



**Southern California Association of  
Marine Invertebrate Taxonomists**

3720 Stephen White Drive  
San Pedro, California 90731

September 1984

Vol. 3, No. 6

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Next Meeting:	October 15, 1984
Specimen Exchange Group:	Natantian decapods
Topic Taxonomic Group:	Oedicerotidae and Liljeborgiidae

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7.*  
MINUTES FROM SEPTEMBER 10, 1984

Additional Financial Support: We have submitted a proposal to ARCO requesting funding support. ARCO became aware of us through Chevron (who has pledged \$2500 to SCAMIT) and appears interested in helping us. Perhaps in the next months we'll have good news from ARCO?

This Newsletter Has Been Brought to You By...: Dale Straughan has generously offered to produce this newsletter for us. We have money to spend on professional services for the newsletter from the increase dues, and may have more if the Chevron pledge and ARCO proposal come through. Therefore things are looking good for forthcoming newsletters.

New Afternoon Format: We discussed ways of improving the cohesiveness of the afternoon sessions at the meetings. Basically we decided that one person would chair the session and a second person would help by preparing specimens for viewing. The format was tried with great success. We had the best meeting to date thanks to Leslie Harris' excellent preparation and well led discussion combined with the new format which utilized Scott Johnson who prepared the specimens and the Cabrillo video set-up with two large color monitors.

Access to SCAMIT Collections: The SCAMIT literature and voucher collections are still in their infancy, but what there is (and will be) are available for members to use. If you want to use either the literature or voucher collection, call Cathy Crouch at Cabrillo Marine Museum, 548-7562.

What's Happening: A new feature of the newsletter which will announce any talks or publications by SCAMIT members. The first announcement includes four participating members who will be presenting papers at the WSN meeting at Denver in December. These people will also give sneak previews of their papers at SCAMIT meetings between now and December.

Dr. John Dorsey and Tony Phillips - A New Species of *Ehlersia* Quatrefages 1865 (Polychaeta: Syllidae) from Southern California with Comments on Spinigerous Setae in this Group.

Sue Williams - Taxonomic Notes on some Ampharetidae (Polychaeta) from Southern California.

Karen Green - A Revision of the Genus *Sonatsa* (Maldanidae: Polychaeta).

Nikon Presentation - Barbara Berham and Nicco from A.G. Heinz Co gave a nice presentation on the different types of scopes (stereo and compound), how to adjust them and how to take photographs. They distributed fliers with basic set-up and maintenance guidelines which are reprinted in this newsletter.

List of August 13, 1984 Voucher specimens:

AHF23 *Dodecaceria fewkesi*  
PL48, SCCWRP42 *Caulleriella gracilis*  
AHF21 *Cirriiformia luxuriosa*  
LACO33 *Dodecaceria concharum*  
HYP33 *Chaetozone corona*

List of September 10, 1984 Voucher Specimens:

PL50 *Brada villosa*  
AHF24 *Brada pluribranchiata*  
AHF25, LACO36 *Flabelliderma commensalis*  
PL49, HYP34 *Pherusa neopapillata*

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Travels with Olga:  
24 Queensberry Place SW 7  
21 July 1939

Dear Frieda and Chauncey: After five days in London I am still dazzled and confused at its size, and usually unable to find what I am after. I have spent hours over maps and transportation routes, and London is still an enigma. It is seemingly a city built into a fourth dimension; the fourth, I would say, is its history. There are not only streets (including Place, Road, Avenue) and Mews (a glorified alley), and courts (dead end blind streets that turn in at unexpected places), but also "closes", in which a small section is shut off from view by a narrow, roofed arch, and once you enter it and pass through a long, dark way, you may encounter dozens of little



shops, with several streets, or at least, named places. Or a court will consist of a whole series of blind ways leading in from one passage each called by a different name. The streets themselves are very crooked and crisscrossed. Consequently a street is never, or seldom, more than a few blocks long. Piccadilly is one of the longer, but it is short. Pall Mall, the Strand, Fleet Street, and a lot of other famous streets are all very short running into other named streets. Thus, street numbers are never high. If you see one going into the one-hundreds, it is most unusual. I often think of Los Angeles in this respect, where the numbers go up to ten thousands!

I have been working all week at the Br. Mus. Nat. Hist. Working conditions are ideal. I am given many priveleges and Mr. Monro is very helpful. We have talked many hours on Chaetopods,- the first intelligent conversations I have ever BEEN ABLE TO HAVE with anyone on this group. But as I have told you, there is no American authority on this group, and not more than a dozen in the world. I am fortunate to start at the Br. Mus., for undoubtedly this is the best equipped institution in the whole world. I have been surprised all day today while working in the stacks of the zoology libraries how complete they are, and how easily books are found. I wish I had a year here in the libraries. But from another standpoint, I could not stand a year of it.

30/mo  
 London is the most expensive city I have ever lived in. The cost of living is exorbitantly high,- prices are "war prices". I am paying 1 pound ten a week for a room and breakfast. In terms of American money, that is \$7.50 a week. Lunches and dinners I must get out, and they are not readily obtained. The common American restaurant system is totally lacking. There are seemingly two kinds of places here,- the expensive, ornate restaurant, and the deucedly poor "snack bar". The latter serves only cold things (do not even prepare hot toast), and drinks are still an enigma to me. The big English drink is tea (it is what I get for breakfast). Then there is a pale tan hot drink, served in a glass, called coffee-milk, a small dash of coffee in a glass of hot milk. Coffee is almost prohibitive, that is, good coffee. Chicory is commonly served, with or for coffee. The reasons for these high prices are obvious when one visits food stores. Thus, for example, a peach- 16¢ to 18¢ each, a muskmellon, 41¢, a pound of coffee, 65¢- 75¢; meats are very high. The most reasonable articles are little pastries. A dish of ice cream, by the way, is a shilling (25¢), or over. (I never eat it). From all of this you will think I am displeased. On the contrary, I find London one of the most interesting places I have ever encountered. And the people are charming, almost disarmingly so. The average Londoner, whether he be rich or poor, enjoys his city with its many beautiful parks, and the environs. One does not need much money if a bicycle is at hand. And these are everywhere. London has many automobiles, and taxi-cabs, but London walks. Consequently, one sees healthy, vital people, little excess fat, and



bright eyes. I have not seen the rosy, apple-like cheeks that were common in Glasgow, but there the air was more brisky. London has had much rain since I have been here. They are not always gentle showers. Often there are heavy peals of thunder. If the sky gets dusky, it is but a few minutes before it pours down in sheets. Just as quickly everyone is under his raincoat or umbrella.

