Western Union Telegraph Company,

RUSSIAN EXTENSION.

San Francisco June 7, 1866.

Dr Carpenter

Dear Sir

The impending departure of our Expedition, renders it necessary for me to complete my correspondence as soon as possible, I have sent to the Smithsonian by the Steamer of the tenth a box (No. 14) containing a copy of my Monterey notes written on one side and every other line only, in order that you can make such notes as you may judge best without altering the text. With this are numbered and named specimens of the shells collected there, comprising about 150 species of which some 20 are not recognized. I was obliged to have the M.S.S. copied by a person who knows nothing of the subject and you will doubtless find many errors in spelling punctuation etc. although I have read and corrected it hurriedly. I have not had time to prepare even Latin diagnoses of these unrecognized species, as we expect daily to be off, for six or eight months cruising in the North. I have made dogmatic remarks in many cases more to draw attention and reply, than because I endorse them to a literal extent; you must therefore excuse my freedom

in criticising.

Copy sent P. P. C.
 Conrad - Gould - Stimpson
 + Mayon
 for revision

Beach and shore shells of Monterey, Cal.
 collected in person, with notes on geographical
 distribution, synonymy, and habits.

By W. H. Dall

Acting Director Scientific Corps U. S. N.

- These notes are the result of two weeks assiduous
 collecting at Monterey, in the month of January 1866.
 The collecting grounds of Monterey may be summed
 up as follows. From the "Salinas River" to the
 point to where the sand bluffs near the town end,
 I have called the "Salinas beach," from that point
 to the town, a low flat marshy beach, strewn
 with bituminous shale, and sandstone, containing
 all the bryozoa; I have called the "Town beach," a small
 beach near the mouth of a rivulet, which is bridged,
 and which spreads widely over the sand, affords
 good specimens of Olivella biplicata. A rocky and
 sandy nook West of the wharf is a noted retreat
 in June for Lunatia Lewisii, which then and
 there deposits its curious egg ribbons (Canfield)
 On the rocks, off the wharf's try works, covered with
 Laminarian algae, may occasionally be found
 the rare and curious Lucapina. The animal of
 great size, resembling India rubber in color and
 texture. The shell is completely covered. Numerous
 small rocky beaches along this part of the shore,
 afford little but Patellids; and just before reaching
 the Chinese fishing settlement, a small steep

sand beach of semilunar shape, each extremity
rocky; presents itself; and here may be found
an infinite variety of small shells enumerated
7 hereafter. I have called this the "Halfmoon beach."
Next, is the Chinese beach where may be found
8 Haliotis shells in great numbers, the remains
from their soup kettles. Beyond this, just around
Mussel point is a small shingle beach, with a
little sand at low tide level; rocks of large size,
9 put out into a heavy surf which always rolls
in from the Ocean. The Patellidae, including the
rare and beautiful Acmaea scabra abound. From
here to Point Pinos, and from thence to Carmel Bay
10 is the sea beach proper. It is very rocky and affords
but little in the way of shells. Fine specimens of
Chlorostoma rustica, Gadinia radiata, and a
fragment of Mercenaria Kennerleyi were found
there; also Haliotids etc. On the rocky islets at
Cypress Point approachable only at low tide, is
11 found sparingly, the dwarf variety of Heelix Californiensis,
the type, very rare, on the main land. A camp
under the Cypresses all night in the pouring rain,
without refreshment, for the sake of attaining the
Island at low tide, (6 A.M. (P.M.)) resulted in nine
poor specimens, mostly dead. A large red and
black millepede, (which existed in myriads) seemed
to be exterminating them. The Actinias on the rocks
along the shore, catch and retain upon their tiny
suckers minute shells and bits of gravel.

Many fine things were obtained from this
source, among the small shells. Sifting the beach
sand proved a failure, the perfect shells being
always on the surface. The additions made in
this manner to the knowledge of the distribution
of Californian species, show that before settling
upon theories of distribution and fauna, it
will be necessary to add largely to the meagre
notes and material now in the hands of naturalists,
and careful collections in Winter and Summer
at distinct points, are necessary. The Mollusks or
some of them changing their station with the seasons.
A half hour's collecting on the little beach, at
12 miles from Santa Cruz, at the north end of Monterey Bay,
Doquel creek, added very interesting species to my
list, particularly an adult Calliostoma supracostatum.
I must express my obligations to Dr. C. A.
Canfield Monterey, Dr. J. B. Cooper, Santa Cruz, Capt.
Josslyn of the Schooner Fayaway, and to Mr. R. E. C.
Stedens of San Francisco, for efficient aid in
ways too numerous to mention, also to Prof. Whitney
of the State Geological Survey for many facilities
for study. The numbers in brackets are those
of the species here referred to in the supplementary
Report to The British Association by Dr. Carpenter
on the W Coast shells; Those species entirely in
brackets were mentioned as occurring at Monterey
in the supplementary Report, but were not found
there by me. The exclamation point denotes personal
collection by myself or the person whose name

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precede the point. The asterisk that the species is not mentioned by Dr. Carpenter as having been collected at Monterey. The dagger that it is new to the Californian fauna.

Class Polyzoa.

Four or five species collected and undetermined.

Class Palliobranchiata.

- 1 (3) *Terebratula unguicula* Cpr. Cooper!
- 2^x (6) *Waldheimia Grayi*, Davidson. Fragments
Town beach Canfield! Cooper, dredged 1.

Class Lamellibranchiata.

- 2^a? *Xylotrya* species, Destroying the Wharf!
- 3 (12) *Pholadidea penita* Conrad (13) plenty alive
in upcast fragments of bituminous shale Town b!
- 3^a (13) *P. Ovoides*, Gld. Cooper! not determined,
a doubtful species)
- 4 (14) *Stomanetta Darwinii*, Sby sp = *metastoma*
do, Cpr. ("prev. in fishes," Cooper) "B. A.!")
^{alive} One in rock dredged in 7 fms. Cooper!
- 5^x (16) *Parapholas Californica* Com. with No. 3! Cuffs
deciduous, only existing in young specimens.
Luminous at night when living. Length of
adult six to eight inches.

- 6 (17) *Saxicora phaladis*, Dinn, var. with P. penita!
- 7^x (18) *Glycimeris generosa*, Gld. Canfield! Town b!
- 8^x (20) *Platodon cancellatus* Conr. 10. Salinas b!
plenty at Saguel! Monterey, Cooper!
- 9^x (21) *Cryptomya California* Conr. Plenty, Salinas b! dead.
Monterey, in crypto, Cooper.
- 10 (22) *Schizothaerus Nuttallii*, Conr. Plenty Town b! small var.
- 11^x (27) *Crepidula punctata*, Cpr. 12. Salinas b!
Dredged at Monterey, Cooper!
- 12 (31) *Thracia curta*, Conr. Cooper!
- 13 (32) *Lyonsia California*, Conr. Plenty, mussel point!
- 14^x ? *Tractata* Gld.
Lyonsia sp. a small hyaline shell probably referable to this genus; and the Californian fauna type of *Crepidula floricornis* Conr. Gld. (E. Coast) and erroneously supposed to be the young of the preceding. This shell is not uncommon, and a specimen of *L. California* of half the size will outweigh three of this species. It has not the large Assicle nor tawny Epidermis of the last named shell, and has ~~probably~~ been separated, already. ~~If not I would propose the specific name of "tenax".~~ Monterey, Cooper.

