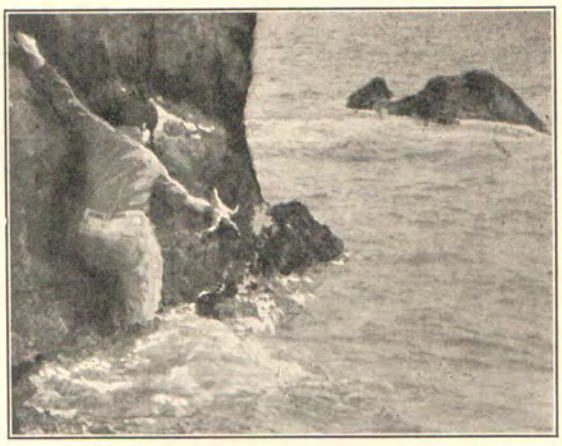
# Pacific Biological Laboratories

# Biological Material

Collecting the giant urchin
*Strongylocentrotus franciscanus*



Collecting one of the very large
*Pisasters* for exhibition

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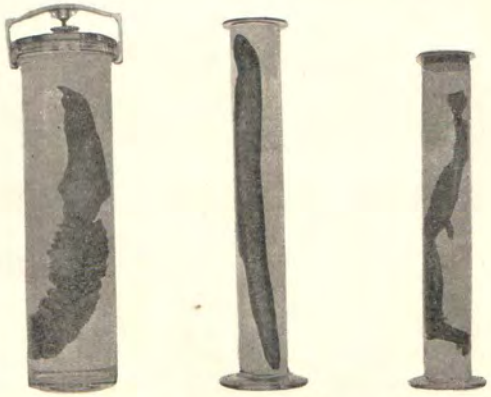
PACIFIC GROVE CALIFORNIA





A group of museum specimens of the type we have recently been producing. The sea pen *Ptylosarcus quadrangularis*, at the right, is seldom taken and therefore not listed. Specimens of the great sabellid *Eudistylia gigantea* are listed on page 6, and the standard exhibition tubes of the hagfish *Polistotrema* (right) on page 12. © P.

# PACIFIC BIOLOGICAL LABORATORIES
## PACIFIC GROVE, CALIFORNIA

# FOREWORD

MONTEREY BAY is the fusion point of faunas from the North and South, and the ranges of a number of characteristic species of both regions overlap in these waters. Here we have the 1000 fathom line swinging close to shore on the open coast, with plenty of shallow water in the bay proper. One can find almost any combination of rocky coast, sand beach or mud flat within a few miles. Rich pelagic hordes approach the shore and enter Monterey Harbor, where a large fishing fleet finds shelter. A short distance to the north, the still water, estuary conditions of Elkhorn Slough are encountered. The local boat bottom and piling fauna is very rich.

Located in such a region, it is rather in the order of things that the Pacific Biological Laboratories should be unsurpassed for western marine specimens. In addition, however, the rapidly growing organization has built up something of a clearing house for supplies of an excellent quality that cannot be produced locally, and some of our microscopic slides, fresh water and terrestrial specimens and lantern slides are pretty well on the way to becoming standard.

As mentioned on the attached insert, special discounts will be allowed on preserved materials. After this discount has been deducted, it will be found that our prices are usually lower, and never higher, than those of other houses in the field, without considering the uniformly superior quality of our specialties and of most of our products in general, and without considering our free delivery clause, mentioned below.

As a producing house, it is no more than natural that our products should be economically priced. The PBL arose as a supply house for other dealers, and that phase of the business is still a large one. In fact, is it safe to say that a great number of the typically western specimens sold anywhere in this country were originally produced here.

It will be understood that many forms not herein listed can be supplied on special order. This does not mean that we can supply any known animal—an obvious impossibility. However, it does mean that we have been successful in securing on special order, on a number of occasions, forms that instructors have been trying for years to obtain elsewhere.

A high percentage of the materials listed herein are kept constantly at hand. Pelagic specimens — Ctenophores and Siphonphores — are rather uncertain, nor can we hope to maintain permanent stocks of all the parasitic slides. It should be borne in mind, (and this applies especially to local marine forms), that we must, above all else, avoid depleting the region by over collecting. One or more formerly rich regions, according to reliable authorities, already afford instances of the ease with which depletion is brought about. Monterey Bay is probably richer in individuals and species than any other region of like size in the United States. and it would be unfortunate if such a situation were to arise here.

*With its photos and drawings, backed by the good will built for us by these excellent Monterey Bay specimens, I believe this booklet will find a ready welcome.*

*We have spared neither effort, time, nor expense in making it as useful and attractive as present circumstances permit. If it tends to make known a fauna rich in species and individuals, abounding in types that merit more frequent use in the classroom, it will have justified our efforts.*

E. Ricketts

President
Pacific Biological
Laboratories

Pacific Grove,
California,
Sept. 1, 1925

## TERMS

Dozen prices apply to orders for 6 or more, hundred prices to 100 or more. Invoices are based on 30 day terms, with a 2% discount for immediate cash. Where schools find it possible to remit cash with order, special discounts will apply. It is needless to emphasize that everything is guaranteed, and can be returned for full credit if not satisfactory according to your standards.

## FREE DELIVERY

Prices are usually FOB Pacific Grove with containers at cost. We will gladly quote delivered prices that are only slightly, or not at all higher than ordinary net prices, on large orders. We customarily allow FREE DELIVERY anywhere in the U. S. on orders totalling $200.00 or more, so long as the proportion of very bulky material is not too high, we to be the judges.

Left: *Polyorchis penicillata,* or similar Leptomedusa. x about 1-2/3. One of the largest medusae ever offered for class work. © P

Above: *Obelia gracilis,* x about 23, showing turgid gonangia and expanded hydranths. © P

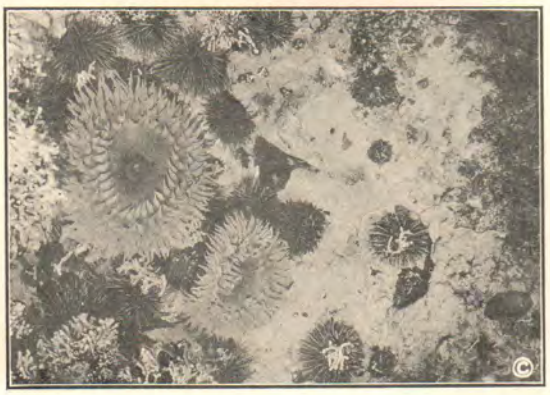
# ZOOLOGICAL PRESERVED MATERIAL

| | Each | Dozen |
|---|---|---|
| **PHYLUM PROTOZOA** | | |
| *Noctiluca miliaris,* phosphorent, marine, vials with sufficient preserved material for 25 students | 2.00 | |
| **PHYLUM PORIFERA** | | |
| *Grantia sp.,* sycon sponge, Atlantic | .15 | .80 |
| *Leucandra sp.,* very large sycon sponge | 1.00 - 1.35 | |
| *Sycon sp.,* local form larger than *Grantia* | .20 | 1.00 |
| Encrusting sponge, many in brilliant colors, piece | .65 | |
| *Spongilla sp.,* fresh water, with gemmules | .30 - 2.00 | 1.00 |
| *Euspongia sp.,* small bath sponges, cleaned | .20 | 2.00 |
| **PHYLUM COELENTERATA** | | |
| **CLASS HYDROZOA** | | |
| *HYDROIDS* | | |
| *Hydra oligactis (fusca),* extended, in 70% alcohol | .20 | 1.00 |
| *Eudendrium californicum,* expanded for classwork | .30 | .80 |
| Clusters for museum, in 1 x 4 in. tube | 1.35 | |
| *Tubularia crocea,* expanded for classwork | .25 | 1.00 |
| Museum cluster in 2 oz. screw top jar | 1.35 | |
| *Abietinnaria sp.,* a profusely branching fernlike sertularian, fully expanded for classwork | .45 | 2.00 |
| *Aglaophenia struthionides,* ostrich plume hydroid, largest of the plumularians | .30 - 3.25 | 1.35 |
| ....*Obelia gracilis,* PBL SPECIAL, fully expanded | .30 | 1.00 |
| Museum tufts on original attachment, in tube | 1.35 - 2.50 | |
| *Sertularella turgida,* not expanded | .30 - 2.50 | 1.15 |
| *MEDUSAE* | | |
| *Gonionemus vertens,* standard classwork medusa, the large British Columbia form | .50 | 2.70 |
| *Obelia gracilis,* very minute, histologically prepared for slides. Vial of 25 or more | 1.75 | |
| *Phialidium gregarinum,* small Puget Sound classwork medusa | .40 | 2.00 |
| ...*Polyorchis penicillata,* PBL SPECIAL, very large bell shaped classwork medusa | .65 - 1.35 | 4.25 |
| *Polyorchis sp.,* and other smaller class medusae | .25 | 1.35 |
| *STYLASTERINA* | | |
| *Allopora sp.,* tide pool reef coral, pieces | .25 - .65 | 2.00 |
| *SIPHONOPHORA* | | |
| *Halistemma rubrum,* well hardened chains, 2 - 4 in. long, in test tube | 6.50 - 10.50 | |
| *Velella mutica,* float | .65 | 4.00 |
| *Physalia pelagica,* Portugese Man O'War, sometimes | 2.65 - 13.50 | |
| **CLASS SCYPHOZOA** | | |
| *Aurelia aurita,* standard class jellyfish, 2 - 3 in. | 1.00 | 4.75 |
| *Chrysaora gilberti,* brown, long tentacled jellyfish highly recommended for class use | 1.00 - 2.00 | 5.50 |
| Museum specimens of scyphistomae and strobilae of *Aurelia,* on original attachments | 2.65 - 6.50 | |

Also see embryological list.

*A substantial discount will be allowed from these list prices.* *See Page 2.*

Actual under-water photo of living hydroids. Left: *Sertularia sp.* Right: *Aglaophenia struthionides*, and solitary corals as they occur in the tidepools. See also stereo and lantern slide, B 593.2, page 21. © S



The living anemone *Bunodactis* expanded in tidepool. See also stereo and lantern slide, B 593.6, page 21. © S

## CLASS ANTHOZOA

| | Each | Dozen |
|---|---|---|
| *ALCYONARIA* | | |
| ....*Anthomastus ritteri*, PBL SPECIAL, the finest alcyonian ever offered for class use. Polyps up to 1 in. long, and fully expanded. One or two of these large colonial specimens sufficient for an entire class. For dissection or exhibition. Each, according to size and expansion | 2.00 - 5.25 | |
| *Balticina pacifica*, long sea pen, according to size | 1.35 - 4.00 | |
| *Plumarella longispina*, better than Gorgonia, dry | .65 - 2.00 | |
| *Renilla amethystina*, sea pansy from Southern California. Polyps fully expanded | 1.00 - 1.35 | |
| *ACTINOZOA* | | |
| *Bunodactis xanthogrammica*, the giant green anemone of local tidepools. Fully expanded | 1.35 - 4.00 | |
| *Balanophyllia elegans*, tidepool solitary coral, according to expansion | 1.00 - 2.00 | 6.00 |
| *Epizoanthus sp.*, a zoanthidian seated on pieces of *Plumarella* from 400-500 fathoms | 1.35 - 2.75 | |
| ....*Metridium dianthus* (*marginatum*), PBL SPECIAL, the finest of all classwork anemones; fully expanded, very beautiful specimens. | | |
| Minute, histologically prepared for slide preparations | .40 | 3.25 |
| Small, average 150 to 200 to quart jar | .40 - .65 | 3.25 |
| Medium, average 50 to 80 to quart jar | .65 - 1.00 | 4.25 |
| Large, average 12 to 24 to quart jar | 1.35 | 8.00 |
| Large museum specimens, averaging one to battery jar, and clustered specimens on original attachment | 1.34 - 13.50 | |