It is cool, even though past the middle of July. I would say as cool as, or colder than, Berkely. The long ocean voyage gave us on board a good opportunity to get hardened. Except for a week in the tropics, the air was always quite chilly and windy. By virtue of that long voyage, I seem to be much farther from the States than if had taken a fast passenger liner from New York. But the smaller boat was much to be preferred.

It is difficult to plan my time here to make the most of it. These numerous, heavy rains dampen both one's ardor and one's speed of propulsion. Clothes are quickly ruined and shoes fall to pieces. London prices are far higher than those in Los Angeles. Insofar as I have seen them, that statement applies to everything.

Customs are less bewildering now, but I dare say that by the time I am at ease, it will be time to move on. Left-hand traffic still confuses me, also the money system; 12 pence in a shilling 20 shillings in a pound, and the florin and half crown pieces (2 and 2½ shillings respectively), (or 50 and 62¢) are likewise so. Paper money comes fortunately in only two kinds,- the ten-shilling note (brown, \$2.50), and the pound note (green, \$5.00). The common currency is coins. When one of these huge pennies drops, it really can be heard.

Preparations for war are everywhere obvious. The letters commonly seen, ARP (Air Raid Precaution), enlist for your country, and other patriotic slogans. Many shops show military uniforms, or other regalia. The newspapers, however, do not carry the lurid and blasting headlines of the American papers. On the whole, they are pacifying or silent on the issue. A match of cricket is of much greater interest.

Expect to be in London at least through August, undoubtedly at this Queensberry address.

Best wishes to you both.



SCAMIT Code: AHF23

Date examined: August 13, 1984

Literature:

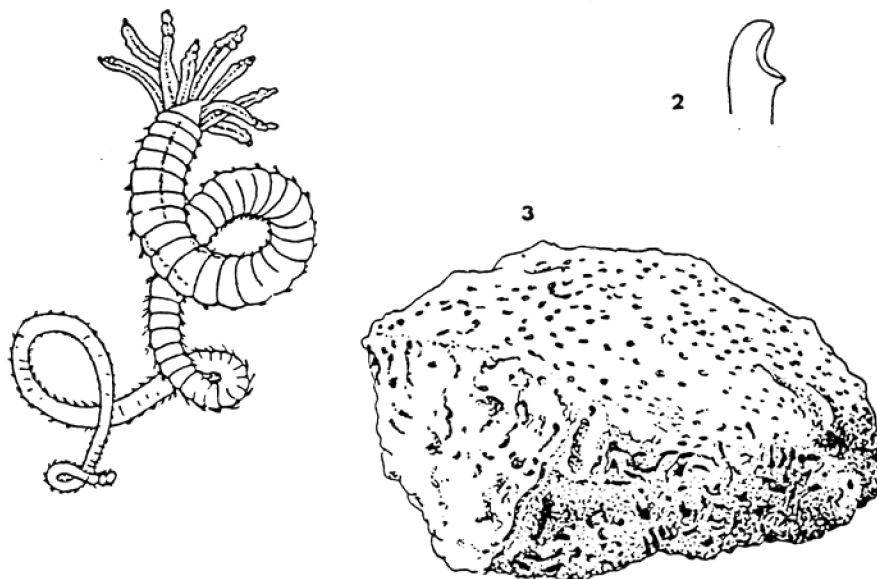
Hartman, O. 1969. Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California Press, Los Angeles, CA: 1-812.

Diagnostic Characters:

Excavate acicular setae present in both rami in median and posterior segments. Body generally dark. Constructs calcareous matrices of tubes. Color dark green to brownish black, releases bright green color in aqueous and alcohol solutions. Length of body 25 to 40 mm; width about 1 mm, segments number to 130; body tumid, tapers posteriorly (fig. 1). Prostomium bluntly conical, without eyes. A pair of long, thick palpi and first pair of lateral branchiae on first setiger, the palpi thicker and grooved. Branchiae present on 3 to 11 segments, decrease in length posteriorly. Capillary setae in notopodia and neuropodia of anterior and middle segments, each minutely dentate at cutting edge. Thick acicular neurosetae first from setiger 9-12, each distally spoon-shaped (fig. 2) continued to end of body. Similar but smaller notosetae first present farther back, and continued to end; capillary setae absent posteriorly. Constructing calcareous tubes in compact masses (fig. 3) in littoral rocky zones. Mature individuals in one colony of one sex; sexual reproduction followed by autotomy and regeneration to form entire colony. Adults mature gradually, with larval development proceeding throughout the year. Fertilized ovum hatches as ciliated trochophore.

Related species and character differences:

Separable from *D. concharum* Oersted, 1843 primarily by habitat. *D. concharum* bores in calcareous shells.

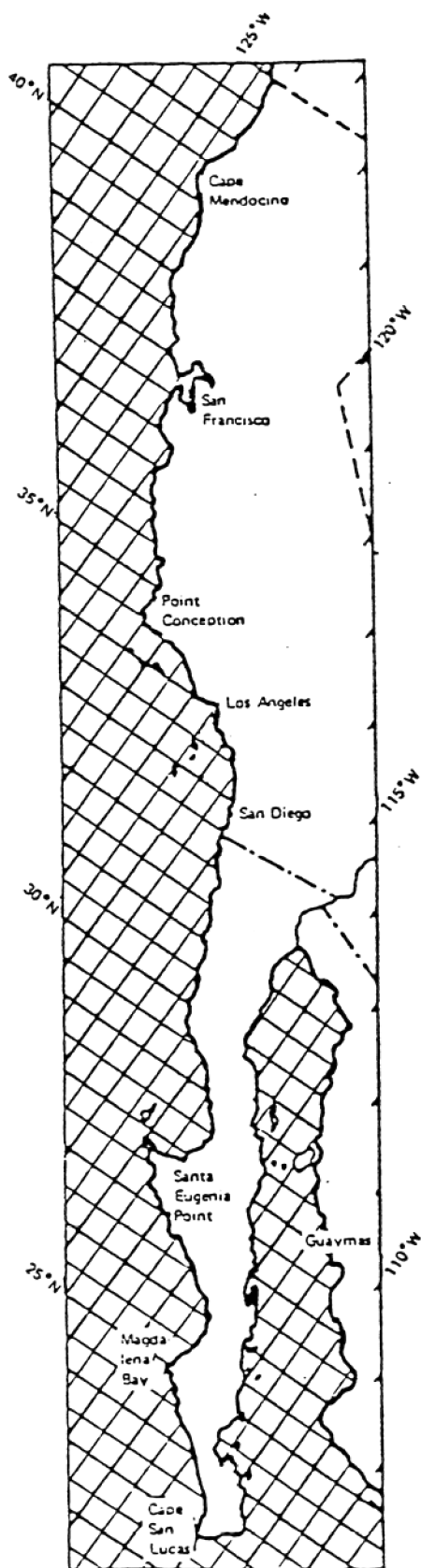


Species: *Dodecaceria fewkesi* Berkeley and Berkeley, 1954 Vol. 3, No. 6

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Distribution:

Western Canada south to southern California, intertidal to 10 fms in rock habitats.