- 15^x (35) *Mytilimeria Nuttallii* Conr. Halfmoon beach! five specimens. Assicle moderate, generally lost. Monterey, Cooper!
- 15^x *Mytilimeria* n. sp. [spongiophila?] (also collected by Dr. Cooper). Three specimens in sponge dead; Halfmoon b! The minute rectangular Assicle flew off during the drying of the shell and was lost. This shell may not be a true *Mytilimeria*, as it is very constant in form and characters. Is not the "sponge" a niche formed by the mollusk?
- 16^x (40) *Machaira patula*. Dixon, Salinas b, rare, Canfield! Cooper! dredged young.
- 17^x (42) *Psammobia rubro radiata*, Nutt. Fragments on Town beach! Canfield! (note - I found this shell at Coal harbor, Ounga, one of the Shumagin Is.) Monterey, Cooper!
- 18 (43) *Macoma (?) secta*, Conr. Salinas b! Canfield! not common. mostly young specimens.
- 19 (46) *Macoma nasuta*, Conr. Cooper! Canfield!
- 20 (49) *Macoma inconspicua* B + S. Cooper!
- 21 (51) *Moderia variegata* Cpr. (^{*Moderia* is} Prior to *Angulus* and equal to it.) Canfield! Cooper! not common, Halfmoon b! (*Thyentus* is preoccupied in Palmonata)
- 22 (53) *Maia Salmona* Cpr. 10. Halfmoon b! Canfield! Cooper! 20 fathoms.

23 (54) *Tellina bodegensis*. Hinds. many valves on Salinas beach! sometimes orange or salmon color.

24 (60) *Semele rufum*. Shy. Salinas b! Soquel! Town beach! Canfield! rare.

24a In the cabinet of the state Geological survey *Semele*? var. albida, is a specimen, which I should refer to the above species although it is perfectly white, but on examination I find it to be entirely destitute of the characteristic puncturations always observable in the area enclosed by the pallial line; in rufum. The hinge teeth are smaller and nearer together than in that shell. The shape is destroyed by rocknesting. Locality, Santa Barbara Island.

25^x (61) *Semele-rubrolineata* anct. not Conrad—
A fine shell of which several valves were found by Dr. Canfield and myself. This is not Conrad's shell as it does not agree with either figure or description. The interior of this species being always of a beautiful white, while his is described as "within purple in the middle" both lunules "purple" etc, Conrad's shell is probably a mature specimen of pulchra, or some of the recently described species, as the figure

color
variable
in other sp.
pale or white

cannot be tortured into decisa of any age, the shape being much more transverse.

The synonymy of these ~~shells~~^{semelles} requires careful revision, many of them being nestlers if not borers. They are subject to numerous variations, among which the color is liable to vary.

26^x 64 *Cummingia Californica*, Com. not uncommon on Town beach with *P. penita* and other borers! Monterey, Cooper!

27^x (69) *Standella Californica*, Com. one valve Town b!

28^x (71) *Standella falcata*, Gould. Plenty of valves and fragments on Salinas beach!

Common on sandy shores northward.

29^x (75) *Pachydesma crassatelloides* Conrad. young on Salinas b! One fine pair, recent. Canfield! Town b.

Abundant near mouths of Pajaro & Salinas Rivers.
30 (76) *Psephistantilla* Gould, abundant, Actinias! Halfmoon b! and Mussel Pt! From pure white to orange with or without purple patch, sometimes with two; with or without external brown zigzag lines or blotches; animal translucent yellow or white. A line at roots of fuci deep water.

31 (77) *Psephis Lordii*, Baird - one specimen living at low water in bunch of algae. Halfmoon beach!

32^x (80) *Mercenaria Kennerleyi*, Rue = *vinus* K. Cpr. Rep. One heavy imperfect valve, Sea beach! ditto Farallones Islands. Cooper! One pair quite minute but perfect. ~~Detritus of Fucus~~^{Detritus of Fucus}, State Coll. This fine and (almost lost) species is apparently a true Mercenaria. A conclusion with which Dr. Cooper agrees.

32^a *Licoconcha neocombiana*, Gabb. Proc. Calacad. Sciences, 1865, p. 189, one live specimen in algae.

33 (86) *Tapes lacineata*, Cpr. "B. A."! not identified! Cooper! dredged young!

34 (87) *Tapes staminea*, Conrad, in all varieties on all the beaches! The common "Clam" of San Francisco markets, and almost the only one seen there; Macoma nasuta and Saxidomus nuttallii very rarely.

Platydora cancellatus is once reported, and Schizothorus nuttallii and Cardium corbis once or twice. Glycymeris generosa has also been brought in.

35^x (89) Saxidomus nuttallii, Conrad, common on Town beach! sometimes as large as acutus. The number of nominal species of this genus on the West Coast, might advantageously be reduced. [There are only these two!] Monterey, Cooper!

- 36 (92) *Rupellaria lamellifera*, Conr. Common on
Tomb! This species when very young is of a
beautiful orange color, blotched with purple,
of parcellaneous texture and with numerous
fine but distinct radiations. These radiations
are sometimes continued till the shell is
an inch in length. (see Cpr. S. Rep. p 641 No 92)
The fry are without lamellae; of a deep orange.
- 37 (93) *Petricola carditoides*, Conr. not abundant
Tomb beach! The perfect shells are exquisite
in their sculpturing, the others rugged and chalky.
- 37² (94) *Chama exogyra*, Conr. One Specimen. Is the
sinistral form of the upper valve to be
relied on as a specific character?
- 38 (95) *Chama pellucida* Sby. Values plenty on rocky
beaches and Chinle beach, aline at
low water on under side of boulders.
- 39^x (97) *Cardium corbis*, Martyn. Common on
Salinas and Tomb beaches! aline between tides.
Monterey, Cooper!
- 40^x (98) *Cardium quadragenarium*, Conr. Fragments
Tomb beach! also Canfield! Cooper!

41^x (104) *Lioocardium substriatum*, - Com. one
value Halfmoon beach!

42 (110) *Lazaria* ^{*Cardium*?} *subquadrata*, Cpr. From to
Mussel point and sea beach, abundant!
alive in gravel under stones at low water -
vars with dark internal blotches like
P. s. tantilla and pale yellow without the
brown surface markings.

43⁺ ? (*Trapezium*) *n. sp.* (*halioticola* D.) Halfmoon b!
dead. Burying in *Haliotis rufescens*, two
perfect specimens, also Cabinet Canf. this
beautiful little species is quite distinct
from anything reported from this coast
before. I place it doubtfully in *Trapezium*.
? How about *T. Californicum* from Vetry?

44^x (III) *Lucina Nuttallii* Conrad, a few dead
valves, may be referred to this species. Halfmoon b.!

45^x (112) *Lucina Californica*, Com. all along the shore
very common, alive at low water in sand.
Monterey, Cooper!

46⁺ *Lucina* *sp.* (sent previously by mail by Dr.
Cooper from Coll. Dall & Stearns) small
divaricate. Probably described. Halfmoon
beach! a few valves - (like *divaricata*).

47^x Undetermined bivalves. Halfmoon beach!
Two valves; apparently allied to the *Veneridae*.

48^x (118) *Orbella Californica* Gld. (= *Diplo-donta orbella*
Cpr. Rep. p. 643) From beach! boring, two specimens.
Monterey, Cooper!

49 (119 + 119^b) *Kellia Laperousii* Desh. Plenty From b!
with borers, all varieties, from strong trans-
verse to thin orbicular.

49^a (120) *Kellia rotundata* Cpr. s. Report, not identified

50^x (122) *Dacrydium rubra*, Mont. Halfmoon beach!
dead, and ⁱⁿ roots of algae and fuci.
Gregarious, twelve specimens, maroon
to translucent white. Monterey, Cooper!