## CLASS CTENOPHORA

| | | |
|---|---|---|
| ....*Pleurobrachia, Hormiphora*, or similar large Cydippids, PBL SPECIAL. These correctly hardened ctenophores are guaranteed not to disintigrate. Not always on hand due to uncertainties of pelagic material. We can sometimes supply also Beroë. | | |
| Large specimens for exhibition | 1.00 - 2.50 | |
| Classwork specimens | .65 | 2.50 |

# PHYLUM PLATYHELMINTHES

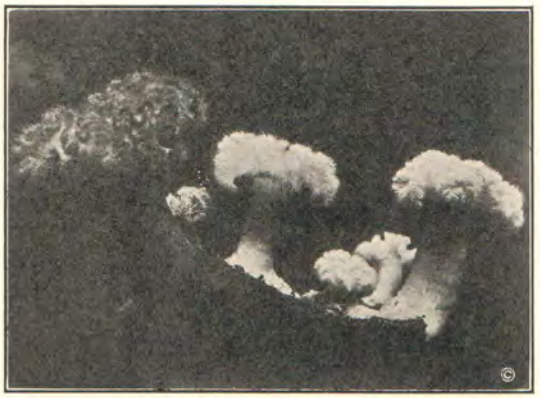
## CLASS TURBELLARIA

| | | |
|---|---|---|
| *Planaria dorotocephala*, histologically prepared and flattened for class or slide making, in 70% alcohol | .20 | 1.00 |
| *Leptoplana sp.*, marine polyclad, histologically prepared and flattened, in 70% alcohol | .65 | 4.75 |

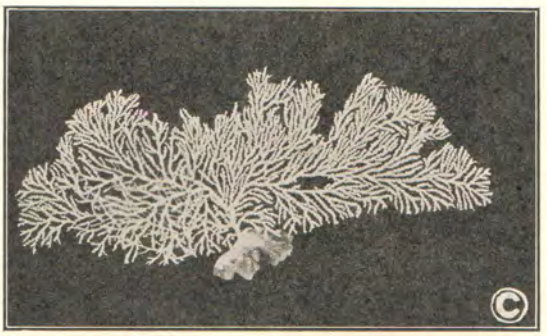
## CLASS TREMATODA

| | | |
|---|---|---|
| ....*Clonorchis sinensis*, PBL SPECIAL, cat and human liver fluke of the Orient. Unquestionably the finest classwork trematode that has ever been offered. | | |
| Flattened, alcoholic specimens for slides | 1.00 | 6.50 |
| Stained, ready to mount specimens | 1.35 | 8.00 |
| (See cut of mounted specimen in slide section) | | |
| *Fasciola hepatica*, sheep liver fluke, not always at hand. | | |
| Classwork material, slightly curled, formalin | .65 | 3.00 |
| Flattened, for slides | 1.00 | 4.75 |

*A substantial discount will be allowed from these list prices.* *See Page 2.*



Living *Metridium dianthus*, the finest anemone for class use.
© Kadel & Herbert



*Plumarella longispina*, dried x 1/3. A Gorgonian (Sea Fan) dredged from a depth of 400 - 500 fathoms. © P

### CLASS CESTODA

| | Each | Dozen |
|---|---|---|
| ....*Gyrocotyl fimbriata*, PBL SPECIAL. The single proglottid cestode, and the only member of the subclass Cestodaria at all available. We are probably the only house in the country producing these important forms, occurring as parasites in *Chimaera colliei* | .65 - 1.35 | 6.50 |
| *Moniezia expansa*, the broad tapeworm of the sheep. | | |
| Complete worms with scolex | 1.00 - 2.00 | 6.50 |
| Pieces of several proglottids | .30 | 2.00 |
| *Cysticercus tenuicollis*, very large "bladder worm" stage of Taenia. From sheep omentum | 1.35 | |

### CLASS NEMERTINEA

| | | |
|---|---|---|
| *Cerebratulus* or similar. With proboscis extruded, for exhibition. Not always to be had | 1.00 - 2.00 | |

## PHYLUM NEMATHELMINTHES

| | | |
|---|---|---|
| ....*Ascaris lumbricoides*, the pig and human roundworm, PBL SPECIAL, large, straight and expanded | .65 - 1.00 | 3.00 |
| Ordinarily prepared specimens, somewhat curled | .40 | 2.00 |
| *Trichinella spiralis*, in infected meat, preserved in glycerine solution. Vial for 25 students | 3.25 | |
| *Echinorhynchus gigas*, spinehead worm of hog | .65 -1.00 | |
| *Sagitta sp.*, pelagic "arrow worm," small specimens | .65 | |

## ANIMALS OF UNCERTAIN RELATIONSHIP (MOLLUSCOIDEA, ETC.)

| | | |
|---|---|---|
| *BRYOZOA* | | |
| *Bugula sp., (turrita)*, classwork and exhibition | .25 - 2.65 | 1.35 |
| Same, expanded for classwork | .40 | 2.00 |
| *Eurystomella (Lepralia) sp.*, encrusting, littoral | .65 - 1.35 | |
| *BRACHIOPODA* | | |
| *Terebratella transversa*, large Puget Sound form | 1.00 | 5.50 |
| *TROCHELMINTHES* | | |
| *Philodina*, etc., miscellaneous rotifers, per vial | 1.35 | |

## PHYLUM ECHINODERMATA

### CLASS CRINOIDEA

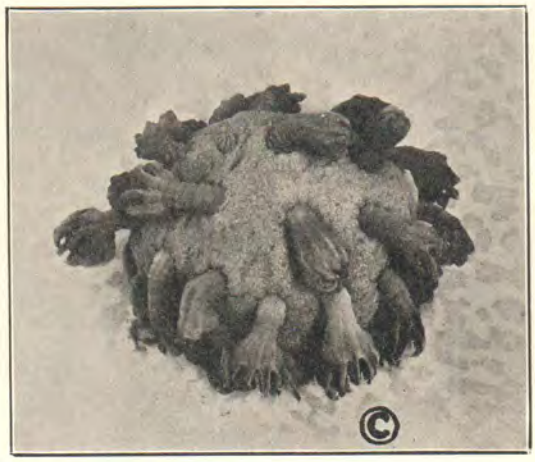
| | | |
|---|---|---|
| *Antedon rosacea, A. bifida*, free swimming forms | 1.35 - 4.00 | |
| *Florometra seratissima*, dredged locally. More or less imperfect specimens | 1.35 - 6.65 | |

### CLASS ASTEROIDEA

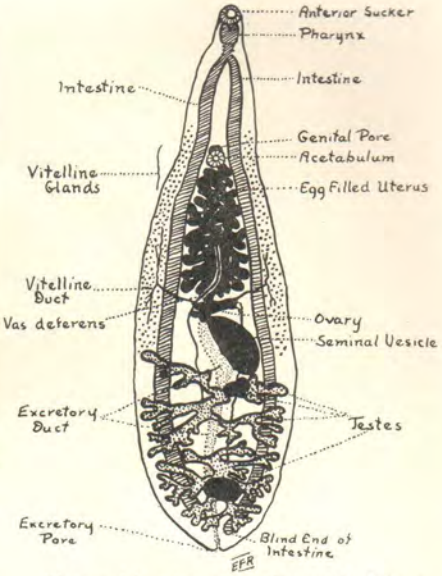
| | | |
|---|---|---|
| *Patiria miniata*, local red starfish, 4 - 6 in. | .30 | 2.00 |
| *Asterias forbesii*, standard Atlantic starfish for classwork, soft skinned, 3 - 5 in. | .30 | 1.65 |
| Medium, 5 - 7 in. | .45 | 2.35 |
| Large, 7 - 10 in. | .65 | 3.35 |
| Medium, vascular system injected | 1.00 | 5.35 |
| *Leptasterias sp.*, very small, usually under 1 in., entirely adequate for external details | .25 | 1.20 |

*A substantial discount will be allowed from these list prices.* *See Page 2.*

*Gyrocotyl fimbriata*, a cestodarian cestode. x about 2. See page 5. © P



*Anthomastus ritteri*, occuring at 400 - 500 fathoms. Probably the finest Alcyonian ever to have been offered for class use. x ½. On page 4. © P




*Clororchis sinensis*, Oriental Liver Fluke of Cat and Human. x 7. Listed on page 4. See photomicro ZE 7, page 19. © P

| | Each | Dozen |
|---|---|---|
| *Pisaster ochraceous* and *P. brevispina*, the heavy, tough skinned local forms. | | |
| Small, 3 - 5 in. | .40 | 2.00 |
| Medium, 5 - 7 in. | .55 | 3.00 |
| Large, 7 - 10 in. | .80 | 4.00 |
| Very large, 10 in. and over | 1.00 - 2.00 | 6.00 |
| Museum collection of 10 different species of asteroids, properly identified and tagged. Monterey Bay forms | 10.00 | |
| Museum collection of 15 species. Not all local | 16.50 | |

### CLASS OPHIUROIDEA

| | | |
|---|---|---|
| *Gorgonocephalus eucnemis* and *G. caryi*, Basket Fish | 2.65 - 5.35 | |
| *Amphiodia occidentalis*, small serpent-like brittle star for classwork | .25 - .65 | 2.65 |
| *Ophiura sarsii*, or *O. lütkenii*, the largest local ophiuroids to be had for classwork | .25 - .65 | 3.35 |

### CLASS HOLOTHUROIDEA

| | | |
|---|---|---|
| *Stichopus californicus*, a very large local form, up to 14 in. long. According to size and condition | 1.00 - 4.00 | |
| *Cucumaria curata*, a replica of the large Cucumarias in everything but size. Too small for dissection | .25 - .40 | 2.00 |
| *C. frondosa, or Thyone briareus*, Atlantic cucumbers of size adequate for dissection | .65 - 1.00 | 4.75 |
| *Psolus chitonoides*, or *P. pauper*, deep water creeping forms, sometimes expanded in beautifully diagrammatic manner. According to size and condition | 2.00 - 6.65 | |
| *Leptosynapta inhaerens*, local apodous form | .40 - 1.00 | 4.00 |

### CLASS ECHINOIDEA

| | | |
|---|---|---|
| ....*Strongylocentrotus purpuratus*, PBL SPECIAL, purple sea urchin. Larger than any of the east coast urchins, and admirable for classwork | .30 - .45 | 2.00 |
| *S. franciscanus*, largest of the urchins | 1.00 - 1.35 | 6.65 |
| *Echinarachnius excentricus*, sand dollar | .30 - .45 | 1.70 |

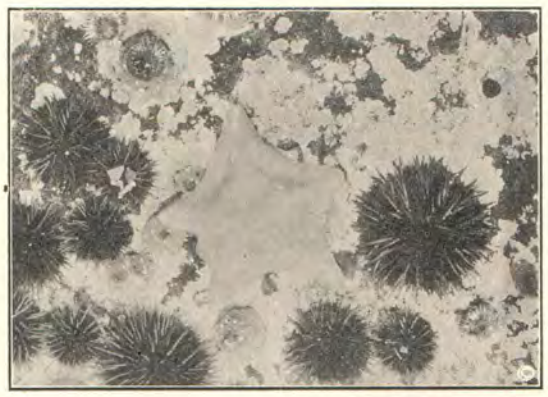
## PHYLUM ANNELIDA

### CLASS POLYCHAETA

| | | |
|---|---|---|
| *Aphrodite sp.*, sea mouse, a most curiously modified scale worm taken from 20 - 65 fathom mud bottoms | .65 - 6.65 | |
| *Nereis vexillosa*, or similar *Nereis* | | |
| Small, 3 - 5 in. | .20 | .65 |
| Medium, 5 - 8 in. | .30 | 1.35 |
| .... Large, perfectly straight, round and beautifully prepared. PBL SPECIAL. It is not always possible to supply the demand for these extra fine specimens | .65 | 3.35 |
| *Polynoë sp.*, scale worm | .30 | 1.35 |
| *Amphitrite sp.*, tube worm, straight and extended | .65 | 3.35 |
| *Eudistylia gigantea*, magnificent sabellid, in membraneous tube up to 14 in. long. Expanded | 2.00 - 6.65 | |
| *Serpula sp.*, or similar small, highly colored serpulid. Fully expanded. In tube | .65 - 2.00 | |