SCAMIT Code: PL48, SCCWRP42

Date examined: August 13, 1984

Literature:

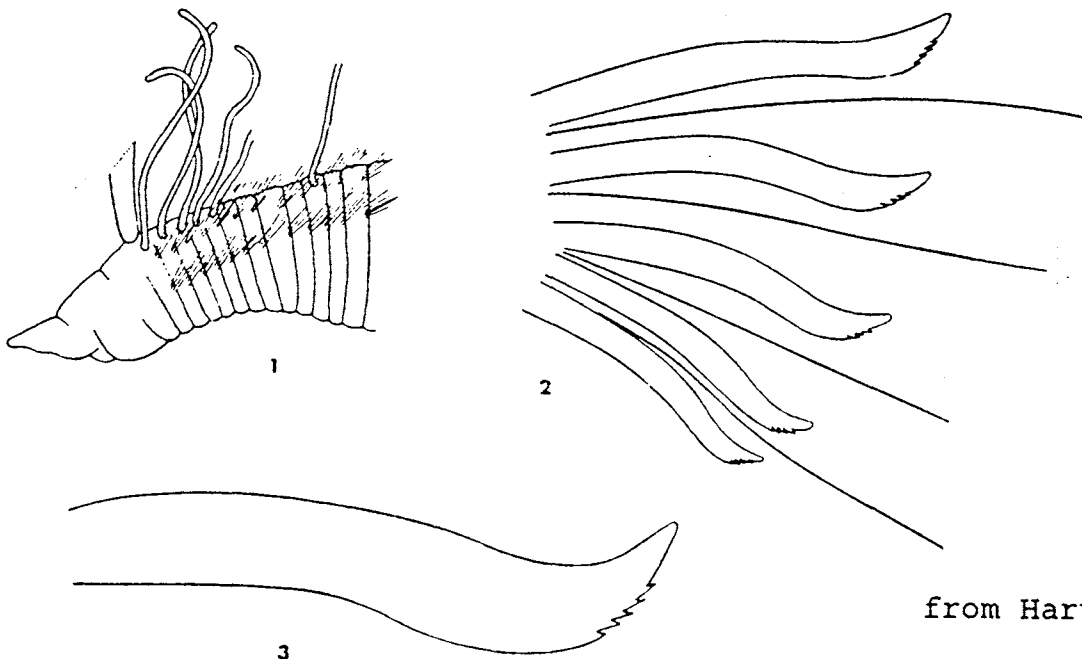
Hartman, O. 1969. Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California Press, Los Angeles, CA: 1-812.

Diagnostic characters:

Setae capillary through about 35 segments. Neuropodial spines alternating with capillaries occur in groups of no less than 4, number 5 over a great many segments, and are characteristically arranged in a fan. Spines are vaguely sigmoidal, finely dentate distally. Notopodial spines begin fan posteriorly, are as thick as neuropodial, but are smooth and straight, and generally longer. Length 10-12 mm; width to 2 mm; setigers number more than 100. Body long, inflated through first 34 segments, then slender, cylindrical, becoming depressed far back and ending in a dorsal anal pore and small midventral lobe. Prostomium triangular, pointed, lacks eyes (fig. 1), merging into smooth buccal region. Paired first palpi thicker than first branchiae, both inserted on setiger. Branchiae inserted immediately above notopodia throughout, but absent from most posterior segments. Parapodia lateral in first few segments, then dorsolateral through inflated region, and again lateral farther back. All setae in 30-35 segments long, slender capillary, the notosetae the longer; then acicular hooks in neuropodia, come to number 4-8 in a row (fig. 2) alternating with slender capillaries; hooks diminish in size ventrally. Distal end hook falcate with dentations (fig. 3). Notosetae straight throughout, far posterior ones are thicker, shorter, spine-like.

Related species and character differences:

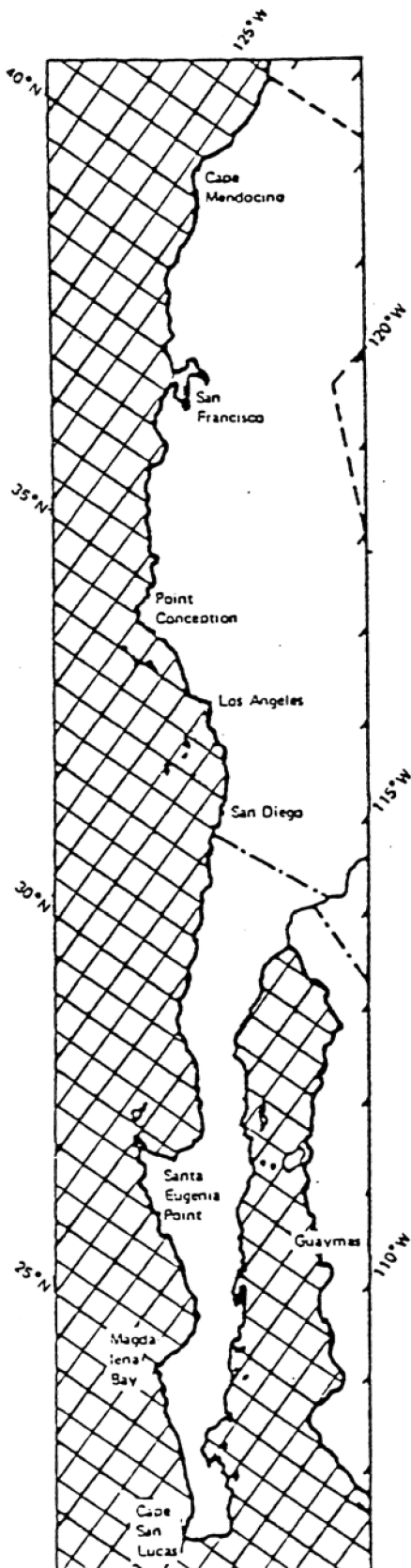
This species should not be confused with other species.



from Hartman, 1969

Distribution:

Southern California, in shelf and slope depths, in fine sand; in offshore canyons, in 542-914 m.