51^x (124) ? *Lepton merodum*, Cpr. from Actinias!
one valve.

52^x (125) ? *Tellinomya tumida*, Cpr. Halfmoon beach!
dead, one valve and one specimen - minute
triangular assicle is lost, shell has the
appearance of a nestler.

53 (127) *Mytilus Californianus* Conrad, Sea beach!
Plenty! Beautifully pearly -

- 54^x (128) *Mytilus edulis* Linné - all along shore!
small but common.
- 55^x (129) *Septifer bifurcatus*, Roe. Large, alive at
Mussel point beach! also dead at Halfmoon
beach! Mtry, Cooper!
- 56^a (131) *Modiola modiolus* Linné, Jewett! ?
~~Cooper!~~ not detected Dredged by Cooper in
Cammel Bay!
- 56^x (132) *Modiola fornicata*, Opr. Plenty, Halfmoon b!
alive at Mussel point! Bearded-
- 57^x (133) *Modiola recta*, Com. Fragments on Salinas
beach! ditto Canfield! Cooper! (dredged.)
- 58 (134) *Adula flaccata*, Gould, From beach! in
sandstone. 5 $\frac{3}{4}$ inches long. Common.
- 58^a (135) *Adula stylina*, Opr. "S. I!" not detected)
- 58^b (136) *Lithophagus plumula*, Hariley "S. I!" not detected)
In rocks along beach, Cooper!
- 58^c (143) *Apina intermedia*, Broderip, Cooper! not detected)
- 58^d (147) *Leda cœlata*, Heinds, Cooper! not detected)

- 58^E (148) *Leda cuneata*, Sby, Cooper! not detected)
- 58^F (149) *Soldia* ? *like syotilla*. 1 depth 40 fms. Cooper.)
- 59^F *Lima* sp. Halfmoon beach! two fragmentary valves. This is not dehiscens Conr. as per Cooper's dredged, live specimens. (? Orientalis ad + Rve) Dehiscens has threaded sculpture, and this is grooved, also much thinner and apparently more gaping. [Is not Dehiscens prior to Orientalis?] Yes, and yours is probably a new variety of it. J.E.C.
- 60 (158) *Pecten hastatus*, Sby - One valve Halfmoon beach! ditto Canfield!

61^x (162) *Pecten latiauritus*, Conrad. (not Carpenter, see Sup. Rep. P. 645, No. 162) Plenty at seasons when the currents and winds bring the kelp on which they live, into the Bay of Monterey. Otherwise only occasional dead valves. In Aug. 1865, the number thrown up was so great that they were largely collected as food, for several days. Town beach! Canfield! about a peck. (This is the smooth and indistinctly ribbed species well described, and badly figured by Conrad in Phil. Acad. Journal, (Vol VII, P. 238, Pl. 18, fig 9) It has been confounded with the following (?) species - Monterey, Cooper!

62 (162^D) *Pecten monotimeris*, Conrad. (not Carpenter -) Halfmoon beach! Three specimens, one adult. Either Conrad's species is a variety of the preceding (which name must stand) or the very distinct specimens which I obtained, and which answer well to the description but not to the wretched figures (Pl. 18 fig 10) must take the name. It is likely that Conrad's shell was not distinct and that this is a new species, but it is better to use up the old synonyms when it can be done legitimately than to add to the already overburdened nomenclature. [Carp. describes another of this style?]

62^A (164) *Janira dentata*, Sby, not detected) ~~Dr Cooper does not recognize this shell as of his collecting? I propose to name it~~ dredged 1 flat valve!

63 (165) *Minutites giganteus*, Gray, large and fine, Mussel Point! Town beach! Young, Halfmoon beach! plenty, apical dark muddy orange color. The young ^(6.50) can hardly be divided from young *Pecten hastatus*, except by the slight attachment along the posterior edge, and the purple color of the hinge-region inside.

64^x (168) *Maculanomia macrochisma* Dish Soguel! Mussel Pt! Town beach! common, [From Alaska to San Diego] Undersides of rocks below low tides. Monterey, Cooper!

Class *Acropoda*, (Omitted.)

Class *Gastropoda*.

Genus *Tornatella*.

Tornatelloidea n. sub. gen.

Shell *Tornatelloid*, thin, without labial callus, the columella twisted and truncate, forming a pseudo canal. Animal?

65^x (176) Type *Tornatella punctocollata* - Cpr - San Diego. Cooper! Monterey Halfmoon beach! and particularly Actinias! twenty specimens and fragments, all dead,

66. (177) *Tornatina culcitella*. Gld. not detected probably not the adult of the next species.)
Monterey, Cooper!

67. (177 $\frac{1}{2}$) *Tornatina cerealis*. Gld. one specimen.
Actinea! differs from *T. culcitella* jr. in want of groove,
Monterey, Cooper!

68^x (? 179 var)? *Tornatina*? n. sp. (harpa - D.) Three specimens
Halfmoon beach! dead. This shell has not the plait of *Tornatina* developed, does not agree with *Utriculus*, H. & A. Gds. but may be *Akera* O. Müller (chena) Its longitudinal (not revolving) striae are curious and suggest the name

- 68^b (180) *Cylichna cylindracea* Linne, not detected,
Monterey, Cooper!
- 69* (189) *Doris albo-punctata*, Cooper, one specimen
rocks at low water! also Canfield!
- 70 (196) *Doris Montereyensis*, Cooper, two specimens
with the preceding.
- 71* (197) *Flabellina opalescens*, Cooper, two specimens
with number 69.
- 71^a* (184) *Neaplysia californica*, Cooper, "After storms," Canfield! plenty.
- 72-(P 33) *Helix Californiensis*, Lea, Cypress Point and
island! Original locality. [A subsequent
visit has not added a single specimen.
They appear at least on the island, to be
exterminated, only fragments remaining where
pints of young shells might be obtained a year
ago." Canfield] P 35. *Helix Dupetit-Thouarsii* Desh,
with the above. Cooper!
- 73* *Pupa californica* ^{Row} Sand hills near Salinas
beach on sticks, Canfield!

- 74^x *Ariolimax columbianus*, Gld. Gulches where springs run down to the beaches. Canf. - Cooper!
- 75 (199) *Melampus olivaceus*, Cpr. one dead specimen Salinas beach! seven dr. Canfield -

Class Prosobranchiata -

- 75^b (202) *Pentalium indianorum* Cpr. not detected! Dredged in 10-20 fms - Cooper!
76. (206) *Cryptochiton Stelleri*, Midd - Mussel Pt. b! valves Salinas and town bs! plenty after storms -
- 77^x (207) *Katherina tunicata*, Wood. (not Shy) - one specimen dead but perfect, Chinese b! [no series of named *Chitonidae* having yet reached California, it is impossible to make out any of the new or less plainly distinguished species - Only those well known to Dr Cooper and myself are mentioned]
- 78 (208) *Tonnicia lineata* Wood. Plenty under stones low water Mussel Pt. valves plenty Halfmoon b!

- 79 (210) *Mopalia muscosa* Gld. Plenty on rocks under Kelp! halftide to low water - Cooper!

- 80^x (213) *Mopalia Hindsii*, Gray - Two specimens, rocks with preceding! Cooper!

- 80^a (216?) *Mopalia lignosa*, Gld. not thoroughly determined - valves halfmoon b!

- 81 (220) *Acanthopleura scabra*? Ree - abundant with the following species, at Mussel Point on rocks! where they can hardly ever be sprinkled with spray except in storms! Inhabits holes and crevices and grows thus ⁱⁿ irregular shapes. Also Cypress Point in similar situations, not found on low rocks which may be covered with water by a high tide, and delights in exposed headlands, where the breeze comes damp and strong from the sea. Cooper!