*A substantial discount will be allowed from these list prices.* *See Page 2.*

Living *Pisaster ochraceous* (See page 6)
Stereo and Lantern Slide A 593.92
page 21. © S



Living Sea Urchins *S. purpuratus* and the starfish *Patiria miniata*, famed for embryological material. See Stereo and Lantern Slide A 593.2, page 21. © S

### CLASS OLIGOCHAETA

| | Each | Dozen |
|---|---|---|
| *Lumbricus terrestris*, large earthworm. Straight, limber and in natural colors, Per C, $9.35 | .30 | 1.35 |

### CLASS GEPHYREA

| | | |
|---|---|---|
| *Dendrostoma sp.*, very large sipunculid, expanded to show tentacles. Museum specimens | 2.00 - 3.35 | |
| ....*Physcasoma sp.*, PBL SPECIAL, small sipunculid, expanded to show horseshoe circlet of tentacles | .65 | 2.65 |
| *Physcasoma sp.*, and similar sipunculids, not fully expanded, for class dissection | .20 | 1.00 |

### CLASS HIRUDINEA

| | | |
|---|---|---|
| *Philobdella gracilis*, large freshwater leech | .50 | 3.35 |

## PHYLUM ARTHROPODA

### CLASS CRUSTACEA

| | | |
|---|---|---|
| *BRANCHIOPODA* | | |
| *Artemia salina principalis*, the brine shrimp, a phyllopod found only in the nearly saturated water of salt works, brine pools, etc. For general account see Science, 10-31-24, Pp. 411. | .25 | .85 |
| *Eubranchippus vernalis*, the fairy shrimp | .25 | 1.00 |
| *Estheria sp.*, large bivalved phyllopods of local temporary ponds. Some attain a length of ½ inch | .40 - 1.00 | 2.00 |
| *OSTRACODA* | | |
| *Cypris sp.*, or similar | .20 | 1.00 |
| *COPEPODA* | | |
| *Charopinus dentatus*, or similar, with long egg sacs. Ectoparasitic on skates | .30 | 1.35 |
| *Cyclops sp.*, the common freshwater free living type | .20 | 1.00 |
| *CIRRIPEDIA* | | |
| *Balanus tintinabulum*, etc., medium for classwork | .20 | 1.00 |
| *Balanus nobilis*, very large, with shells sometimes 6 in. high. Museum clusters | 1.35 - 4.00 | |
| *Coronula diadema*, the ivory barnacle of the whale | .40 | 2.00 |
| *Conchoderma auritum*, the hooded barnacle of the whale, museum specimens on *Coronula* | 2.00 - 4.00 | |
| *Lepas anatifera*, clusters | .75 - 2.00 | |
| Large single specimens | .20 | 1.20 |
| *Mitella polymerus*, the western goose barnacle of rocky shores. Similar to *Lepas* | .20 | 1.00 |
| Clusters for museum | .65 - 2.65 | |
| *Sacculina carcini*, degenerate sac-like Cirriped parasitic on crab. Museum specimen on host | 2.00 | |
| *Scalpellum californicum*, leathery shelled, deep water goose barnacle of local mud bottoms | .40 | 2.00 |
| *NEBALIACEA* | | |
| *Nebalia sp.*, primitive malacostracan | .40 | 2.00 |
| *MYSIDACEA* | | |
| *Mysis sp.*, opossum shrimp | .25 | 1.35 |

*A substantial discount will be allowed from these list prices.* *See Page 2.*

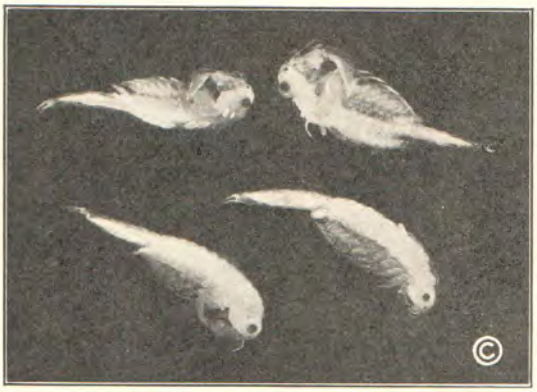
*Coronula* and *Conchoderma*, barnacles commensal on the whale. © P

*Aphrodite sp.*, the "Sea Mouse," pp. 6, from 20 - 60 fathom mud bottoms. Ventral and dorsal surfaces. x 1/3. © P

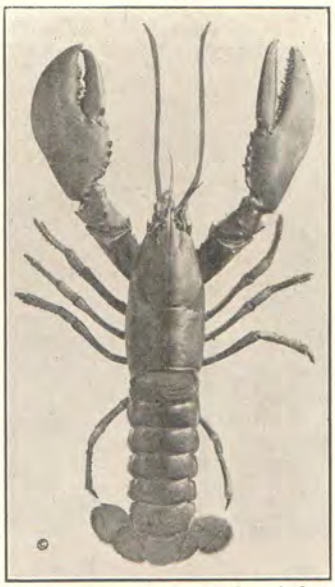
| | Each | Dozen |
|---|---|---|
| *ISOPODA* | | |
| *Asellus, Oniscus*, etc., freshwater and terrestrial | .20 | .80 |
| *Idothea sp.*, very large marine Isopod (1½ in.) | .30 | 1.60 |
| *Livoneca sp.*, a deep water form often parasitic on flounders. Brood sac turgid with young | .65 | 3.35 |
| *AMPHIPODA* | | |
| *Caprella geometrica*, or similar; grotesque forms living among hydroids | .20 | .80 |
| *Gammarus, Hyalella* and similar freshwater forms | .20 | .80 |
| *Talorchestia sp.*, beach flea, much larger than *Gammarus*, and well adapted to classuse | .20 | .80 |
| *STOMATOPODA* | | |
| *Squilla mantis*, mantis shrimp, Europe, up to 10 in. | 2.00 | |
| *DECAPODA* | | |
| ....*Astacus sp.*, PBL SPECIAL, the Oregon crayfish. Very much larger than even the largest Cambarus. Internal anatomy well preserved. Plain preserved | .40 | 2.00 |
| Injected | .80 | 4.00 |
| *Cancer magister*, the largest edible crab and the finest Brachyuran for dissection | 1.35 | 8.00 |
| *Crago franciscorum*, small edible shrimp | .20 | .80 |
| *Emerita analoga* (*Hippa*), curiously modified sand crab | .40 | 1.60 |
| *Hemigrapsus nudus*, purple shore crab, good medium form for classwork | .65 | 2.65 |
| *Holopagurus pilosus*, and *Pagurus ochotensis*, very large deep water hermit crabs, in shells of *Polynices*. Museum specimens | 1.00 - 4.00 | |
| *Homarus americanus*, the lobster, an Atlantic form; Injected with red color mass | 2.00 | 10.00 |
| *Panulirus interruptus*, the Pacific spiny lobster | 1.35 - 2.00 | |
| *Uca crenulata*, fiddler crab, Southern California | .30 | 1.00 |
| Museum collections of decapods, correctly identified and tagged or labelled: | | |
| 15 species, local forms, to include as varied a selection as possible | 16.00 | |
| 30 species, not all local, to include many economically important forms | 32.00 | |
| **CLASS MYRIAPODA** | | |
| *Spirobolus sp.*, large milliped | .55 | 2.00 |
| *Lithobius* or *Geophilus*, small centipedes | .25 | 1.20 |
| *Scolopendra sp.*, large centipedes, (average 2 in.), for classuse | .65 | 3.35 |
| **CLASS ARACHNOIDEA** | | |
| *Buthus carolinensis*, scorpion for classwork | .65 | 3.35 |
| *Mastigoproctus giganteus*, whip tailed scorpion, specimens from one to several inches long | .65 - 2.00 | |
| Medium spiders for classwork, *Epeira*, etc. | .25 | 1.20 |
| *Margaropus annulatus*, cattle ticks | .25 | 1.20 |
| Wood ticks | .20 | 1.00 |
| *Limulus polyphemus*, the horseshoe crab, an Atlantic form | | |
| Small specimens, average 3 or 4 in. | 1.00 | 4.00 |
| Medium, up to 6 or 7 in. | 1.35 - 2.00 | 6.00 |
| Large, up to 18 or 24 in. total length | 2.60 - 6.65 | |
| *Pycnogonum stearni*, small sea spider | .30 | 1.20 |
| **CLASS INSECTA** | | |
| *Lepisma sacculina*, primitive wingless form | .30 | |
| *Dictyophorus reticulatus*, lubber locust, a giant grasshopper, standard for classuse. In alcohol Per C, 8.50 | .40 | 1.60 |
| *Melanoplus femur-rubrum*, small grasshopper | .20 | .80 |
| *Anasa tristis*, squash bug, stink bug | .20 | .80 |

*A substantial discount will be allowed from these list prices.* *See Page 2.*

Large Nereis, PBL SPECIAL packed 1 dz. to the 12 x 2 in. glass cylinder. © P



The phyllopod *Artemia salina*, Brine Shrimp. x 8. © P



*Homarus americanus*, the Atlantic lobster, injected specimens of which we carry in stock for the benefit of Western instructors. © S

| | Each | Dozen |
|---|---|---|
| *Tibicen septendecim*, 17 year locust | .40 | 1.60 |
| *Termopsis nevadensis*, the large Pacific Coast termite. Workers | .15 | .60 |
| Soldiers and winged | 20 | .80 |
| *Anosia plexippus*, monarch butterfly, in alcohol | .20 | 1.20 |
| *Anopheles sp.*, malarial mosquito; or *Culex sp.*, house mosquito | | |
| Egg clusters | .20 | 1.00 |
| Larvae | .40 | 1.60 |
| Pupae | .40 | 2.00 |
| Adults | .25 | 1.35 |
| *Musca domestica*, housefly. Eggs, larvae, pupae, adults | .20 | .60 |
| *Tabanus atratus*, the large housefly | .25 | 1.40 |
| *Harpalus sp.*, or similar large black ground beetle | .20 | 1.00 |
| *Alus*, or similar small beetle, larvae | .20 | 1.00 |
| *Leptinotarsa decimlineata*, Colorado potato beetle | .20 | .60 |
| *Apis mellifica*, honey bee | | |
| Worker adults | .20 | .60 |
| Drone adults | .20 | .80 |
| Worker larvae | .20 | 1.00 |
| Worker pupae | .30 | 1.60 |
| Adult queens, sometimes available | 1.65 | |

## PHYLUM MOLLUSCA

### CLASS SCAPHOPODA

| | | |
|---|---|---|
| *Dentalium entalis*, Europe, or *D. neohexaganum*, dredged from Monterey Bay. Tooth shells | 1.20 | |

### CLASS AMPHINEURA

| | | |
|---|---|---|
| ....*Cryptochiton stelleri*, PBL SPECIAL, the largest of the chitons, reaches an extreme length of 10 in. Beautifully expanded and preserved specimens for exhibition | 1.00 - 4.00 | |
| *Katherina, Ischnochiton, Mopalia*, etc., for classwork | | |
| Average 1 to 2 in. in length | .40 | 2.00 |
| Average 2 to 3 in. in length | .65 | 3.20 |
| .... PBL SPECIAL. Average 3 in. or more. Perfectly flattened and admirably adapted to classwork | .80 | 4.00 |
| Museum collection of local chitons, 10 species correctly identified and labeled | 10.65 | |