SCAMIT Code: AHF21

Date examined: August 13, 1984

Literature:

Moore, P. 1904, New Polychaeta from California. Proc. Acad. Nat. Sci. Pa. 56 : 484-503.

Hartman, O. 1969, Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California Press, Los Angeles, CA: 1-812

Diagnostic charaters:

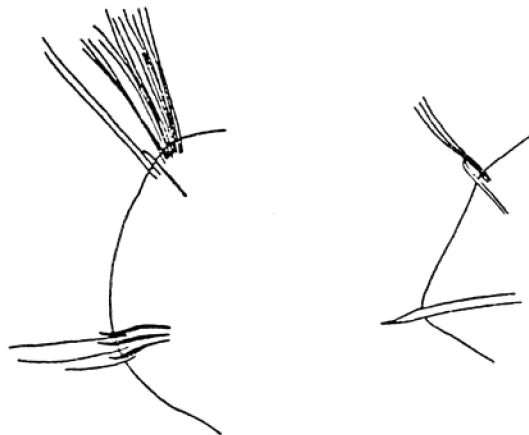
Transverse row of tentacular cirri present on setiger 4 or 5. Color drab yellow to reddish brown, with black spines. Length 60-100 mm; width to 4.5 mm in anterior third of body; setigers 300-400. Body linear with dorsum arched and ventrum concave. Prostomium rounded in front, wider than long, without eyes. Buccal region triannulate, inflated, about twice as long as prostomium. Segments much wider than long, uniannulate. Dorsal tentacles form a dense tuft on setiger 4, number 12-14 pairs. Branchiae present from first setiger, usually a pair to a segment, the first inserted immediately above notopodium, and increasingly higher to be inserted nearer middorsum than to notopodia in posterior segments; branchiae usually not coiled. Parapodia small, papillar, with only capillary setae in first 30 segments. Dark to black spines (fig. 1) in neuropodia from setiger 31, and in notopodia from about setiger 50, number 1-3 in a series, accompanied by capillary setae in all notopodia but not in posterior neuropodia. Dark spines may number only one in a ramus (fig. 2) in posterior neuropodia.

Variability:

Dark spines noted in Moore's and Hartman's descriptions do not develop until worms are older.

Related species and character differences:

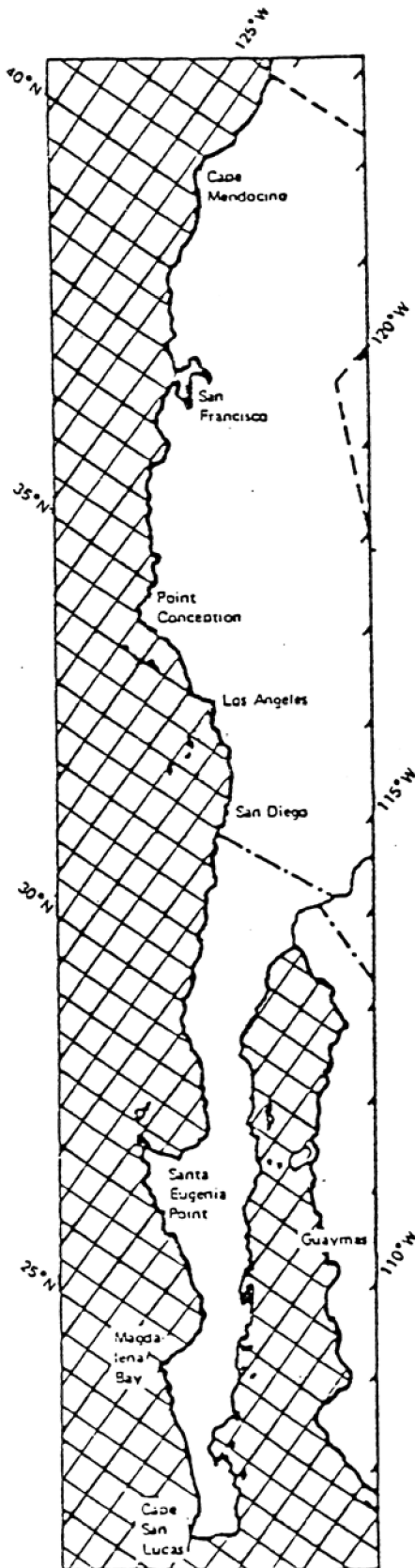
*Cirriiformia spirabanchia* (Moore, 1904)- tentacular cirri are on setiger 6 or 7. *Cirriiformia tentaculata* Montague, 1908 is a European species that does not occur in this area.



from Hartman, 1969

Distribution:

Central and southern California, intertidal to 10 fms, in rocky and mixed sediments.



SCAMIT Code: LAC033

Date examined: August 13, 1984

Literature:

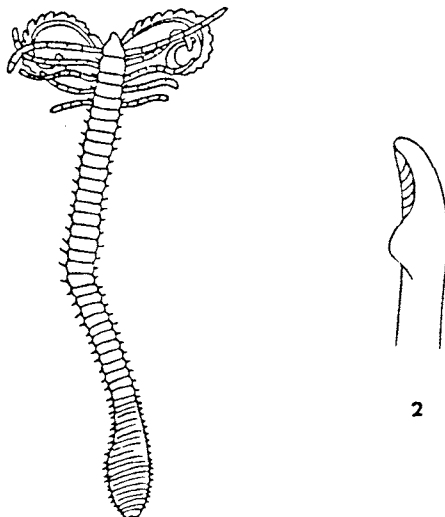
Fauvel, P. 1927. Polychaètes Sedentaires. Addenda au Errantes, Archiannélides, Myzostomaires. Faune de France, 16: 1-494.  
Hartman, O. 1969, Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California Press, Los Angeles, CA: 1-812.