- 82, (222) *Ischnochiton magdalensis*, Hinds, of large size at Mussel Pt. b! and rocks, generally near low water mark, varies very much in sculpture and colors.

- 83^x *Acartho-chites*? *anagorites* - Halfmoon b!
one specimen -
- 84^x (238) *Nacella instabilis* Gld. one specimen
Halfmoon beach! dead, Monterey Cooper!
- 85 (239) *Nacella insessa*, Heinds, (*incessa* in error?)
Plenty on Halfmoon beach! - dead. An abnormal
growth of *A. patina* juv. simulates this
shell, but may always be separated by the
fine striae on the *acmœa*. This variety is to
A. patina what *A. asmi* is to *A. pelta*, and
may like *asmi* be parasitic.
- 86^x (242) *Nacella paleacea* Gould - Seven specimens
dead Halfmoon beach!
- 87 (242^b) *Nacella triangularis* - (^{Cooper} var. tr. Cpr. S. Rep.)
20 specimens Halfmoon beach! dead - ^{Cooper} This is
a good species and well marked although
the varieties run from wide oval and
flat to narrow triangular and compressed.
The black apex seems to be constant,
although the brown markings are not

88*

Nacella n. sp. (*vernalis* P.) Halfmoon beach!
some fresh, all dead, one adhering to *Laminaria*,
which was slightly excavated under it. 30
specimens, agreeing in appearance - Epidermis
bright grass green when fresh; smooth or wrinkled
and extending over and round the edge -

89 (243) *Acmaea patina* Esch and var. like *nacella*
insessa - Abundant on rocks between tides
from Town to Mussel Pt. Max. diam, long.
2.03. in. diam lat 1.72 in of largest specimens -

90 (244) *Acmaea pelta* Esch - and var. *asmi* - Type
between tides all along rocky shore! Var. *asmi*.
Halfmoon beach! dead, three specimens!
"parasitic on *Chlorostoma* etc." Cooper!

91* (245) *Acmaea persona* Esch - not common, on
small rocks at low water! 20 specimens -
Cooper!

92 (246) *Acmaea scabra* Rue, 30 specimens, rare.
Mussel point! including var. *limatula*, Cpr.

93 (247) *Acmaea spectrum*, Rue, not common;
between tides! 20 specimens -

94 (248) *Acmaea rosacea*, Cpr. Plenty on Halfmoon
beach, dead! a good species - 50 specimens -

95 (249) *Lottia gigantea*, Gray, Mussel Pt!
100 specimens large and fine -

96 (250) *Scurria mitra*, Esch - All along sandy
shore! very common but all dead - Sometimes
overgrown with mullipore which radiates
from the apex in regular lines or ridges
of nodules, often of a rich, rosy color -
which tinges the whole shell, and suggests
a difference which is merely apparent -

97* (252) *Gadinea* (*Rowellia*) *radiata*, Cooper, Sea beach!
near high water mark, a colony of 48, all alive
and of various shapes and fantastic forms,
caused apparently not so much by irregularities
of the rock, as by rapid growth at some seasons
and rest at others. This shell resembles *G. pent-*
goniostoma in Coll. Newcomb - from Gulf Cala.
Dr. Cooper's original ^{living} specimens were all very
immature - of these Max. height 0.7 in - width
1.3 in - The animal exudes a most profuse

milky slime from all parts of its body - Large specimens ~~were~~ first obtained by Rowell at Farallones, 98 (253) *Fissurella volcano*, Rue, one specimen alive rocks low water! Abundant dead Halfmoon and Chinese bs! ~~Dark var = violacea Esch.~~

- 98^a + *Crepidella*? n. sp. (*bimaculata* D.) Halfmoon b! 25 dead and broken - no trace of apex on most minute specimens - junior var - has ribs sharper, and somewhat cancellated. Length of largest (frag.) 1 1/2 in. Found living by Dr Cooper at Santa Barbara I. (No 999.) figured. Ntry; shells!
- 99^x (254) *Glyphis aspera* - Esch - Not uncommon dead, Soquel! very large, Halfmoon b! small but numerous - Ntry. Cooper, alive!
- 100 (255) *Glyphis densicathrata*, Rue, 3 specimens Halfmoon beach! dead - South to Cape St. Lucas.

101 (256) *Lucapina crenulata*, Sby, rocks off the whalers tryworks, not common, Canfield!

102 (258) *Puncturella cucullata* Gld. not detected, Cooper!

103 (260) *Haliotis cracherodii*, Leach, Every where
dead, alive on rocks between tides! Extremely abundant.

114 (261) *Haliotis splendens*, Roe, Cooper! not detected,
Not found by me at Mtry. J. G. B.

105 (263) *Haliotis rufescens*, Swains. Abundant dead—
but being an article of food and exportation
with the Chinese, not so common as *H.*
cracherodii which they do not use. (J. G. B.)

They did collect the latter in 1861, very largely.

106* (264) *Haliotis Kamchattkana* Jonas—rare, dead
on Salinas and Town beaches! Not the northern
species, found in Alaska—

107 (265) *Phasianella compacta* Gld, var. Abundant
dead, Halfmoon b! Alive at lowest water
under stones, all varieties, containing yellow,
green, purple, white, crimson, and black in
various proportions—

107² (266) *Pomaulax undosus*, Wood, Nuttall! Amistake;
Mr. Nuttall evidently obtained the young of
the next species, which without the operculum,
sometimes cannot be distinguished from this shell.)

108 (267) *Pachypoma gibberosum*, Chemm. Sea beach!
alive on rocks between tides, feeding on algae
and Laminaria, Common—Muzzle, short,
squarish, muscular—Tentacles moderate, pointed
bases covered by, but not connected with, two
small semilunar lobes (the rudiments of the
"veil.") Eye pedicles above and outside of tentacles,
both being cylindrical thick and non-retractile;
Cloak divided behind; with a single tentacular
filament on each side at the posterior point.
Foot moderate rounded—regularly granulated
at the sides—Color of the foot, on the sides red
and purple mixed—Lighter on top of head
and edges of cloak, mantle large, yellow as well
as the body of the cloak; the edges of the mantle a
very brilliant yellow—Eyes black—The young is
stellate and resembles *Imperator*, ~~&~~ *Imperatorius*
Cpr. S. Rep. no. 268; "The animal so described
seems to agree exactly with that of *Pandora*." J. G. B.

109 (269) *Septothyra sanguinea*, Linné, (-*Septonyx* Aug.
Cpr. S. Rep. 269, Proc. for seals, Cooper.) alive at
low water under stones, Mussel Point! Animal
yellowish white dotted with black—Tentacles
long, filiform, Eyes sessile on inner bases,

small, black, very sluggish and timid - Dead abundant - by Halfmoon beach! This shell runs through a large number of varieties in color quite as worthy of mention as the one denominated "pupurascens." One of the most remarkable generally of a larger size than the type, is red and white marbled, or banded in very curious fashions, the color running a little way crimson then white or cream color then dark purple brown almost black - I have seen two completely white specimens, but the apex is always dark colored - With regard to the geographical distribution of this shell some apparent confusion exists -

Mr. J. Hepburn a veteran and accomplished collector who has dredged extensively at Vancouver and who has collected all along the Coast, tells me that he has never obtained it North of the Fanalones. The similarity of the young specimens of Margarita ^{or Calliost. costatum} pupilla may have caused the mistake. It is certainly ^{not} "rare, further South" being very common at Monterey, and Sta Barbara, found at San Diego (Cooper!) and I have three small delicate specimens which I have every reason to suppose, came

but is more rare south of Pt. Conception J. G. L.

from the Gulf of Cal. It is rare at the Farallones, and not yet found at Bolinas or Bodega - That the mediterranean specimens so rare and doubtless unknown in Linné's time can be conspecific I doubt N. B. This is not the only Californian shell described by Linné; see Mytilus edulis, Modiola modiolus, Bulla cylindracea, Carolina tetemus, &c. - Was he not more likely to get the Mediterranean than this?