### CLASS GASTROPODA

| | | |
|---|---|---|
| *PROSOBRANCHIATA* | | |
| *Fissurella volcano*, small keyhole limpet | .30 - .65 | |
| *Lucapina crenulata*, giant keyhole limpet, with shell covered by mantel. Up to 6 in. | 2.00 - 4.00 | |
| *Haliotis rufescens*, the great red abalone | | |
| Entire specimen for exhibition | 1.35 - 2.65 | |
| Shell only, cleaned | .30 - .65 | |

*A substantial discount will be allowed from these list prices.* *See Page 2.*


*Pagurus ochotensis*, the large hermit crab dredged from 20 - 60 fathoms. © P

*Anisodoris nobilis*, Sea Lemon, nudibranch up to 4 or 5 inches long. © P

| | Each | Dozen |
|---|---|---|
| *Haliotis cracherodi*, the black abalone, a smaller form | 1.00 - 2.00 | |
| Shell only, cleaned | .30 - .45 | |
| *Carinaria sp.*, heteropod. Pelagic, transparent | 2.65 - 5.35 | |
| *Fulgur* (*Sycotopus*) *canaliculatus*, doubly injected; out of shell. Atlantic coast material | 1.35 | 6.00 |
| ....*Polynices lewisii* and *P. draconis*, PBL SPECIAL. Giant sea snail | | |
| Entirely expanded, for museum | 1.35 | |
| Partially expanded, for classwork | .80 | 4.80 |
| *OPISTHOBRANCHIATA* | | |
| *Aplysia californica*, littoral sea hare from southern California; expanded for exhibition. 4 to 8 in. | 1.00 - 2.65 | |
| *Pleurobranchus californicus*, local deep water sea hare; according to size and condition | 1.00 - 4.00 | |
| *Aeolis sp.*, small nudibranch for classwork | .30 | 1.20 |
| ....*Anisodoris nobilis*, PBL SPECIAL. Sea lemon, nudibranch up to 4 or 5 in long. | | |
| Gills extended | .45 - 2.00 | |
| Imperfectly expanded, for classuse | .40 | 3.20 |
| Museum collection of nudibranchs, correctly identified and labeled. 10 local forms, some very large and brilliantly colored | 16.00 | |
| *Cymbulia peronii*, 2 in. pteropod or sea butterfly, Europe | 2.00 | |
| *Hyalaea tridentata*, small pteropod, Europe | .45 | |
| *Tiedmannia sp.*, medium transparent pteropod, Europe | .80 | |
| *PULMONATA* | | |
| ....*Helix aspersa*, PBL SPECIAL. One of the edible (European) snails, fully expanded for classwork | .40 | 1.40 |
| *Limax sp.*, probably *maximus*, very large slug (4 to 6 in.), fully expanded for classwork | .80 | 2.80 |

## CLASS PELECYPODA

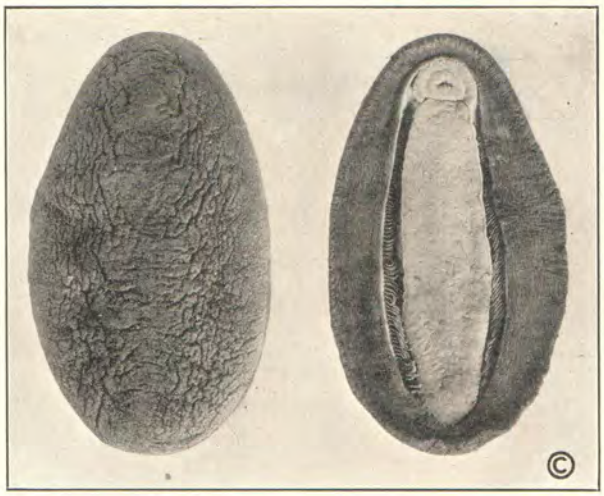
| | | |
|---|---|---|
| *Mytilis californianus*, edible mussel | | |
| Small, 3 to 5 in. long | .20 | 1.00 |
| .... PBL SPECIAL, giant; shells up to 8 or 10 in. long. Probably the best pelecypod being offered in this country for classwork | .45 - 1.00 | 2.80 |
| Fresh water mussels, *Quadrula*, *Anadonta*, etc., for instructors preferring this type, medium | .60 | 2.00 |
| *Paphia sp.*, and *Saxidomus sp.*, marine clams similar to the eastern *Venus mercenaria*, small | .20 | .60 |
| Medium | .20 | .80 |
| *Schizothaerus nuttalli*, a very large long necked clam | .65 - 1.35 | |
| *Tivela stultorum*, the Pismo clam of gastronomic fame | .45 - 1.00 | |
| *Pholadidae sp.*, boring clam taken from solid rock | .65 - 2.00 | |
| *Teredo navalis*, marine borer, pile worm. Small | .80 | 4.00 |

## CLASS CEPHALOPODA

| | | |
|---|---|---|
| *Loligo opalescens*, western squid, rounded and well preserved. | | |
| Medium specimens | .60 | 3.20 |
| Large specimens | .80 | 4.00 |
| Vascular system injected | 1.20 | 6.00 |
| ....*Polypus hongkongensis*, *P. vulgaris* and *P. bimaculatus*, PBL SPECIAL, Octopi or Devilfish. Beautifully preserved specimens, with legs spread out for exhibition, as in cut; often with natural colors preserved. Very small specimens, to fit 1 or 2 oz. jar | 1.35 | |

*A substantial discount will be allowed from these list prices.* *See Page 2.*

Living *Katherina tunicata*, an admirable classwork chiton, averaging 3 in. or more. See also Stereo and Lantern Slide F 594.3 page 22. © S



Dorsal and ventral surfaces of the large *Cryptochiton stelleri*, obtainable for exhibition. © P

| | Each | Dozen |
|---|---|---|
| Medium specimens, to fit in pint mason jar | 2.00 - 3.35 | |
| Larger specimens, for battery jars | 4.00 - 6.65 | |
| Very large specimens, legs not spread, for exhibition | 4.00 - 10.65 | |

## PHYLUM CHORDATA

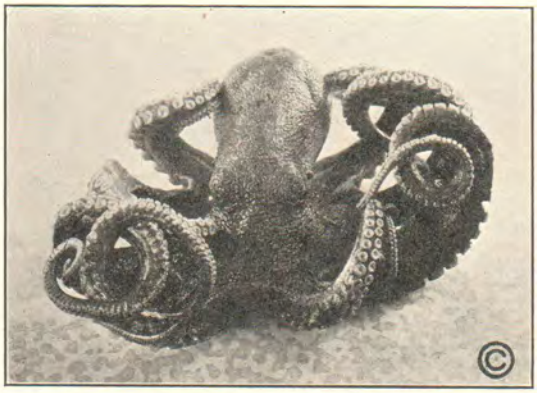
### LOWER CHORDATES

| | | |
|---|---|---|
| *Dolichoglossus* (*Balanoglossus*), acorn tongue worm | 1.35 | 8.00 |
| *Appendicularia sp.*, minute Larvacea tunicates | .20 | 1.20 |
| *Amaroecium* or similar compound tunicate | .40 - 1.35 | |
| ....*Clavelina sp.*, PBL SPECIAL. Small glassy tunicate, anatomy can be seen without dissection, with binocular magnifier. Excellent for classuse | .20 | 1.20 |
| ....*Styela californica*, PBL SPECIAL. Very large (total length up to 10 in.) stalked tunicate. Dissection material | .40 - .80 | 3.20 |
| *Salpa fusiformis*, pelagic Thaliacean tunicate | | |
| Large asexual forms with brood chain | .80 - 2.00 | |
| Small sexual forms for class | .20 | 1.20 |
| Large sexual forms for class and exhibition | .40 - .80 | 3.20 |
| *Branchiostoma lanceolatus*, Amphioxus | .45 | 2.65 |

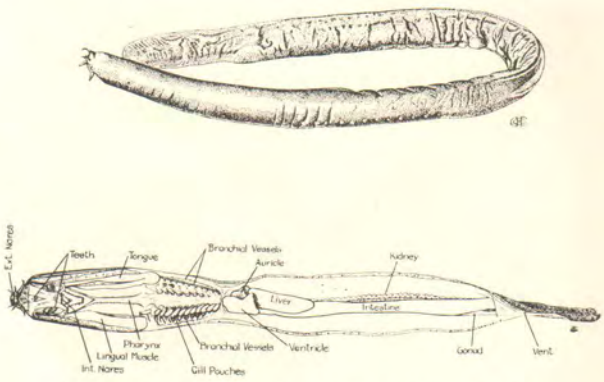
Living *Haliotis cracherodi*, the black abalone, an edible gastropod. See also Stereo and Lantern Slide A 594.3, page 22. © S

*Helix aspersa*, the edible snail. Expanded preserved specimens similar to the above, are available for classwork. © P

*A substantial discount will be allowed from these list prices.* *See Page 2.*



The Octopus *Polypus bimaculatus* as we prepare it for exhibition. x ½. © P

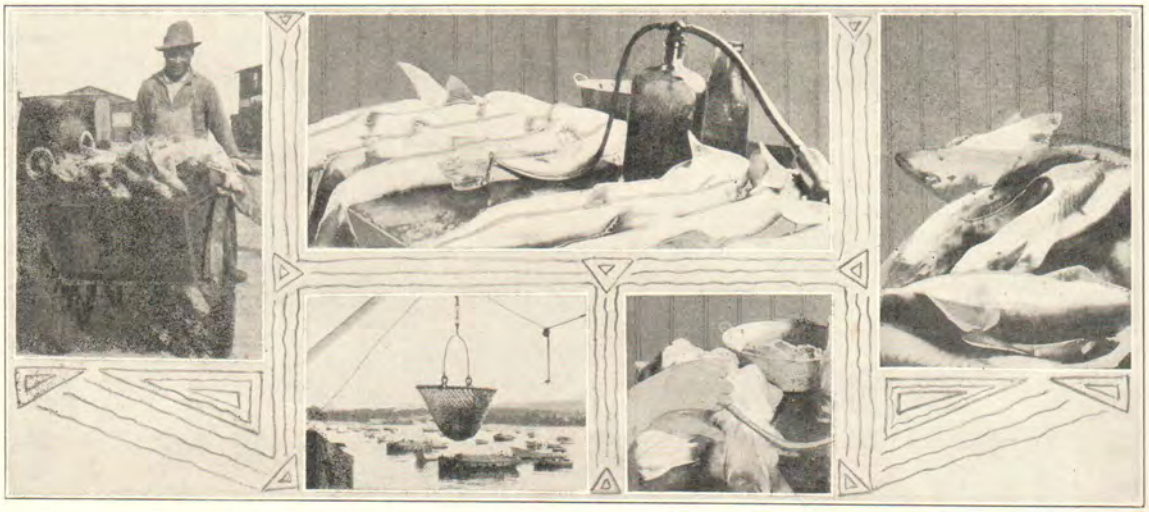



External appearance and anatomy of the celebrated *Polistotrema (Bdellostoma) stouti*, the California hagfish. © P

## CRANIATA

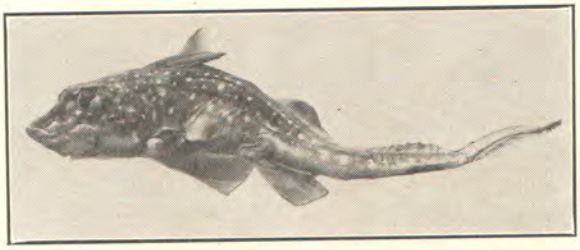
| | Each | Dozen |
|---|---|---|
| *CYCLOSTOMATA* | | |
| ....*Polistotrema* (*Bdellostoma*) *stouti*, PBL SPECIAL, the large hagfish, of which Monterey Bay is type locality. The most primitive vertebrate available, and one that should be in every classroom and teaching museum. For general account, see Science, 1-16-25, Pp. 68. Carefully selected exhibition specimens in special 15 in. glass tube with foot | 5.35 | |
| Unmounted specimens for class and exhibition | 1.60 - 4.00 | 13.50 |
| *Entosphenus tridentatus*, or similar large lamprey | 1.60 - 4.00 | 18.75 |
| *PISCES* | | |
| *Squalus sucklii*, or *Mustelus canis*, dogfish | | |
| Pups with sac | .65 | 2.65 |
| Small, under 18 in. | 1.20 | 6.00 |
| Medium, 18 to 24 in. | 2.00 | 10.00 |
| Medium, arteries injected | 2.40 | 13.50 |
| Medium, arteries and hepatic portal injected | 2.80 | 20.00 |
| Large, 24 to 30 in., including a few sexually mature ♀, many ♀ not sexually mature, and adult ♂ | 2.40 | 13.50 |
| Large, arteries injected | 2.80 | 20.00 |
| Large, arteries and hepatic portal injected | 3.60 | 24.00 |
| Jumbo, 30 to 40 in., all animals sexually mature | 2.80 | 20.00 |
| Jumbo, arteries injected | 4.00 | 28.00 |
| Jumbo, doubly injected (as above) | 4.75 | 32.00 |
| Heads of jumbo fish, for brain dissection | 1.40 | 8.75 |

Below: Scenes at our wharf preparing room, during the handling of great quantities of dogfish.