Diagnostic characters:

Excavate acicular setae present in both rami in median and posterior segments. Body generally dark. Bores in calcareous shells. Branchiae on set 3-5. Body dark greenish brown to black; subcylindrical, truncate (fig. 1). Length 20-50 mm; width about 2 mm; setigers number 45-80. Prostomium small, triangular, without eyes; with a pair of nuchal organs near posterior end. Buccal segment short, triannulate, with a pair of large, thick, longitudinally grooved palpi surpassing branchiae in length and thickness. Paired branchiae present on first 3-5 setigers, each slender, filamentous, decrease in length posteriorly. First 6-7 setigers with capillary setae, the notosetae the longer. Thick, distally excavate spines present in both rami in median and posterior segments, the tip spoon-shaped (fig. 2); accompanied with capillary setae. Posterior end of body somewhat inflated, tapers to a blunt pygidium without appendages. Penetrating calcareous shells and rocks, in littoral zone.

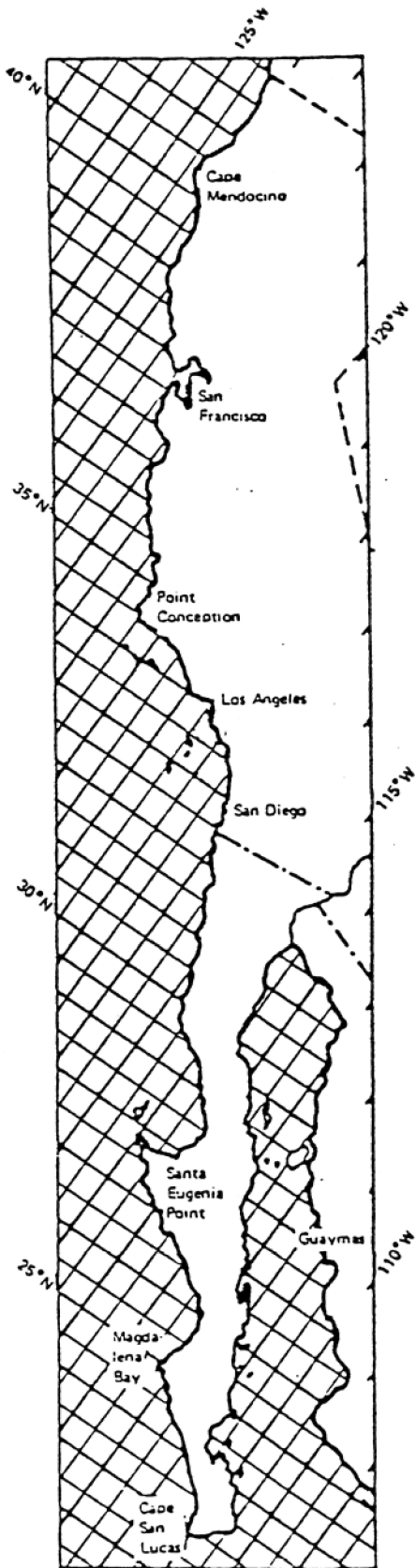
Related species and character differences:

Separable from *Dodecaceria fewkesi* Berkeley and Berkeley, 1954 primarily by habitat. *D. fewkesi* constructs calcareous matrices of tubes. If a large number of branchiae are present (on setigers 3-11) this character may also be used to differentiate the two species.



Distribution:

Western Canada to southern California,  
in intertidal rocky areas; cosmopolitan.



SCAMIT Code: HYP33

Date examined: August 13, 1984

Synonymy:

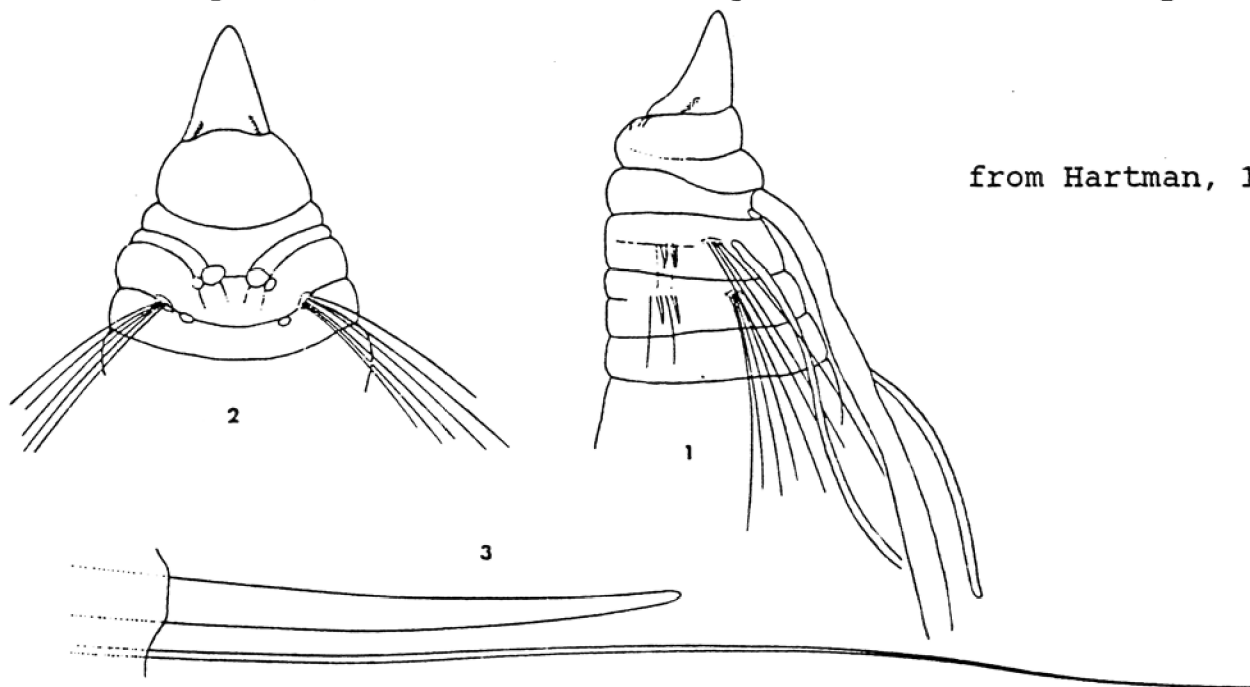
*Chaetozone spinosa corona*

Literature:

Berkeley, E. and C. Berkeley, 1941. On a collection of Polychaeta from southern California. Bull. So. Calif. Acad. Sci. 40: 16-60.  
Hartman, O. 1969. Atlas of Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California Press Los Angeles, CA: 1-812.