110^x Leptothyra n. sp. (pauicostata, D.) 9 dead Halfmoon b! This little shell which has been ~~labeled~~ ^{called} by Dr. Cooper as the young of the preceding, is undoubtedly a distinct species. No approach to it has occurred among the thousand or more specimens of L. sanguinea, from Monterey which I have examined - Its uniform spotted buff color, mature lip and few revolving ribs make it impossible to confound the two - I have seen about twenty specimens all of which are nearly uniform in color and size - Murex, pale red, not buff color. J. C.

111^x (271) Liotia fenestrata - Cpr. Halfmoon beach! rare. 3 specimens dead.

111^a (272) Liotia acuticostata. Cpr. Cooper! not detected.

111^b (275) Trochiscus norrisii, Shy. Nuttall! no one has since found this shell at Mr. Terry, and we may well believe the Locality mark an error. An alcoholic specimen of this species kindly furnished by Dr. Cooper proved beyond doubt that it is not a Proboscidea. A careful drawing of the lingual ribbon was rendered impossible by an accident but the formula was 5.1.5 unciniform - the central tooth being rather shield shaped, without cusps or projecting points, and attached by nearly all its under surface to the membrane. The following notes were taken in colors and anatomy - Veil, short black, edged with crimson on cirrus at posterior end. Edge notched or serrated almost fringed anteriorly. Gill very large on the left side, single, pectinate. Excretory canal simple cylindrical, large, on the right side of neck. Muzzle short muscular, dark purple brown. Foot blotched and spotted with black and crimson with a few long granules on or near the edge - They may be found feeding

on the floating Kelp, and present a most beautiful sight in the water. They have not been found to my knowledge North of San Pedro, dead or alive.

Occurs north to Pt. Conception, Cooper!

111 (276) *Trochiscus* ~~convexus~~^{us}, Cpr. Jewett! Not detected.)

112 (277) *Chlorostoma funebre* a. ad. Very common on rocks between tides! Sutureal fill sometimes absent.

113 (279) *Chlorostoma rustica* Gmelin non prior. Kiener, Pl. 55 fig. 1. two views; as *Trochus* r. Gmel, Hab. ? (= *Chl. brunneum* Phil. Cpr. Sup. Rep. p. 652.) Rocks! rare, alive, Sea beach! not common, dead. A variety fluctuata, has the spine depressed, base broader and with more striae, and the upper whorls undulating. The young are frequently nearly black with a strong umbilical rib. but no pit.

Is not *rustica* the
same as *obscure* and
Vogel? Phil.

(= *Trochus montereyensis* Kiener Pl. 33, fig. 1)

114 (280) ? *Chlorostoma Pfeifferi* Phil. Mussel Pt. aline, ^{tuppering, young shell} ~~Fig. 2, two views~~ Canfield! rare, Dead, Rocks and

Halfmoon b! not common. The large umbilicus gives this shell a very un-*Chlorostomoid* aspect.

114^a (282 *Omphalius fuscescens*, Phil. Jewett!

not found by any one, at Monterey, so far as I could ascertain. The number of "Jewett" shells which are located by him to the North of their present habitats suggests a doubt as to the correctness of his labels. It is difficult to understand why the species preceding this in Dr. Carpenter's Catalogue is denominated Chlorostoma aureotinctum. It appears to be a good *Omphalius* - The orange spot is in the umbilicus; not the aperture as far as I have seen.)

115⁺ (*Ptychostylis caffea* - Gabb. Proc. Cal. Acad. 20 fms. rare Cooper! not detected.) Dredged, 1 dead, J.B.G.

116⁺ ? *Calliostoma n.* sp. (Canfieldii - D.) Shell, seven whorled; the last whorl comprising more than half the entire shell. Alone; sutures small but deeply channelled, smooth, with three revolving ribs close to suture, three to four, on the lower part of the whorl. Color, pearly with bronze-yellow pencillings obliquely to the suture. Surface of the whorls rather flattened. Base semiannated,

convex umbilicated, with nine basal revolving ribs. Umbilicus strongly carinate internally, smooth, narrow and small. Aperture rhomboidal, pearly with grooves answering to the exterior ribs, Columella straight with a slight callosity but not reflected. Height .4 maj diam. .4 min diam. .3. Dir $70^{\circ}45'$. One specimen of this modest little species was found dead on Halfmoon b! I take pleasure in dedicating it to a friend, who has done so much for science, with such slender means. The Umbilicus and operculum (as yet unknown) may remove it from *Calliostoma* -

- 117^t *Calliostoma tricolor*, Gabb, Proc. Cal. Acad. Sci., Soquel, two specimens! frag. Halfmoon b! The large specimen from Soquel - though broken is to be noted as the largest yet obtained - This seems to be the headquarters of the species, as Dr Cooper
- 118 (283) *Calliostoma canaliculatum*, Martyn, Soquel, two fine specimens! Small specimens rare at Halfmoon beach! All the *Calliostomas* may be found at times on the kelp in deep waters.
- (has since obtained about 30 found there)

119(284) *Calliostoma costatum*, Martyn. Very common at Mussel Pt. b! also dead on sandy beaches, and sparingly aline on rocks at low tide. The most common variety of this shell, at Monterey is of a uniform chestnut brown, with a reddish dash in the umbilical region, and the ribs of a yellowish cast. There are however two varieties well worthy of mention for their beauty if for no other reason. In one, the color is interrupted on the upper part of the whorls by a regular succession of blotches of a much darker brown, immediately after which occurs a lighter patch of color, particularly upon the ribs. The other variety has the upper portion of the shell, although quite perfect, of a beautiful blue, in lines or patches alternating with dark brown and light yellow patches. I saw there none of the reddish specimens which appear to have been distributed as the type, and at first hardly recognized the shell. When the outer coat is removed it leaves the nacre of a remarkably brilliant blue.

120(285) *Calliostoma annulatum*, Martyn. Small fragments Halfmoon b! one dead Soquel!

This exquisite species is found on the growing kelp, and large numbers of fine specimens were brought in by fishermen while I was at Monterey, but despite my endeavors, having been given to a lady, they were all ruthlessly sacrificed to that artistic monstrosity, a "shell frame" which was not for sale.

121^x(287) *Calliostoma supragranosum*. Cpr. Soquel! One large specimen. Mussel Pt! two adult specimens dead. To the description of this beautiful species, now found adult for the first time may be added as follows. Shell six whorled, acute, whorls gently rounded with fine revolving threadlike ribs, anterior three to five, granulated. Last whorl roundly carinate, base flattened with about twenty fine revolving striae. Columella thick, not reflected, but base around it somewhat excavated, aperture about one-third the length of the whole shell, rhomboidal, pearly, smooth. Shell of a beautiful light salmon color—ornamented near the suture and carina with alternate patches of faint yellow and

G.

13

N. B. 2 very young specimens in State Coll. obtained at Monterey by Dr. Cooper, were at first confounded with *C. costatum* young.

chestnut brown. Alt. 1.1 in. Max. diam. 0.9
Defl. 62° - angle of carina 98° . A variety
from Sequoia is of a slaty hue, approaching *C. costatum*.

