epacmus
nitidus Cole & Lovett, 1921
Exoprosopa
atripes Cole, 1923
celer Cole, 1916
hyalipennis Cole, 1923
tiburonensis Cole, 1923
Geron
alba Cole, 1923
insularis Cole, 1923
niveoides Cole, 1923
Metacosmus
nitidus Cole, 1922
Rhabdopselaphus
albopilosus Cole, 1923
pygmaeus Cole, 1923
Spongostylum
argentatus Cole, 1919
Villa
albicincta Cole, 1923
albicollaris Cole, 1923
apicola Cole, 1952
arenicola Cole, 1923
ariditata Cole, 1923
chromolepida Cole, 1922
cinerea Cole, 1923
flavicincta Cole, 1923
flavipilosa Cole, 1923
meridionalis Cole, 1923
nitida Cole, 1923
nivea Cole, 1923
peninsularis Cole, 1923
psammina Cole, 1960
quadripunctata Cole, 1923
sini Cole, 1923
sonorensis Cole, 1923
tricellula Cole, 1952
Villa (continued)
vanduzeei Cole, 1923
vastitita Cole, 1923

Canacidae - 1
Tethina
spinulosa Cole, 1923

Ceratopogonidae - 1
Hartomyia
mallochi Cole, 1921

Coelopidae - 1
Coelopa
anomala Cole, 1923

Dolichopodidae - 3
Dolichopus
bakeri Cole, 1912
Hercostomus
occidentalis Cole, 1912
Parathalassius
melanderi Cole, 1912

Ephydridae - 2
Allotrichoma
litoralis Cole, 1912
Parydra
metallica Cole, 1921

Heterocheilidae - 1
Dryomyza
hannai Cole, 1921

Hippoboscidae - 3
Lipoptena
traguli Ferris & Cole, 1922
Melophagus
montanus Ferris & Cole, 1922
Ornithoica
promiscua Ferris & Cole, 1922

Keroplatidae - 1
Platyura
nigra Cole, 1919

Lauxaniidae - 1
Lauxania
pacifica Cole, 1912

Micropezidae - 1
Micropeza
flaviventris Cole, 1923

Milichiidae - 1
Milichiella
nigrella Cole, 1912

Mycetophilidae - 4
Boletina
atra Cole, 1923
Dziedzickia
immaculata Cole, 1919
oregona Cole, 1919
Tetragoneura
quintana Cole, 1921

Mydidae - 1
Mydas
californicus Cole, 1969

Pipunculidae - 1
Pipunculus
sonorensis Cole, 1923

Platypezidae - 1
Agathomyia
lutea Cole, 1919

Scatopsidae - 1
Scatopse
californica Cole, 1912 [as *californiana* in figure caption; = incorrect original spelling]

Scenopinidae - 3
Caenotus
inornatus Cole, 1923
minutus Cole, 1923
Pseudatrichia
insulana Cole, 1923

Stratiomyidae - 3
Euparyphus
lagunae Cole, 1912
Nemotelus
rufoabdominalis Cole, 1923
Stratiomyia [sic]
atra Cole, 1919

Syrphidae - 12
Criorhina
rufocaudata Nayar & Cole, 1969
Eristalis
californicus Nayar & Cole, 1969
vandykei Nayar & Cole, 1969
Mallota
powelli Nayar & Cole, 1969
Pterallastes
borealis Cole, 1921
Sphegina
bridwelli Cole, 1924
melanderi Cole, 1924
nigrimana Cole, 1924
punctata Cole, 1921
vittata Cole, 1924

Spilomyia
banksi Nayar & Cole, 1968
oregonensis Nayar & Cole, 1968

Tephritidae - 3
Aciura
maculata Cole, 1919
Baryplegma
maculipennis Cole, 1923
Eurosta
pallida Cole, 1923

Therevidae - 45
Chromolepida
bella Cole, 1923
Chromolepida (continued)
mexicana Cole, 1923
Dialineura
willistoni Cole, 1965
Epomyia
bella Cole, 1923
Furcifera
brazilanus Cole, 1960
hardyi Cole, 1960
kroeberi Cole, 1960
Pherocera
albihalteralis Cole, 1923
flavipes Cole, 1923
nigripes Cole, 1923
signatifrons Cole, 1923
Psilocephala
albertensis Cole, 1925
amplifrons Cole, 1925
argentifrons Cole, 1923
arizonensis Cole, 1923
canadensis Cole, 1923
cinerea Cole, 1923
flavipennis Cole, 1923
flavipilosa Cole, 1923
frontalis Cole, 1923
fuscipennis Cole, 1923
latifrons Cole, 1923
occidentalis Cole, 1923
pollinosa Cole, 1923
signatipennis Cole, 1923
subrufa Cole, 1923
tepocae Cole, 1923
Tabuda
borealis Cole, 1923
Thereva
bakeri Cole, 1923
bimaculata Cole, 1923
borealis Cole, 1923
brunnea Cole, 1923
cinerascens Cole, 1923
cockerelli Cole, 1923
flavipilosa Cole, 1923
foxi Cole, 1923
macdunnoughi Cole, 1925
nana Cole, 1959
nanella Cole, 1960
neomexicana Cole, 1923
nigripilosa Cole, 1923
pacifica Cole, 1923
pseudoculata Cole, 1923
pygmaea Cole, 1923
vanduzeei Cole, 1923

Ulidiidae - 6
Acrosticta
mexicana Cole, 1923
tepocae Cole, 1923
Euxesta
compta Cole, 1912
Notogramma
purpuratum Cole, 1923
Tetanops
apicalis Cole & Lovett, 1921
Tritoxa
pollinosa Cole, 1919