*A substantial discount will be allowed from these list prices.* *See Page 2.*

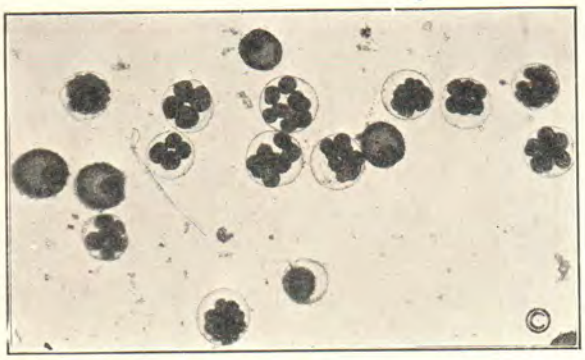
*Squalus sucklii*, the dog shark © S



*Chimaera colliei*, the ratfish. A holocephalan for which we are headquarters

| | Each | Dozen |
|---|---|---|
| *Raja binoculata, Dasyatis dipterura*, etc., common skates, specimens 8 to 20 in. across, for classwork | 1.00 - 6.65 | 8.00 |
| *Tetronarce californica*, the torpedo or electric ray | 2.65 - 5.35 | |
| ...*Chimaera colliei*, PBL SPECIAL. The rat fish, a holocephalan. We can supply this weird and highly interesting form throughout the year, in any quantity, for class or exhibition | | |
| Straight, beautifully prepared exhibition specimens, ♂ | 2.00 - 3.35 | |
| ♀ | 2.65 - 5.35 | |
| Classwork specimens for dissection | 1.60 | 13.50 |
| *Amia calva*, fresh water dogfish, bowfin, sometimes | 1.35 - 2.65 | |
| *Lepidosteus platysomus*, or similar gar, sometimes | 1.35 - 2.65 | |
| *Polyodon, Acipenser*, or similar sturgeon, sometimes | 2.65 - 5.35 | |
| *Clupanodon*, or similar class teleost | .40 | 2.00 |
| *Embiotocidae*, viviparus perch of several sort, can be supplied for exhibition. Pregnant ♀ | 1.35 - 2.65 | |
| Gravid uterus, with escaping fish, dissected out | 2.65 | |
| *Scorpaenichthys*, or similar ornamented Scorpaenid | 1.35 - 2.65 | |
| Blennies, sculpins, flounders, rockcod, *Porichthys*, etc., can usually be supplied to order. | | |
| *AMPHIBIA* | | |
| *Necturus maculatus*, mud puppy, large, straight | 2.00 | 12.00 |
| *Necturus maculatus*, injected arterially | 2.65 | 21.35 |
| *Triturus torosus*, water dog, a western salamander | .60 - 1.00 | 6.00 |
| *Rana pipiens*, grass frogs, medium | .30 | 1.80 |
| Large | .45 | 2.40 |
| Large, injected | 1.35 | 10.65 |
| *Rana catesbiana*, bullfrog, medium | 1.35 | 12.00 |
| Large | 2.00 | 16.00 |
| *REPTILIA* | | |
| *Phrynosoma sp.*, horned toad, or similar class lizard | 1.00 | 6.00 |
| Such snakes as Racers, Rattlesnakes, Garter, King and Gopher snakes can occasionally be supplied for exhibition | 2.00 - 8.00 | |
| *Pseudemys elegans*, the Cumberland Terrapin, and other large turtles | | |
| Small, under 5½ in. | 1.00 | 4.80 |
| Medium, 5½ to 7 in. | 1.35 | 8.00 |
| Large, 7 to 9 in. | 2.00 | 12.00 |
| Injected large and medium specimens | 4.00 | 24.00 |
| *AVES* | | |
| Pigeons, preserved for classwork | 1.35 | 10.65 |
| Pigeons, arterially injected | 3.00 | 20.00 |
| *MAMMALIA* | | |
| White Rats, plain preserved | 1.35 | 9.35 |
| White Rats, arterially injected | 2.40 | 17.50 |

*A substantial discount will be allowed from these list prices.* *See Page 2.*



Eggs of the starfish *Patiria miniata* in early cleavage and gastrulae stages. x about 29. Note the comparatively large size of these eggs, their almost diagrammatic clearness and the high degree of fertility. © P

Developmental stages of the Scyphozoan jellyfish. The scyphistoma and the usually rare strobila, attached forms, are at the left and center, with the free swimming ephyrula on the right. © P.

# EMBRYOLOGICAL MATERIAL

| | Each | Dozen |
|---|---|---|
| ....*Aurelia* developmental stages, PBL SPECIAL. See list of zoological materials for museum specimens of scyphistomae and strobilae on rocks. This is probably one of the few regions in the world where such material can be taken in quantity. See American Naturalist, Jan.-Feb., 1925, page 94. All stages fully expanded. | | |
| *Scyphistomae*, polyp stage | .40 | 4.00 |
| *Strobilae*, saucer stage | 1.00 | 8.00 |
| *Ephyrulae*, early free swimming stages | .40 | 2.00 |
| ....*Patiria miniata*, eggs and early larvae, PBL SPECIAL. Starfish eggs. Each year, an increasing number of the large eggs of this starfish are grown in our laboratory. It is likely that this material exceeds any other in its suitability for classwork in cleavage. See Biological Bulletin, Aug. 1925, page 111. Vials for 25 students are 40 mm. x 12 mm., and contain solidly packed eggs to a depth of about 5 mm. In 70% alcohol via Bouins. | Per vial | Dz. vials |
| A. Ripe, but unfertilized | 1.20 | 12.00 |
| B. Killed a few minutes after fertilization, for polar bodies | 1.60 | 16.00 |
| C. Early cleavage | 1.80 | 18.00 |
| D. Late cleavage | 1.80 | 18.00 |
| E. Blastulae | 2.00 | 20.00 |
| F. Gastrulae | 2.00 | 20.00 |
| G. Bipinnaria, per vial of 1 dozen | 1.40 | 14.00 |
| H. Brachiolaria. East coast material. 1 dozen | 2.00 | 20.00 |
| | Each | Dozen |
| I. Young starfish (*Leptasterias*) after completion of metamorphosis | .25 | 2.40 |
| *Antedon sp.*, free swimming crinoid, pentacrinus larvae | .65 - 2.65 | 2.00 |
| *Cancer antennarius*, early developmental stages. Each egg removed from cluster and fixed in strong picro-sulphuric. Illustrating partial and superficial cleavage in an egg the embryo of which forms on the flat side. Per dozen eggs, any available stage. To order | | 1.60 |
| *Cancer antennarius*, or similar large crab, zoaea | .25 | .80 |
| megalops | .40 | 1.60 |
| *Homarus*, schizopod stage. Atlantic coast material | .20 | .85 |
| *Limulus*, trilobite stage. Atlantic coast material | .40 | 1.20 |
| *Amaroecium sp.*, tadpole larvae of tunicates | .40 | 1.60 |
| *Scup*, or similar teleost. A. Cleavage. B. Periblast. C. Germ Ring. Stage A, B, or C. | .40 | 2.40 |
| Stage D. Early embryos (usually *Porichthys*) | .80 | 4.00 |
| *Raia* or *Dasyatis*, egg cases with embryos | 1.00 - 2.00 | |
| Frog eggs. 10 stage series, from unsegmented egg to newly hatched larvae. 1 dozen to each stage, per series | 8.00 | |
| Eggs of any of the above stages, per dozen | | .80 |
| 15 stage series. Duplication of the above 10 stages, plus 5 tadpole stages. 1 dozen to each stage, per series | 12.00 | |
| Tadpole stages, any stage, per dozen | | 1.00 |

*A substantial discount will be allowed from these list prices.* *See Page 2.*

Pig embryo of about 10 mm, with membranes dissected away. © P

*Marchantia* gemma cup, living. See also Lantern Slide BL 41. © P

| | Each | Dozen |
|---|---|---|
| Chick embryos, in 70% alcohol via picro-sulphuric, correctly graded and histologically prepared for whole mounts or sectioning. A. Primitive streak (17-20 hours). B. 24 hours. C. 33 hours. D. 48 hours. E. 72 hours. Any stage, per dozen | | 8.65 |
| ....Pig embryos, PBL SPECIAL. Correctly graded and prepared for sectioning. Preserved in 70% alcohol, via Bouins or Zenkers. | | |
| Under 6 mm., not always at hand | | 10.65 |
| 6 - 10 mm. | | 8.00 |
| Exactly 10 mm. | | 9.35 |
| 10 - 15 mm. | | 6.00 |
| 15 - 20 mm. | | 5.35 |
| 20 - 30 mm. In formalin via Zenkers | | 4.00 |
| 30 - 45 mm. In formalin via Zenkers | | 4.00 |
| Graded series of 6 stages, including one typical representative from each of the above stages, per series | 4.75 | |

# BOTANICAL MATERIAL

Most of our botanical material is put up in unit packages, each unit containing sufficient material for 12 students. No attempt is being made to list a comprehensive grouping, the intention being to mention only the more commonly used forms. Many items not listed can be supplied.