122 (289) *Calliostoma splendens*, Cpr, Halfmoon beach!
two broken, dead. specimens -

123 (290) *Phorcus pulligo*, Martyn. Halfmoon beach!
dead, three specimens. (Why not *Phorcus Pfeifferi*,
which can hardly be distinguished when young? -
Where did Philippi describe *Pfeifferi*? Find
no mention of it in the Reports, Kiener's
name and figures. published 1846, may
be prior -)

124 (294) *Gibbula succincta*, Cpr, Mussel Pt! alive
under stones at low water, Halfmoon b! dead,
40 specimens - Monterey, Cooper!

125 (298-986) *Margarita pupilla* Gould. Lown to Mussel Pt!
dead, 30 specimens. Mussel Pt! alive, five
specimens, all varieties insensibly passing
into *palmona* var. -

126. (299) *Margarita acuticostata* Cpr. Mussel Pt. at low water mark under stones with *Guccinella*, rare, Dead plenty from town to Halfmoon beach! on sandy beaches—

126^b (305) *Crucibulum spinosum* Sty. Nuttall! not detected.)

127. (307) *Grepidula*? *dorsata* Brod. (Cpr.) Halfmoon beach! common dead—

128 (309) *Grepidula adunca* Sty. Halfmoon beach! not common - dead - frequently strongly striated longitudinally—

129. (311) *Grepidula navicelloides* Nuttall, Town b! in all imaginable varieties, in borer's crypts—

130⁺ *Galus*? *conicus* Brod, one specimen Halfmoon b! not contortus as per type, in State Coll, nor fastigiat as per description in Mazatlan catalogue, Common in shells from Lower Cal's beaches, imported from "shell work."

130^a (313) *Galus contortus* Cpr. (Cooper! not detected)

131 (314) ? *Hippomyx cranioides*, Cpr. Halfmoon b! dead 9. specimens—

131^a (315) *Hippomyx antiquatus*, Linné, not detected)

132 (317) *Hippomyx turneri*, Cpr. Halfmoon b! dead 15 specimens—

133 (322) *Cæcum crebricinctum*, Cpr. ^{on} Actinia! one specimen.

134⁺ *Cerithium* species. Halfmoon beach! one specimen. This specimen has not the aspect of a Monterey shell; it is unknown, as yet from Cal's, and I doubt but it is an importation—

135 (329⁺) ? *Bittium filsum* Gould, Mussel Pt! rare alive under stones, Plenty dead on beaches (? also var *esuriens*.)

136 ? *Bittium* sp. indent. Halfmoon b! dead

- 137 ? *Bittium* sp. indet. Halfmoon b! dead.
- 138^x(331)? *Bittium quadrifidatum*, Cpr. Halfmoon b! dead
Monterey, Cooper!
- 139^x(333)? *Bittium armillatum*, Cpr. Halfmoon b! plenty dead
Monterey, Cooper!
- 140(335) *Litorina planaxis*, Nuttall, Mussel Pt! Rocky
shore! Seabeach! very large and plenty—
Has a green patch sometimes to the columella—
- 141^x(336) *Litorina Sitchana* Phil. Mussel Pt! 3 alive,
one dead Halfmoon b! Canfield four
specimens, from Spanish women, two
specimens. The ribs are generally fainter than
in the Sitka variety, I saw no smooth ones at Sitka
- 142.(337) *Litorina scutulata*, Gld. Every-where, Rocks!
alive; beaches! dead; plenty, variegated much like
Phasianella with yellow, white black and olive green
- 143^t(338)? *Assimineæ*? subrotundata Cpr. Feeding on minute fuci
on the backs of *Haliotis rufescens*, Seabeach only! six specimens,
mostly immatures, do. Canfield, all immatures—

144^{*}(341) *Lacuna porrecta* Cpr. Halfmoon b! dead rare

145^{*} *Lacuna* indet. Halfmoon b! dead, 14 specimens-

146^{*}(342) *Lacuna solidula* Loven. in variety, Halfmoon beach! plenty.

147^{*}(342^b) *Lacuna compacta*, Cpr. Halfmoon b! dead/plenty,

148[†](344) *Lacuna unifasciata*, Cpr. Halfmoon b! dead, many varieties, all plenty - On Kelp fronds in deep water - alive -

149^{*}(345) *Isapis?* fenestrato Cpr. Halfmoon b! one dead. Monterey, Cooper!

149^a(346) *Isapis obtusa* Cpr. Cooper! not determined)

149^b(347) *Rissoina intufossa* Cpr. Cooper! not found)

150[†](350) *Alvania*, indet. Halfmoon b! One dead -

150^a(353) *Fenella pupoidea*, Cpr. Cooper! not obtained)

151(361) *Diala marmorata*, Cpr. Halfmoon b! dead 20 specimens varying greatly in color -

152(362) *Diala acuta*, Cpr. Halfmoon b! ten specimens -

153[†](366) *Trinia californiana* Gray - Mussel Pt! 25 dead specimens, 3 or four fresh - one dead Salinas b! called "Frijoles" by the Spanish people, and "coffee bean" shell by Americans. Monterey, Cooper!

154[†](368) *Crato vitellina* Reinds Mussel Pt! fine dead,

155(369) *Crato columbella*, Mke - Halfmoon b! three dead,

156[†] (*Succula Carpenteriana*, Gabb, From beach, fragment, Canfield! Cooper! also Santa Barbara B. Heppellum?)

157.(374+74^a) *Drillia torosa* Cpr. Mussel Pt! ten specimens and fragments not uncommon - This shell passes so gradually into the orange colored variety that it cannot be regarded even as a permanent variety worthy of a name - Alive at low water on fuci -

157^a(382) *Mangelia angulata*, Cooper! not determined)

- 158^x *Mangelia hexagona*, Gabb. one sp. Halfmoon b! dead, (Call. Stearns)
Monterey, Cooper!
- 159^x *Mangelia* indet. (X) 12 spec. Halfmoon b! dead,
- 160^x *Mangelia* indet. (XX) one sp. Halfmoon b! dead,
- 161^x *Mangelia* indet. sp. (XXX) five sp. Halfmoon b! dead,
- 162^x *Mangelia* ? n. sp. (XX) (Montereyensis?) Two
specimens Halfmoon b! dead,
- 163^x *Mangelia* indet. sp. (XVI) two sp. Halfmoon b! dead -
- 164^x *Clathrella* ? n. sp. (Canfieldi?) one specimen
Halfmoon b! dead,
- 165(385) *Mitromorpha aspera*, Cpr. (= ? *filosa* var.)
Halfmoon beach! four specimens dead - Monterey, Cooper!
- 166(386) *Mitromorpha filosa* Cpr. Halfmoon b! dead fifteen specimens -
- 166^b(388) *Conus Californicus* Hinds Mussel Pt! not common,
young delicate brown network pencillings. Monterey, Cooper!

167^{*}(392) *Ocostomia* *gravidus*, Gould, Actinias!
Halfmoon b! dead 20 specimens. One alive under
stone at very low water. Operculum shaped like
shell of *Dolabella Rhynchii*, Monterey, Cooper!

168^{*} *Ocostomia* *indet.* Halfmoon b! five specimens.

169^{*} *Ocostomia* *indet.* Halfmoon b! seven specimens.

170^{*}(396) *Chrysallida*? *cincta*, Cpr. Halfmoon b! one dead.

170^a(399) *Chemnitzia* *tridentata*, Cpr. (not found.)