Diagnostic characters:

Neuropodial spines from setiger one, number 6-9 in a fascicle, are straight and entire. Lateral eyes present. Segments number 50-60. Body pale, with black eyes; thickest in anterior third, tapering to slender tail. Length 18-25 mm; segments number 50-60. Prostomium acutely pointed in front, directed forward, with a pair of transversely elongated eyes at sides (fig. 1). Buccal region divided into a longer anterior and a shorter posterior ring. Third visible ring short, with bases of the thick, paired palpi, dorsally (fig. 2) and the first branchiae immediately behind. Next segment longer, with long notosetal fascicles, and second pair of branchiae. Third segment the first with biramous parapodia, the notopodia resemble the first and neuropodia with 1-2 thick spines and slender capillary setae. Acicular, yellow spines continue posteriorly in neuropodia, increasing to 6-9 in a row, and gradually appear in notopodia in middle segments, so that the spines in a segment form a partial cincture of body segments in posterior third of body. Spines are distally straight (fig. 3) and much thicker than the accompanying capillary setae. Lateral branchiae inserted directly above notopodia; branchiae absent in posterior third of body.



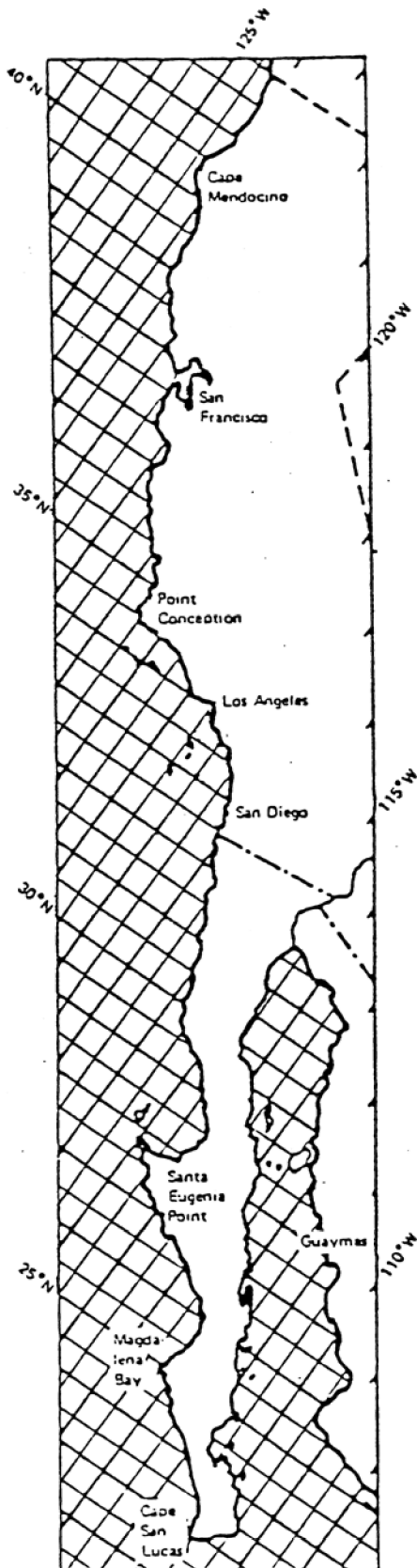
Species: *Chaetozone corona* Berkeley and Berkeley, 1941, Emended

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Related species and character differences:  
This species is clearly differentiated from all other cirratulids by the above diagnostic characters. Hartman's description and figure on page 235 of the Atlas are incorrect in that they have neuropodial spines starting on setiger two. Hartman's key to the species of *Chaetozone*, however, is correct.

Distribution:

Southern California, in shelf and canyon depths to 119 m, in silt and mud.



SCAMIT Code: LAC035

Date examined: August 13, 1984

Literature:

- Hartman, O. 1961. Polychaetous Annelids from California. Allan Hancock Pacific Exped. 22:115.  
Hartman, O. 1969. Atlas of the Sedentariate Polychaetous Annelids from California. Allan Hancock Foundation, University of Southern California Press, Los Angeles, CA: 259.  
Fauchald, K. 1977. The polychaete Worms. Science Series 28, Natural Hist. Mus. of Los Angeles Co. : 30.

Diagnostic Characters:

A small species (<10mm) with a distinctive body form having a slender anterior region abruptly broadening in the median and posterior regions (fig. 1).

Variability:

Hartman (1961) described *R. maculatus* as having only two kinds of setae; capillary notopodial setae (fig. 2) and falcate neuropodial setae with delicate marginal serrations along one edge (fig. 3). All specimens taken off Palos Verdes during the L.A. Co. Sanitation Districts' monitoring surveys (approx 50 specimens in 15 years) have at least two additional setal types. In the posterior region, the notopodial spinigers are accompanied by 1 or 2 stout spines with strong marginal serrations along one edge (fig. 4). The posterior neuropodial falcigers described by Hartman are accompanied by 2 or 3 stout, marginally dentate, spines similar in size to the neuropodial spines, but slightly broader in the serrated area (fig. 5).

In addition to these four setal types, four of the 50 individuals taken by LACSD bear, on the first setiger of the posterior region, a pair of large hooked spines inserted at the level of the neuropodia and directed forward (fig. 6&7). When these spines are present there are no other setae on the segment. These spines do not appear to be related to the size or number of segments; they may be sexual.

Type material, deposited at AHF, is currently unavailable for examination.

Related Species and Character Differences:

*Raricirrus* is a monotypic genus.

Depth Range:

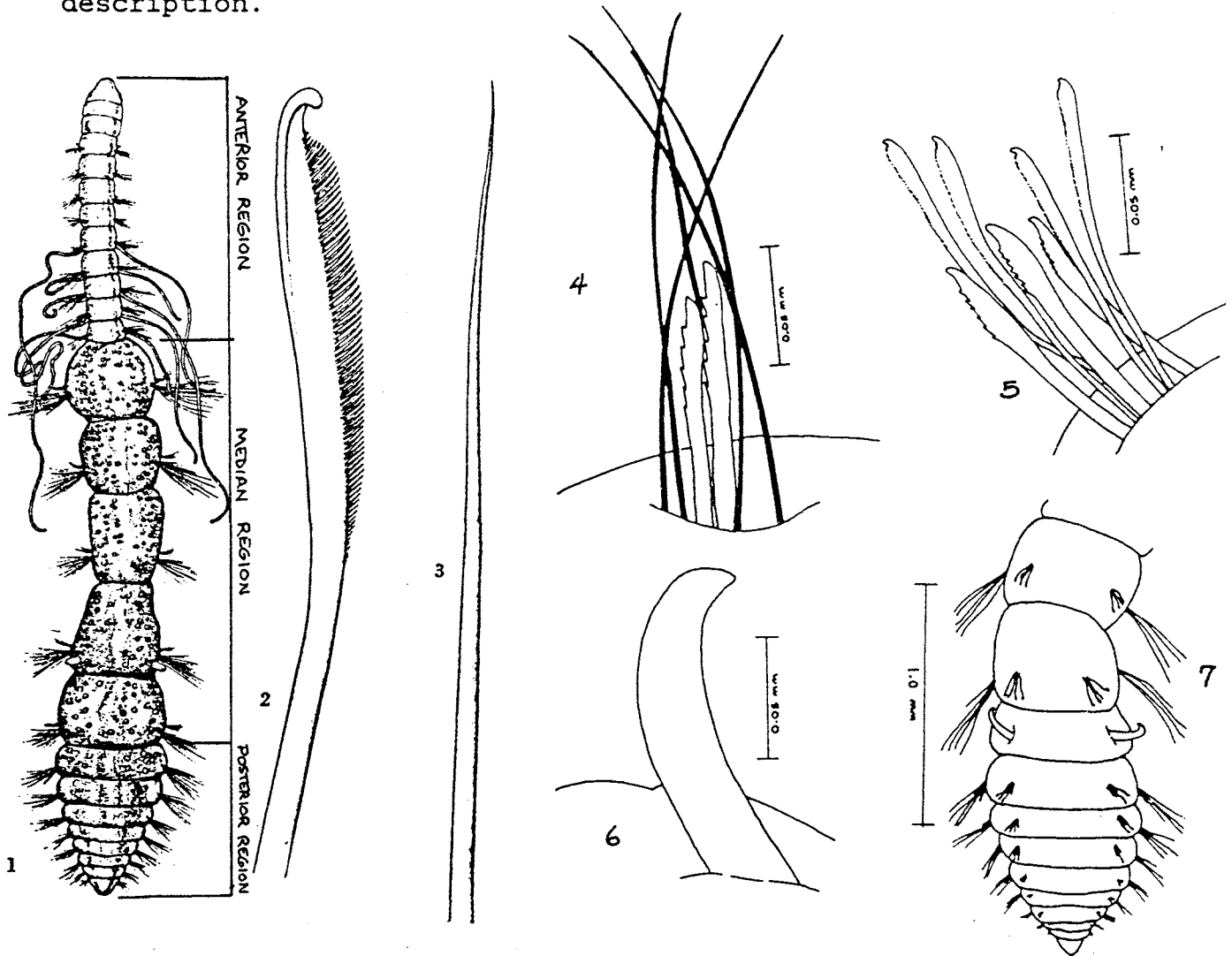
25 to 38 fms (Hartman 1961)  
60 to 150 m (LACSD data)

Distribution:

Appears to occur only along the Palos Verdes Shelf, which includes the type locale of Pt. Fermin.

Comments:

Hartman originally named this worm *Raricirrus maculata*. Fauchald (1977) uses the trivial name *maculatus*, correcting the disagreement in gender between the generic and trivial names in the original description.



*Raricirrus maculatus* 1. Entire animal, dorsal view. Regions defined (modified from Hartman '61). 2. Neuropodial seta. 3. Notopodial capillary seta. 4. Notosetal fascicle, posterior region. 5. Neurosetal fascicle, posterior region. 6. Hooked spine, first setiger posterior region. 7. Posterior end, ventral view, showing placement of hooked spines in posterior region. Fig. 1-3 from Hartman, 1961.



## TO ALL NIKON MICROSCOPE USERS

On several occasions in the past weeks, Service Department personnel of Nikon Inc. have encountered problems caused by the improper cleaning and servicing of Nikon equipment. Nikon Inc. would like to make, in an effort to avoid unnecessary problems caused by such servicing, the following suggestions:

1. To clean the lens surfaces, remove dust using a soft hair brush or gauze. Only for removing finger marks or grease, should soft cotton cloth, lens tissue or gauze lightly moistened with absolute alcohol (methanol or ethanol) be used.

For cleaning the objectives and immersion oil use only xylene. For cleaning the surface of the entrance lens of the eyepiece tube and the prism surface of the Trinocular Eyepiece Tube "T" or the Ultra Wide Eyepiece Tube "UW", use absolute alcohol.

Observe sufficient caution in handling alcohol and xylene.

2. Avoid the use of any organic solvent (for example, thinner, ether, alcohol, xylene, etc.) for cleaning the painted surfaces and plastic parts of the instrument.
3. Never attempt to dismantle the instrument so as to avoid the possibility of impairing the operational efficiency and accuracy.
4. When not in use, cover the instrument with the accessory vinyl cover, and store it in a place free from moisture and fungus.

It is especially recommended in areas of high humidity that the objectives and eyepieces be kept in an air-tight container containing desiccant.

5. NOTE CORK SHOULD NEVER BE USED TO CLEAN NIKON OIL OBJECTIVES.

Please note as per your Nikon warranty, "Any defects or damage directly or indirectly caused by the use of unauthorized replacement parts and/or performed by unauthorized personnel" will void the warranty.

We, therefore, suggest that while a product is under warranty only Nikon personnel or Authorized Nikon Repair Station dealers or personnel repair Nikon microscopes.

Remember, Nikon personnel or Authorized Repair Station personnel are specifically trained in the repair and maintenance of Nikon equipment.

# Five easy steps to set up your microscope.

operation is designed into Nikon Microscope. For proper and best results, simply follow 5-step checklist.

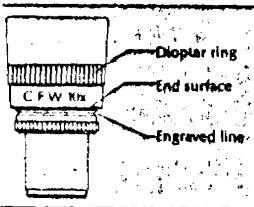
## 1.

### PREPARING THE HEAD.

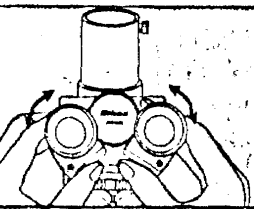
▶ putting a specimen on the turn on the illumination and adjust to a comfortable intensity

▶ the 10X objective into on.

▶ eyepiece diopter ring to "0" (a line on CFDW eyepieces). top while holding bottom



▶ it interpupillary distance so right and left images merge into one.



## 2.

### FOCUSING FOR YOUR EYES.

▶ your specimen on the stage. ▶ turning the coarse knob, focus the objective. Adjust with fine knob on smallest detail visible. ▶ switching on the 40X objective and fine knob.