## THALLOPHYTES

| | Per Unit | Double Unit |
|---|---|---|
| *MYXOMYCETES*, the slime moulds | | |
| *Stemonitis*, or *Fuligo*, dry in boxes | 1.00 | 2.00 |
| *CYANOPHYCEAE*, the blue green algae | | |
| *Anabaena*, *Nostoc*, or *Oscillatoria* | 1.00 | 2.00 |
| *CHLOROPHYCEAE*, the green algae, any of the following | 1.00 | 2.00 |

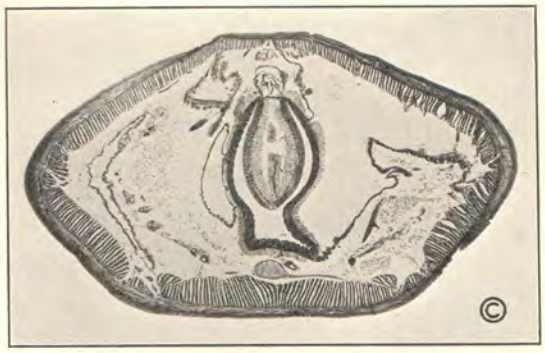
*Chara*, pondweed, sexual
*Cladophora*
Desmids, mixed
Diatoms, mixed
*Hydrodictyon*, water net
*Oedogonium*, sexual
*Pandorina*
*Spirogyra*
*Ulothrix*
*Ulva*, sea lettuce
*Vaucheria*, sexual
*Volvox*
*Zygnema*

| | | |
|---|---|---|
| *PHAEOPHYCEAE*, the brown algae | | |
| *Ectocarpus*, or *Fucus*, fruiting | 1.00 | 2.00 |
| *Nereocystis lütkenii*, the giant kelp. Small specimens of a total length of two or three feet are usually on hand, each | 2.00 - 6.65 | |
| *Pelvetia*, the most common rockweed locally | 1.00 | 2.00 |
| *Postelsia palmaeformis*, sea palm, up to 12 in. high, each | .65 - 1.35 | |
| *RHODOPHYCEAE*, the red algae | | |
| *Corallina*, the coralline alga | 1.00 | 2.00 |
| *Gigartina*, large tuberculated leaves, each | .20 - .40 | |
| *Nemalion* or *Polysiphonia* | 1.00 | 2.00 |

*A substantial discount will be allowed from these list prices.* *See Page* 2.

Reproduction of photo of the exhibition of leaves. Other exhibitions of this sort can be had for "Flowers and Inflorescences," "Fruits, Seeds and Seedlings," and "Roots." The actual specimens are mounted on a background averaging 25 x 15 in., with wooden frame slotted for a glass cover. They are passed around the room as needed, and are hung to the wall by picture wire when not in use. © P.

*Prices on Botanical Exhibitions are net. No discount.*



T. s. Earthworm. x 11. From slide ZA 16
© P

W. m. *Clonorchis sinensis*, x 7, the cat and human liver fluke of the Orient. An excellent classwork trematode. See also illustration on page 6.

| | Per Unit | Double Unit |
|---|---|---|
| *FUNGI* | | |
| *Albugo* (*Cystopus*) or *Mucor*, Phycomycetes | 1.00 | 2.00 |
| *Aspergillus*, *Microsphaera* or *Penicillium*, Ascomycetes | 1.00 | 2.00 |
| *Peziza*, per dozen | 1.65 | |
| *Morchella*, per dozen | 4.00 | |
| *Puccinia graminis*, wheat rust, a Basidomycete; Uredospores or Teleutospores | 1.00 | 2.00 |
| *Geaster*, the "earth star," per dozen | 1.65 | |
| Lichens, Foliose or Crustose, illustrating symbiosis | 1.00 | 2.00 |
| **BRYOPHYTES** | | |
| *HEPATICEA*, the liverworts | | |
| *Marchantia*, ♂, ♀, sporophytes or gemmae | 1.00 | 2.00 |
| *MUSCI*, mosses | | |
| Typical moss, protonema stage | 1.00 | 2.00 |
| Typical moss, (*Polytrichum* or similar) capsules | 1.00 | 2.00 |
| *Polytrichum* or similar ♂. *Mnium* or similar ♀ | 1.00 | 2.00 |
| **PTERIDOPHYTES** | | |
| Fern leaves with sporangia, per dozen | 1.65 | 2.65 |
| *Pteris* rhizome, sections | 1.00 | 2.00 |
| Fern prothallia | 1.00 | 2.00 |
| *Salvinia* or *Azolla*, water ferns | 1.00 | 2.00 |
| *Equisetum*, vegetative or fruiting | 1.00 | 2.00 |
| **SPERMATOPHYTES** | | |
| *GYMNOSPERMS* | | |
| *Pinus*, ♂ cones; ♀ cones, 1, 2, or 3 year | 1.35 | 2.50 |
| *Zamia*, staminate sporophylls | .40 | .75 |
| *ANGIOSPERMS* | | |

No attempt is made to supply class material for structural botany. The botanical exhibitions described below fill this need quite thoroly.

# BOTANICAL EXHIBITIONS

In line with our policy of adding to our products nothing but items of high quality and known pedagogical value, we are glad to announce that we have been chosen to distribute the framed botanical exhibitions that Dr. Emerson of Penn College has been developing during the past few years. One of these exhibits is illustrated on the opposite page.

The object has been to supply to teachers, in a permanent, indestructible form, the specimens commonly required for structural botany. Each exhibit contains 25 to 40 numbered specimens, dried and mounted or in vials. These are mounted on heavy book board backs on white, the whole in a heavy wooden frame with a groove for inserting glass.

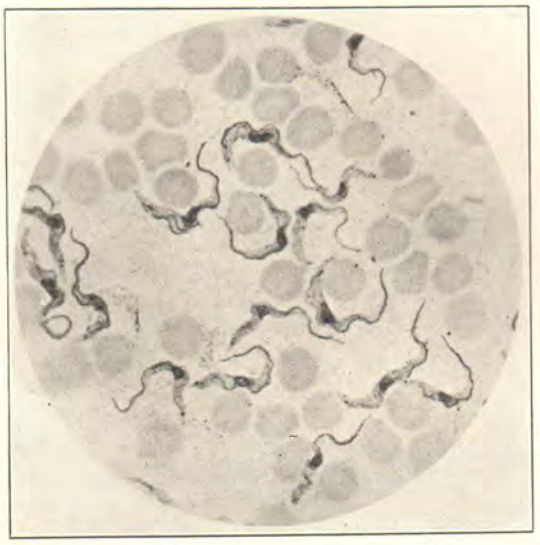
The numbers refer to the legend in the lower right hand corner of the background, and this, in turn, is referable to the printed explanatory syllabus that accompanies each exhibit.

The following five sets have already been developed, and several others are projected. Shipment can be made from any one of several points in the middle west or on the Pacific Coast.

| | | |
|---|---|---|
| BE 1. | Leaves | 16.00 F. O. B. shipping point |
| BE 2. | Flowers and Inflorescences | 16.00 F. O. B. shipping point |
| BE 3. | Fruits, Seeds and Seedlings | 16.00 F. O. B. shipping point |
| BE 4. | Roots and Propagation | 17.50 F. O. B. shipping point |
| BE 5. | Stems | 16.00 F. O. B. shipping point |

*The prices on Botanical Exhibitions and Slides are net. No discount.*
*The Botanical Preserved Material prices are list.*

*Leishmania tropica*, the organism of Oriental sore. Photomicro at about 800 diameters from slide ZE 3b. © P.



*Trypanosoma gambiense.* x about 800. From Slide ZE 3.

# MICROSCOPIC SLIDES

As forcast in our September, 1924, Announcement, our slide stock has been building up rather slowly, and it is not even now considered advisable to issue a complete price list. To the original set of slides for invertebrate zoology has been added a set for general biology, a set for botany, a grouping of slides to apply to parasitology, and slides of the illustrated human embryo. These preparations will usually be found satisfactory according to any standard of quality, however high. A number of them are surprisingly fine. In the unlooked-for contingency that any of them prove not highly satisfactory, instructors need have no hesitancy in returning them for credit, since doing so will work the mutual benefit of improving future quality and insuring satisfied users.

## SET BA. SLIDES FOR GENERAL BIOLOGY

26 representative preparations, complete in wooden box, according to the following specifications. Per set ..... 13.00

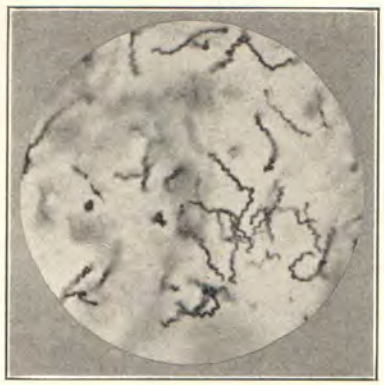
| | | | | | |
|---|---|---|---|---|---|
| BA 1. | 3 types of Bacteria | 1.00 | BA 14. | T. s. *Grantia* | .60 |
| BA 2. | *Spirogyra*, vegetative and conjugating | .60 | BA 15. | *Hydra*, w. m. extended | .60 |
| BA 3. | *Mucor* or *Rhizopus* | .60 | BA 16. | Hydroid colony, with hydrothecae and gonothecae | .60 |
| BA 4. | *Marchantia*, l. s. ♂ | .70 | BA 17. | *Planaria*, w. m. | .60 |
| BA 5. | Moss protonema, w. m. | .60 | BA 18. | Earthworm, t. s. | .60 |
| BA 6. | Fern prothallus, w. m. | .60 | BA 19. | Starfish ray, t. s. | .60 |
| BA 7. | T. s. monocot and dicot stems | .60 | BA 20. | Entire small clam, t. s. | .90 |
| BA 8. | T. s. typical angiosperm leaf | .60 | BA 21. | W. m. of *Anopheles* or *Culex* | 1.50 |
| BA 9. | L. s. root tip, mitosis | .60 | BA 22. | T. s. insect compound eye | .60 |
| BA 10. | Section of lily ovary | .60 | BA 23. | W. m. 3 types of honey bee legs | .60 |
| BA 11. | Section of *Capsella* embryo | .70 | BA 24. | T. s. frog skin | .60 |
| BA 12. | *Amoeba proteus* | 1.00 | BA 25. | T. s. *Necturus* intestine | .60 |
| BA 13. | *Paramoecium* | .60 | BA 26. | Starfish eggs, several stages | .90 |

## SET ZA SLIDES FOR INVERTEBRATE ZOOLOGY

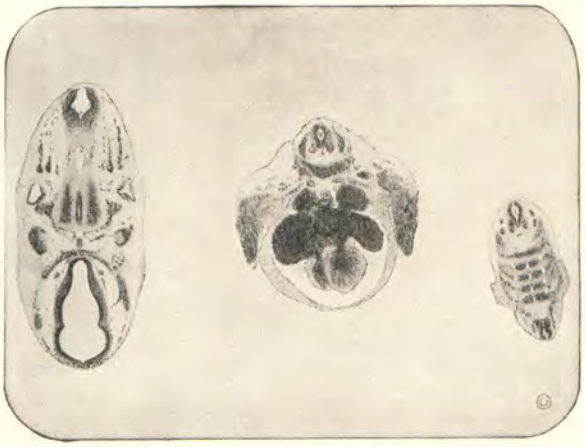
First mentioned in our April, 1924, Synoptic Price List, this set of invertebrate preparations has proved rather popular with the great division of zoology departments too small to have a full time technician, yet large enough to demand the best in the line of microscopic preparations. The complete set, 25 slides, will sell at $16.00 from now on, supplanting the old price of $15.00; separate preparations selling as follows:

| | | | | | |
|---|---|---|---|---|---|
| ZA 1. | *Amoeba proteus* | 1.00 | ZA 14. | *Trichinella* in meat | .60 |
| ZA 2. | *Paramoecium*, fission | .75 | ZA 15. | Starfish ray, t. s. | .60 |
| ZA 3. | *Paramoecium* conjugation | .90 | ZA 16. | *Lumbricus*, t. s. | .60 |
| ZA 4. | *Grantia*, t. s. or l. s. | .60 | ZA 17. | *Lumbricus*, l. s. | .60 |
| ZA 5. | *Hydra oligactis*, w. m. | .60 | ZA 18. | *Bugula turrita*, w. m. | .60 |
| ZA 6. | *Hydra*, t. s. | .60 | ZA 19. | Entire small clam, t. s. | .90 |
| ZA 7. | *Obelia*, w. m. hydroid | .60 | ZA 20. | *Amphioxus*, t. s. several regions | 1.00 |
| ZA 8. | *Obelia* medusae, w. m. | .60 | ZA 21. | L. s. root tip, mitosis | .60 |
| ZA 9. | Small *Metridium*, t. s. | .60 | ZA 22. | Starfish eggs, cleavage | .60 |
| ZA 10. | *Planaria dorotocephala*, w. m. | .60 | ZA 23. | Starfish eggs, blastulae | .60 |
| ZA 11. | *Planaria*, t. s., several regions | .60 | ZA 24. | Starfish eggs, gastrulae | .60 |
| ZA 12. | *Clonorchis sinensis*, w. m. | 2.00 | ZA 25. | Frog egg, t. s., neural fold | 1.25 |
| ZA 13. | *Dipylidium*, scolex and proglottids | 1.50 | | | |

*The above prices are net. No discount, except for purchasing in quantity.*



*Treponema pallidum* of syphilis. x 1500
Organisms in situ in tissue section of congenital luetic. ZE 1 © P.