170^b(403^b) *Chemnitzia* *var. stylus* Cpr. Cooper! not found.)

171 *Chemnitzia*? *gracillima* Gabb. Proc. Cal. Acad.
Halfmoon beach! one dead.

171^a *Chemnitzia* *indet.* Halfmoon b! two fragments.

171^b(407) *Eulima* *rutila* Cpr. Cooper! not found.)

172^{*}(408) *Eulima*? *Thersites* Cpr. (testo Cooper)
Halfmoon beach! one dead—

172^a *Eulima* *indet.* Actinias! one specimen dead—

173 *Eulima* *indet.* Halfmoon b! one specimen dead.

174^{*}(409) *Scalaria*? *Indianorum*, Cpr. Mussel Pt!
alive at lowest water. Halfmoon b! dead—
Mtry, Cooper!

175(410) *Scalaria* *tincta*, Cpr. Halfmoon b! very
plenty. Alive rarely at Mussel Pt. lowest
water—a good species—

176. *Scalaria* *indet.* Halfmoon b! four specimens dead.

176^a(411) *Scalaria* *subcornata* Cpr. Cooper! not found.)

176^b(412) *Scalaria* *crebricostata* Cpr. Cooper! not found.)

~~"Probably not north of Pt. Conception," Cooper.~~
177^{*}(414) *Opalia* *borealis*, Gld. Mussel Pt! seven dead

178(415) *Opalia* *insculpta* Cpr. Halfmoon b! 9 specimens.

178^a(416) *Opalia* *spongiosa* Cpr. Cooper! not found.)

179^{*}(424) *Cerithiopsis* *assimilata*, C.B. Ad Halfmoon b! one specimen—

- 179^a (419) *Cerithiopsis tuberculata* Mont. Cooper! not determined)
- 179^b (420) *Cerithiopsis columna* Cpr. Cooper! not determined)
180. *Cerithiopsis* indet. seven speci. Halfmoon b! dead,
- 181 *Cerithiopsis* indet. one speci. Halfmoon b! dead,
- 182^x (425) *Triforis adversans* Mont. Halfmoon b! one dead,

Rissoinella n. subgen.

Shell like *Cerithiopsis* when young. Thin sculptured, lip broad, reflected thin, Peristome continuous not sinuous,

183. Type (422) *Rissoinella purpurea* Cpr. sp = *Cerithiopsis purpurea* Cpr. Sup. Rep five specimens. Halfmoon b! dead,
- 183^a (*Cancellaria Cooperi*, Gabb. Proc. Cal. Acad. Cooper! ^{10 spec.} ~~found~~, not found)
- 184^x (429) *Velutina laevigata* Linné, Halfmoon b!
25 specimens dead (= var? of same?)

- 185⁺(432) *Lunatia Lewisii*, Gld., close to wharf on sand among rocks! rare. Abundant in June and July when they come up to deposit their cup shaped egg ribbons on the sand, in this particular corner, only - Canfield! Cooper!
- 186⁺ *Lunatia* spec. Heafman b! two specimens, one alive, not the young of Lewisii - and apparently undescribed, Colls, Stearns and Canfield -
- 187⁺ *Nerita*? n. sp. (alta, D.) Salinas b! one spec. dead. State Geol. Survey Coll. two perfect ^{from San Pedro.} specimens. This shell is perfectly distinct from N. Recluziana and I cannot find any reference to such a shell in the books or notes within my reach -
- 188⁺ *Lamellaria*, n. sp. (Stearnsii, D.) Heafman b! one dead. This extremely distinct species differs from the typical Lamellarias in its color and slight spiciness, and may be a lutina or a form not yet eliminated -
- 189⁺ *Lamellaria* n. sp. (orbicula, D.) Heafman b! dead, 7 specimens.

189⁷^a *Lamellaria*? n. sp. (*rhombica* Dall) Halfmoon b!
eleven specimens.

190⁺ *Lamellaria*? n. sp. (*depussa* D.) Halfmoon b!
dead, two specimens.

191⁺ (*Sigaretus debilis*, Gld. Cooper! not detected)
"Not found by me north of Sta Barbara": Cooper.
192(435) *Piuma Oregensis* Redf. Salinas b! fragments
not uncommon. Invariably decollate.

193⁺(436) *Ranella californica*, Redf. Salinas and Town
b! fragments not rare.

194⁺(437) *Mitra maura*, Swainson. Mussel Pt!
Halfmoon b! dead and worn, rare, four specimens,
Monterey, Cooper!

195(438) *Marginella jewettii*, Halfmoon b! common,
35 specimens, collected personally, hundreds
by others, at times.

196⁺(439) *Marginella subtrigona*, Cpr. Halfmoon b!
rare, five specimens, dead, so far as I have
observed. The perfectly fresh specimens of this pretty
species are always more or less pellucid and salmonous.

197⁺(440) *Marginella regularis*, Cpr. Halfmoon beach!
common, 50 specimens! Coll Stearns 200 specimens.

198⁺(441) *Volutella pyriformis*, Cpr. Halfmoon b! dead
25 specimens - Monterey, Cooper!

199(443) *Olivella biplicata* Sby. Mussel Pt. to Town! dead,
Alive small sandy beach near town where
a brook spreads over the sand. The number of
folds in this shell is by no means constant,
varying from one to eight, the younger ones
having less. In nearly all specimens the
additional folds will be found back of the
column, out of sight. It varies in color from
purple to white and is variegated with a
deep orange, and particularly when young
with zigzag brown lines. In short it is
protean.

200(444) *Olivella baetica* Cpr. Halfmoon and Salinas b!
This shell is sometimes dull purple, sometimes
nearly white, often ornamented with zigzag
lines of brown like *lineolata*. It is almost impos-
sible to distinguish some varieties of its young,
from young *O. biplicata*, Sitka alive, 7 fms - mud.

- 201^{*}(445) *Nassa fossata*, Gld. Salinas beach! Large and fine, fine specimens. After storms - Monterey, Cooper!
- 202^{*}(446) *Nassa perpinguis* Heds. Halfmoon b! rare, one or two specimens, Monterey, Cooper!
203. (448) *Nassa mendica*, Gld. Halfmoon and shingly beaches! very common after a heavy blow, 100 specimens.
- 204^{*}(449) *Nassa Cooperi* Fhs. Halfmoon and other beaches, common, 150 specimens mostly dead - Monterey Cooper!
205. (451) *Amycla carinata* Hinds, 1843. (= *gausapata* (Gld) Cpr 1848, + *californiana*, Gask, 1851, + *Heindsii* (Rue) Cpr) Halfmoon b! abundant, 100 specimens, Bought from the Spanish women by Mr Stearns, over ten thousand; collected for shell work. The careful and critical examination of the largest number of these shells, probably, ever brought together, confirms me in the conclusion that there is no place to draw the line between these varieties. It is easy to pick out and name two or three extreme forms; but there are thousands

to each one of them, which will equally well fit either diagnosis - found living on a floating buoy in the harbor - these ~~finds~~ ^{also indicate} ~~the~~ ^{the} ~~help~~ ^{help} ~~fields~~.