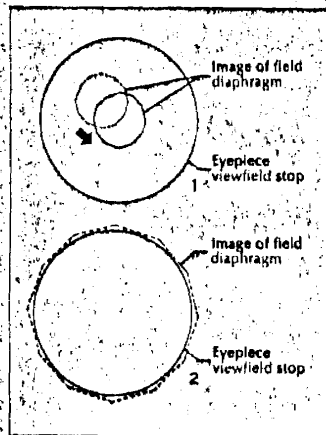
▶ switching to 4X objective. Adjust diopter of eyepieces to accommodate.

▶ locking focus at 40X. ▶ switching to 10X objective.

## 3.

### SETTING THE CONDENSER FOCUS.

- ▶ Using the field diaphragm control ring, close the field diaphragm to its smallest size.
- ▶ Rotate condenser focus knob to move condenser vertically.
- ▶ Using the condenser centering screws, bring the field diaphragm image to the center of the field of view.
- ▶ Switch to 40X objective. Adjust field diaphragm so its image is about the same as the field of view.
- ▶ If not centered, use the condenser screws again.
- ▶ Diaphragm must be centered before clearing from the field of view.

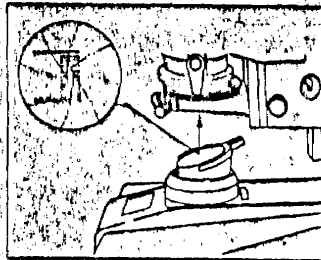


## 4.

### CENTERING THE ILLUMINATION.

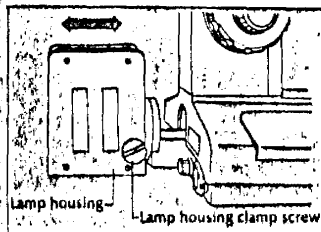
(NOTE: This step is not required on Labophot and other microscopes with pre-centered illumination systems.)

- ▶ To focus and center the illumination remove the diffuser.
- ▶ Close the aperture diaphragm on the condenser.
- ▶ Use a filter (the ND or blue filter) as a mirror to observe the filament image on the underside of the con-



denser. (For reflected light systems remove an eyepiece and look at image at back of objective.)

- ▶ Focus the filament image by moving lamp housing in or out until it becomes sharp.
- ▶ After illumination is focused and centered, replace the diffuser.

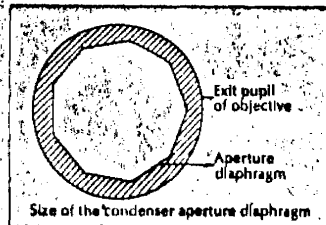


## 5.

### ADJUSTING THE APERTURE DIAPHRAGM.

This last step controls contrast and depth of field.

- ▶ Remove one eyepiece. Look down the tube at the back of the objective.
- ▶ Adjust the aperture diaphragm so that it is just inside the opening (about 25% less than full aperture).



**Nikon**

# Five easy steps to set up for photomicrography.

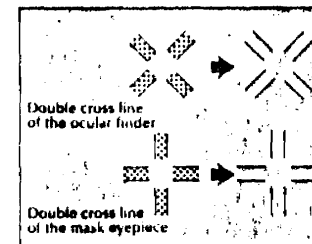
Proper setup for Nikon Photomicrography is a simple procedure. Just use these five easy steps as your personal checklist or as a handy guide for training others.

Complete steps 1 through 5 on the other side of this page before you begin the following photomicrographic process.

## 1.

### SETTING THE OCULAR VIEWFINDER.

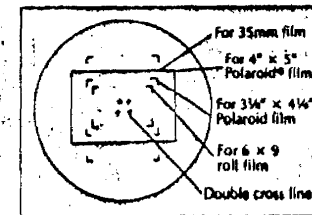
- ▶ Without a specimen on stage, focus on photo mask reticle.
- ▶ Look away, then recheck.



## 2.

### FOCUSING THE SPECIMEN.

- ▶ Place a clean specimen on the stage.
- ▶ Focus on specimen and compose the subject.
- ▶ Recheck focus against photo mask reticle. (NOTE: Always make the last focus movement up against gravity.)



## 3.

### USING THE PROPER VOLTAGE & FILTER

- ▶ For color daylight film, voltage should be set to film specifications and color balance, (NOTE: Tungsten color films require no filter.)
- ▶ For 35mm daylight films use NCB 10 filter.
- ▶ For Polacolor® range is from an 80 C filter for 1 second exposure to no filter for 4 second exposure.
- ▶ For black and white film, use green or another contrasting color.
- ▶ Didymium filter can be used for some H & E stains.

### VOLTAGE AND FILTER SETTINGS

	Daylight color film	Tungsten color film
Labophot	5.5 volts with NCB 10 filter	5 volts, no filter
Optiphot M	6 volts with NCB10 filter	5 volts, no filter
Metaphot	9 volts with NCB10 (blue) filter	9 volts, no filter
Optiphot	9 volts with NCB10 (blue) filter	9 volts, no filter
Biophot	9 volts with NCB10 (blue) filter	9 volts, no filter

All Fluorescence microscopes—use daylight film, no filter  
Fiber Optic Illuminator—use tungsten film with intensity set to maximum.

## 4.

### SETTING THE EXPOSURE.

- ▶ On automatic systems, set exposure according to film manufacturer's ASA specifications.
- ▶ Bracket your exposures because specimens vary greatly in their ratio of dark area to light.
- ▶ Follow these rules of thumb for compensation:

Brightfield—setting is generally within  $\pm 1/3$  of exposure adjustment.

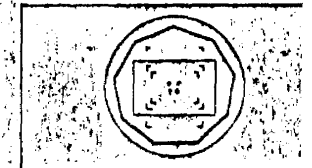
Darkfield and Fluorescence—setting is generally between -1 to +2 of exposure adjustment.

- ▶ For manual systems, use a light meter to determine the exposure.

## 5.

### APERTURE & FIELD DIAPHRAGM ADJUSTMENT.

- ▶ Readjust aperture diaphragm on condenser for best results with your particular specimen.
- ▶ Normal setting approximately 7/8 of full aperture. Closing aperture further will give more contrast a depth of field at the expense of resolution.



- ▶ Set field diaphragm just outside film format in photo mask reticle.
- ▶ Recheck.
- ▶ Expose film.

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