Photomicro x 5 of typical slide preparation of T. s. human 12 mm. embryo. See also Lantern Slide EL 3. © P

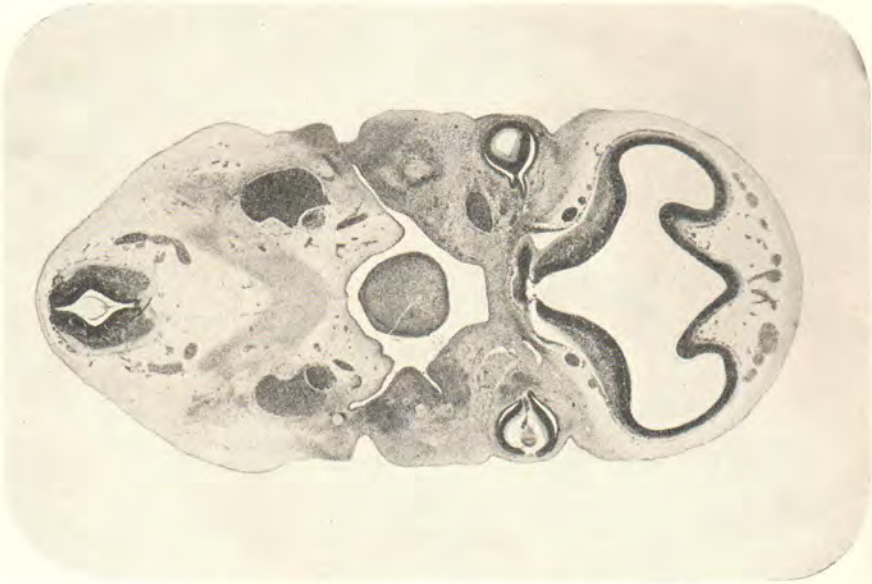
## SLIDES FOR PARASITOLOGY, MEDICAL ZOOLOGY

During the past two years, literally hundreds of such preparations as *Trypanosoma gambiense, Treponema pallidum, Eimeria stiedae, Clonorchis, Fasciolopsis,* etc., have been sold through typed price lists and announcements. The appreciation and approbation has been considerable enough to justify our listing these forms in a printed price list. Bear in mind, however, that it is very difficult for us to keep a constant stock of material so rare or hard to secure as *Leishmania,* for instance, or *Schistosoma,* and we cannot guarantee to keep on hand more than 50 to 75% of the preparations listed. These, or any other of our products, may be had upon approval.

| | | |
|---|---|---|
| ZE 0a. | *Entamoeba histolytica,* the organism of amoebic dysentery. Pure culture smear | 1.75 |
| ZE 0b. | T. s. human colon to show amoebic dysentery absesses, with the organisms in situ | 1.75 |
| ZE 1. | *Treponema pallidum,* of syphilis, in tissue. Levaditi | 1.50 |
| ZE 2. | *Spironema obermieri,* of Asiatic relapsing Fever, blood smear | 1.75 |
| ZE 2a | *Leptospira icteroides,* the recently discovered agent of yellow fever | 2.25 |
| ZE 3. | *Trypanosoma gambiense* of African sleeping sickness. Hundreds of these organisms, well stained, in blood smear | 3.00 |
| ZE 3a. | *T. lewisi,* a non-pathogen, in rat blood | 2.00 |
| ZE 3b. | *Leishmania tropica* of Oriental Sore, exceedingly fine preparations of clean pure cultures, with a staining technic especially developed for the PBL | 1.75 |
| ZE 3c. | *Giardia intestinalis,* pure culture smears of this human intestinal flagellate *Trichomonas* and other forms can sometimes be supplied at this figure. | 2.25 |
| ZE 4. | *Eimeria stiedae* (*Coccidium oviforme*) of Coccidiosis. Sections of rabbit liver showing heavy infection, with the coccidians clear enough for detailed study | 1.25 |
| ZE 5. | *Plasmodium vivax* of tertian malaria. Uncovered slides of ring or of pigmented stages | .75 |
| ZE 5a. | *P. falciparum,* of aestivo-autumnal malaria. Crescent or pigmented stage. Uncovered | .75 |
| ZE 5b. | Negri bodies of hydrophobia | 2.25 |
| ZE 6. | *Fasciola hepatica,* sheep liver fluke, whole mount | 1.25 |
| ZE 6a. | *Cerceriae* of *Fasciola,* from the snail *Lymnaea* | .75 |
| ZE 6b. | *Fasciolopsis buski,* exceedingly good whole mounts of this Chinese human intestinal fluke | 3.00 |
| ZE 7. | *Clonorchis sinensis,* human and cat liver fluke from the Orient | 2.00 |
| ZE 7a. | *Schistosoma japonicum,* the Oriental blood fluke. ♂ or ♀ on separate slides, both on the same slide, and in coitu, prices ranging from $2.50 to 8.00, but not always on hand. | |
| ZE 8. | *Taenia saginata,* sexually mature proglottids | 1.50 |
| | gravid proglottids | 1.50 |
| ZE 8a. | Sections of *Taenia crassicolis,* l. s. or t. s. | 1.00 |
| ZE 8b. | *Dipylidium caninum,* scolex | 1.00 |
| ZE 8c. | *D. caninum,* sexually mature proglottids | .60 |
| ZE 8d. | *D. caninum,* gravid proglottids | .60 |
| ZE 8e. | *Diphyllobothrium mansoni,* proglottids | 1.50 |
| ZE 9. | *Necator americanus,* hookworm, ♂ or ♀ | 1.00 |
| ZE 10. | *Trichinella spiralis,* in fibres of muscle | .60 |
| ZE 10a. | *Ascaris lumbricoides,* t. s. | 1.00 |
| ZE 10b. | *Filaria bancrofti* of elephantiasis, in blood smears | 2.25 |
| ZE 11. | *Pediculus vestimenti,* or *P. capitis,* human lice | 1.00 |
| ZE 12. | *Cimex lectularius,* bedbug, whole mount | 1.00 |
| ZE 13. | *Anopheles sp.,* ♀, the malarial mosquito | 1.25 |
| ZE 14. | *Culex sp.,* the house mosquito | 1.00 |

*The above prices are net to all. No discount except for purchasing in quantity.*

Line drawing of 12 mm. human embryo mentioned in recent announcements. See also Lantern Slide EL 1. © P



T. s. head region, 12 mm. human embryo. Photomicro x 9 of typical slide section. See also Lantern Slide EL 2. © P

ZE 15. *Pulex irritans*, human flea ..... 1.00
ZE 16. *Dermacentor venustus*, the tick implicated in the spread of Rocky Mountain spotted fever ..... 1.50

Preparations of a number of other parasitic or medically important Arthropods are often at hand, including *Glossina*, the vector of African Sleeping Sickness, *Aedes*, the mosquito transmitting yellow fever, etc., etc.

## HUMAN EMBRYO SLIDES

Slide preparations of a 12 mm. human embryo have been described at greater length elsewhere. The accompanying illustrations are fairly accurate reproductions of typical slides, most of which have representative sections from three body regions. This material was correctly fixed in the first place, and the subsequent processes have been attended to by a technician of considerable ability. Most instructors ask that we forward a number of preparations from which selections can be made, the balance being returned.

Price per slide, $4.00 to 6.00 each, with 25% discount for purchasing in quantities of 6 or more.

## SET BA. SLIDES FOR BOTANY

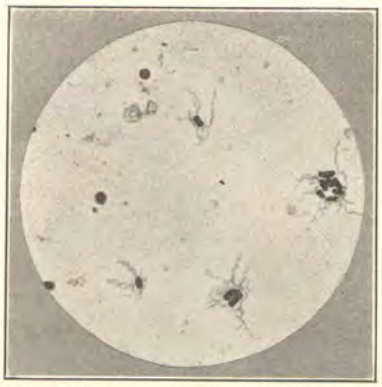
Selected for their pedagogical value and quality, these slides will prove of great value to departments requiring the highest quality of preparations. 30 slides are offered, to fit the average college course in botany. The set sells, complete, at ..... 15.00
Single preparations, each ..... .60

Bo A 1. *Nostoc*, blue green alga
Bo A 2. *Spirogyra*, conjugating
Bo A 3. *Ulothrix*, green alga with zoospores and gametes
Bo A 4. *Ectocarpus*, brown alga
Bo A 5. *Nemalion*, red alga
Bo A 6. *Coprinus*, gill fungi
Bo A 7. *Puccinia*, wheat rust, uredospores
Bo A 8. *Puccinia*, teleutospores
Bo A 9. *Puccinia*, aecidiospores in sections of barberry leaf
Bo A 10. Lichen, section
Bo A 11. Moss, antheridia, sections
Bo A 12. Moss archegonia, w. m.
Bo A 13. Fern sporangia, w. m.
Bo A 14. *Selaginella* stem, illustrating protostele
Bo A 15. *Pteris* rhizome, polystele
Bo A 16. Fern prothallium, w. m.
Bo A 17. Pine, ♀ cone, l. s.
Bo A 18. Pine, ♂ cone, l. s.
Bo A 19. Lily ovary, section
Bo A 20. Lily anther, section
Bo A 21. *Pinus*, leaf, section
Bo A 22. Lilac leaf, section
Bo A 23. *Cycas*, leaf, section
Bo A 24. *Aristolochia, stem*, t. s., typical dicot stem
Bo A 25. *Zea mays*, corn, t. s. stem, typical monocot stem
Bo A 26. *Pinus*, stem, 3 sections
Bo A 27. Root of Sagittaria, t. s.
Bo A 28. Root branch in Sagittaria
Bo A 29. *Tradescantia*, l. s. root tip showing mitosis
Bo A 30. Dodder on host

## SET BT. SLIDES FOR BACTERIOLOGY

A set of 15 slide preparations, containing such economically important forms as *Streptococci, Staphylococci, Pneumococci, Gonococci*, the bacilli of Anthrax, Botulinus poisoning, Tetanus, Tuberculosis, Typhoid Fever, etc. 15 preparations complete in wooden box ..... 12.50

*The above prices are net. No discount except for purchasing in quantity.*



Photomicro of *B. typhosus*, x 1200, showing flagella

# LANTERN SLIDES

## LANTERN SLIDES AND STEREOS OF THE CALIFORNIA WILD FLOWERS

for which this state is so justly famous. 50 photos, beautifully hand colored, of group pictures and close-ups of the actual living flowers, under natural conditions. The standard set of 50 stereos sells at $22.50 colored, with stereoscope at $1.75. The 50 lantern slides colored sell at $60.00. A detailed price list will be sent upon request.

## AMOEBA TO MAN LANTERN SLIDES

A set of 100 preparations, with syllabus, planned for the teacher of general zoology. These are photos and drawings, mostly from life, of the representative types from the chief animal divisions. The complete set sells at $60.00. A detailed price list can be had.

## LANTERN SLIDES OF THE HUMAN EMBRYO

The negatives used in making the embryo illustrations shown in this catalog have been made also into lantern slides. Three such preparations are offered:

E-L 1. Lantern slide of entire 12 mm. human embryo, from photo. x5 ..... 1.00
E-L 2. Lantern slide of t. s. thru the head region of 12 mm. human embryo. From photomicro 1.00
E-L 3. Lantern slide of 3 sections thru different body regions. From photomicro ..... 1.00

## LANTERN SLIDES AND STEREOS OF THE MARINE FAUNA OF MONTEREY BAY

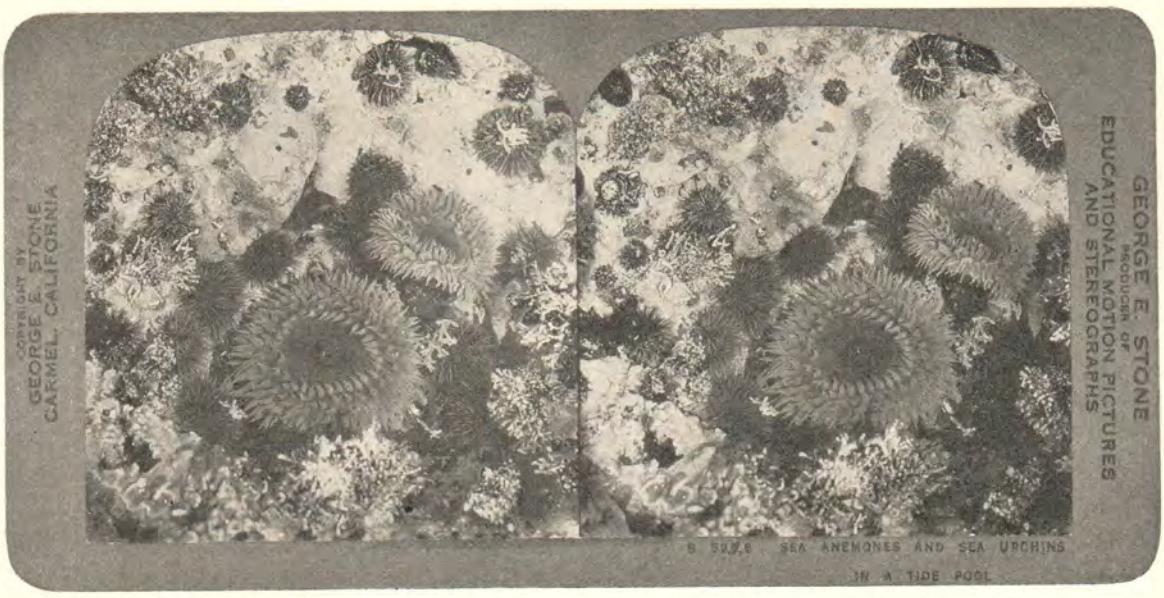
These lantern slides and stereos, the product of the zoologist-motion picture photographer, Geo. E. Stone, were first mentioned in our January, 1925, Announcement, at the time we were chosen as the medium of distribution to colleges. Since that time full sets or selected preparations have been sent to a great many universities in this country and abroad. The stereos especially have apparently filled a long felt want, and we do not hesitate to recommend them most highly. They aid more than any other one thing in portraying the rich life of our intertidal zone; and to schools located anywhere in the world they are the next best thing to a trip to the sea shore.

Stereographs (giving full relief when viewed through the stereoscope) in the following titles, sell, uncolored, at $3.35 per dozen; handcolored at $5.40 per dozen. Stereoscopes at $1.75 each

Lantern slides of the same subjects sell, uncolored, at 50c. each; handcolored at $1.20 each

A 589.3 General view of rocky tidepool, showing profusion of *Pelvetia*, and other rockweeds
B 589.3 Closeup of kelps at low tide, showing holdfasts
A 591.179 The starfish *Pisaster ochraceous* regenerating a lost ray
A 591.52 Rocky coast laid bare at low tide. The holes in the rocks have been made by the sea urchin *Strongylocentrotus purpuratus.*
C 591.52 Rocky coast near Carmel, California. Masses of surf resistant mussels and goose barnacles can be seen attached to the rocks
E 591.52 Close up of rocky grotto, showing starfish, mussels and goose barnacles in great profusion
F 591.52 Typical rocky shore supporting vast communities of animals and plants
A 593.2 An underwater photo showing the red starfish *Patiria miniata* and many purple urchins and anemones
B 593.2 Solitary Corals (*Balanophyllia elegans*) in tide pool with Sertularian and Plumularian hydroids
D 593.6 Sea anemones and sea urchins exposed on the rocks at low tide
A 593.6 Vividly colored anemones in tide pool
B 593.6 The large anemone *Bunodactis*, expanded, in tide pool with purple urchins
A 593.92 The starfish *Pisaster ochraceous* on the rocks at low tide
A 593.95 A great bed of the sea urchins *S. purpuratus*, under water
B 593.95 Close up view showing the pits worn in solid rock by sea urchins
C 593.95 Sea urchins in pits worn in solid rock
A 594.1 Cluster of mussels, *Mytilus californianus*, anchored to the rocks by the tough horny threads they spin

*The above prices are net. No discount of any nature.*




Slightly reduced photo of one of the stereographs (B 593.6) listed on page 21, giving full relief when viewed through stereoscope. © S

B 594.1 The long necked clam *Schizothaerus nuttalli*, with siphon and foot extended.
C 594.1 Close-up view of the edible mussel, *M. californianus*
A 594.3 Cluster of black abalones, *Haliotis cracherodi*, exposed on the rocks at low tide
B 594.3 Close-up view of the black abalone, showing limpets attached to its shell
C 594.3 The red abalone, *H. rufescens*, in a tide pool. Note encrustations of algae attached to shell
D 594.3 Cluster of *Chlorostoma*, a snail which abounds in the border land of the sea
E 594.3 Cluster of limpets attached to rock
F 594.3 *Katherina tunicata*, a large chiton occurring just above the low tide mark
A 595.35 Close-up view of goose barnacles, *Mitella polymerus*, and edible mussels attached to face of rock

## BOTANICAL LANTERN SLIDES

With the following few preparations, selected for pedagogical significance and general quality, we are making a start in the supplying of lantern slides for botany and plant ecology. The illustration of *Marchantia* gemmae cup and of the fern group used herein were both made from photos prepared for this series.

Uncolored lantern slides of this set sell for, each ..... .60
or if a dozen or more are ordered at once, per dozen ..... 6.50

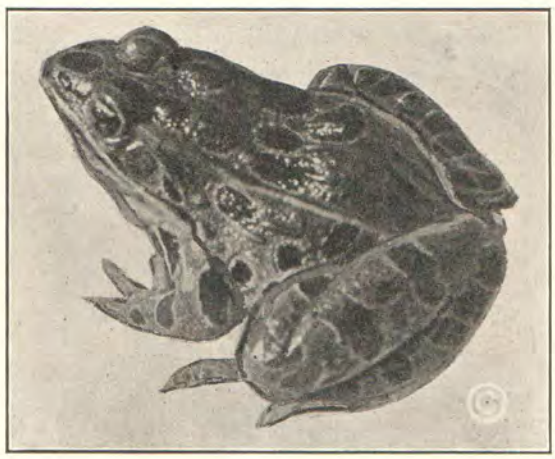
B-L 1. Alpine Mat Plant, "Vegetable Sheep," New Zealand
B-L 2. Alpine Mat Plant, *Petrophyton*, Colorado Mountains
B-L 3. Apical Cell of *Pellia*. T. s. or L. s. from photomicros
B-L 12. Cactus skeleton, from museum specimens. T. s. and L. s. on one slide
B-L 13. Cactus forest in Arizona
B-L 14. Cycads, showing fern-like vernation
B-L 15. Cycads, *Zamia* cones
..Bog Vegetation:
B-L 4. Pitcher Plants
B-L 5. Blueberry Flowers
B-L 6. Larch, Poison Sumach, etc.
B-L 7. Larch. Horizontal roots of young tree exposed by digging
B-L 8. Larch and white pine in *Chamaedaphne* bog
B-L 9. *Decodon*, a pioneer species on edge of young bog
B-L 10. *Habenaria ciliaris* (Orchid)
B-L 11. Cranberry fruit on shrubs
..Dunes and Dune Vegetation: Lake Michigan Dune Region
B-L 16, 17, 18. General Views
B-L 19. Lagoons and off-shore bar
B-L 20. Cottonwood, young seedlings
B-L 21. Cottonwood, tree with strong adventitious root, left by receding sand
B-L 22. Pine stage in dune vegetation
B-L 23. Oak stage in dune vegetation
B-L 24. Destruction of mature forests
B-L 25. Grapes keeping above the sand
..Dunes and Dune Vegetation: Kansas Inland Dunes
B-L 26, 27, 28. General Views
B-L 29. Plum and mulberry holding sand stabilized
B-L 30. *Solidago gymnospermoides* and *Calamovilfa* acting as sand binders
B-L 31. *Yucca glauca* in flower
B-L 32. Eroding clay banks, with root and slump propagation
B-L 33. Eroding clay shore, Lake Michigan
B-L 34. Erosion near its finish. Indiana forested ravine

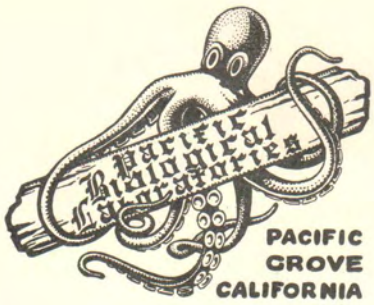
*The above prices are net. No discount of any nature.*

Lantern Slide B-L 59. Cinnamon Fern. © P

..Ferns:
B-L 35. *Botrychium virginianum*
B-L 36. *Botrychium obliquum*
B-L 37. *Cystopteris bulbifera* on rock face
B-L 38. *C. bulbifera* bulblets forming new plants
B-L 39. *Camptosorus rhizophyllus*
B-L 40. *Camptosorus* propagating (walking) by leaf tips taking root
..Fireweeds:
B-L 41. *Marchantia*
B-L 42. *Epilobium*
..Flowers:
B-L 43. *Helianthus*, sunflower, growing wild
B-L 44. *Baptisia bracteata*
B-L 45. Skunk cabbage
B-L 46. *Sagittaria latifolia*
B-L 47. Lupine
B-L 48. *Euphorbia marginata*, "Snow on the Mountain." An alkali plant.
B-L 49. *Arisaema triphyllum*
B-L 50. *Arisaema draconitum*
..Trees:
B-L 51. Beech trees, Indiana
B-L 52. *Betula lutea*, Birch
B-L 53. Tulip tree in flower, leaves and flowers in detail
B-L 54. *Juniperus communis* and *J. virginiana* together
B-L 55. *Populus tremuloides*
B-L 56. Horse Chestnut trees
B-L 57. Plant succession: On rock face
B-L 58. Plant succession: In rock crevice
B-L 59. *Osmunda cinnamonea*, Cinnamon Fern

*The above prices are net. No discount of any nature.*






*Most of the illustrations used herein are copper halftone reproductions of actual photos, either of the living animals, or of specimens and slides taken from our stock.*

*The line drawings are mostly the work of H. C. Creutzberg of Wistar Institute.*

*Of the photos, those marked © S, were taken and copyrighted by Geo. E. Stone, the producer of the excellent stereos and lantern slides of tidepool life, mentioned on page 21. Photos marked © P were taken at various times and by different individuals, mostly from materials on our stock shelves. They are copyrighted by Pacific Biological Laboratories. Photos copyrighted elsewhere are so indicated in the caption marking them.*

*Lantern slides, ranging in price from 60c. to $1.00 each, can be had of most of the photos used for illustrations.*