206 (453) *Comptelia tuberosa*, Ch. Washington L! not uncommon, passed from translucent white to dark brown, with every imaginable variety of color and markings -

206^a ? *Comptelia n. sp.* (Camaritaceae) Washington L! dead 5 specimens ^(distinct)

207 (454) *Comptelia corrugata* (Rue) Oetala, Washington back! these specimens, this I take to be the type and probably distinct from the following -

208 (454 par) *Comptelia occidentalis* n. sp. Oetala, Washington L! 50 specimens at times very abundant;

Boys got a Spanish woman, Altamira, 2000 specimens, this shell differs from the northern type above mentioned in shape, size, coloration, habit and faunal center; being most abundant at Monterey and never found far north where the *corrugata* flourished, the animal is white, Buccinoid, eyes very small and black, siphon nearly three times the length of the shell, Prothorax very long also, Operculum Buccinoid,

with some resemblance to that of *Scutella*, (*Corintha Clado*) Under stones at low water moved Rt! a line with *Leptothyrus* markings, whitish succinea etc. - This shell passed through

much the same series of variations as the *Leptothyrus* - from pure white, white dotted speckled, blotched; with spiral pencilings; of all colors both as ground and markings; brown, purple, salmon color, crimson, yellow; white, almost black etc. - The apex is usually dark colored - The genus *Thaenocaria* must be more clearly defined before we ever refer any shell to it, until such definition be made the genus of *Murex Adansoni* is immediately

needed - 209* (458) *Thaenocaria crispata* Lehmann, smooth var.

Murex Rt! three or four worn and dead - The ^{Apex} ~~apex~~ ^{condition} ~~condition~~ ^{locally detected}.

210* (459) *Thaenocaria cancellata*, Quaker, dead back! fine specimens dead and worn - Monterey Bay!

211* (460) *Thaenocaria variata*, Val - and var.

Rarely more! 30 specimens - alive - Monterey Bay!

- 212*(461) *Monoceros engonatum*, Lour. Rocks! one fine specimen - at times not uncommon - probably in summer. Monterey, Cooper!
- 213*(462) *Monoceras lapilloides*, Lour. Rocks! fine or six living - occasionally plenty - Monterey, Cooper!
214. (463) *Ocenebra lurida* - Midd - and vars, Mussel Pt! about 30 specimens. The varieties of this and the next species are very perplexing -
- 215(464) *Ocenebra interfossa*, Cpr. Mussel Pt. beach! 12 specimens and vars.
- 216*(466) *Cerastoma monodon*, Esch. Mussel Pt! one live specimen, one dead, Salinas beach! This is not the original *Murex foliatus*; a specimen from Sta. Barbara exactly accords with that species as figured in Ree - and Kiener - It differs in the sculpture between the varices and in the character of the varices. The last one more like *nutalli* and the first like *monodon*. The shell in question in Colls. Stearns and Newcomb. Monterey, Cooper!

217. (470) *Nitidella Gouldii* Cpr. Halfmoon beach!
 three or four specimens of this dubious shell were obtained.

218 (473) *Muricida Californica*. Heinds, Mussel Pt!
 a few specimens.

219. (481) *Chrysodomus dorus* Ree. Mussel Pt! two
 large worn specimens, also Canfield. The most
 southern locality recorded.

220 *Fusus geniculus*, Conrad. Mussel Pt! not
 uncommon, dead and worn. Quite distinct
 from ambustus junior

An examination of this list results as follows:-

	Species-
Species collected by me-	219
Previously reported but not obtained by me	44
Total Known fauna of Monterey	263

Of these were:	Species
Not obtained by me	43
Previously reported from Monterey	101
Previously reported from both N & S. of Monterey	29
Previously found only to, N. of Monterey	24

Previously found only to, S. of Monterey 42
 New, or not reported from North of San Diego 23
 Total 263

Of the 44 species previously reported from Monterey
 but not found there by me, by far the greater number
 were dredged in deep water by Dr. Cooper and a
 few, (some seven of which are doubtful) are reported
 as collected by Nuttall and Jewett and from
 the Smithsonian general collections and other
 sources. (B. A. Column in Sup. Rep.)

Cooper (doubtful)	2	Species
Cooper dredged	30	"
Canfield (<i>M. patula</i>)	1	"
Jewett (all doubtful)	3	"
Nuttall	3	"
B. A. Reps.	2	"
Smithsonian (miscellaneous)	3	"
Total	44	

~~*Leptopoda antiquatus*, and *Janina dentata* in Cooper's~~
 Column. (Sup. Rep.) are doubtful. The last was probably
 a young specimen of *P. purpuratus* which much
 resembles *Janina dentata* junior. Canfield's specimens of
M. patula though dead and broken, are undoubtable.

see above
 p. 46.

It is common at Santa Cruz and found small
in size to San Diego.

No 1 found
by my dredging
in Canfield's
Bay. I have
seen many of these
by my dredging
in Canfield's
Bay. I have
seen many of these

I am informed by Dr. Newcomb that Col Jewett's
most northern point of collection, on the coast was
Point Concepcion, therefore he could not have collected
the shells attributed through him to Monterey,
Viz [among others] (1) Modiola modiolus (2) Trochiscus
connexus, and (3) Omphalius fuscescens, besides a few
others which were found there. I cannot find that any
one has ever found Nos 1 and 3 there and No 2 in the
description at least, bears a strong resemblance to
Chlorostoma funebre, Junior, worn, Prof. Nuttall's
Pomaulax undosus, I have already mentioned and
his Crucibulum spinosum, may have been
??? Crepidula dorsata, but, at all events cannot be
found at Monterey now. The other miscellaneous
sources may have been correct, or may not. They comprise
[do] Tape laciniata - Kellia rotundata (a questionable
species) Adula stylina (a northern shell, [found
by J. L. G.])
[do] Lithophagus plumula and Bittium attenuatum

Collectors at Monterey have met with the following success-

Cooper	98	species [more, adding above]	$\frac{181}{2}$
S. J. Miscellaneous mostly Canfield,	40	"	
Nuttall	16	" (incl. doubtful)	
Dall	219	"	

Careful and energetic collecting will do much toward elucidating the problems of geographical distribution. What is most wanted now is a careful collection at some point between San Francisco and the mouth of the Columbia River, and between San Diego and Cape St. Lucas. The veteran Col. Jewett is I understand now on his way out here to dredge thoroughly in the Gulf of California. Success to all his labors and to all other earnest working collectors!

P.S. A small collection since made by Mr Gabb, of the State Geological Survey enables me to add the following Southern species to my list. They are all from the "Caepnori beach" Monterey, Cal.,

- (a) *Corbula ovalata*, Sby. (a Gulf of Cal. species also found on L. Cal. coast. = ?? adult of *C. luteola* Cpr., near to the fauna.) one valve.
- (b) *Corbula*? different, (three valves)
- (c) *Donax navicula* Sby. also Southern, (three valves)

- (d) *Hetero donax biniaculatus*, also Southern, (~~one~~ ^{one pair})
- (e) *Lucina* (Here) *lingualis* Cpr. ditto (three valves)
- (f) ? *Chione*? *excavata* Cpr. ditto (one valve)
- (h) *Cytherea*? sp. like sp. from C. St. Lucas (5 valves)
- (k) ? *Gardium* sp - (one valve)

- (m) *Lucina*? *Nuttallii* - (three valves.) See No. 44 ante.

Which makes an increase of eight sp. to the Monterey fauna, making a total of 227 sp known and supposed to have been found there. (263 is the number given 4 pp. ante.)

The remarkable occurrence of some undoubted specimens only at certain periods, makes it probable that all those reported may have been really found at this prolific locality. Others have been seen in collections from other parts of the bay, and collected at Santa Cruz, etc. which would swell the number found in Monterey bay to ~~300~~ or even more.

Stems

Monterey shells -
with
Carpenter's notes -

Maech
Maurphua
Septicidophua
Kymenophua
Orthophua

Beach and shore shells of Monterey, Cal.
Collected in person, with notes on geographical
distribution synonymy and habits.

By
W. H. Dall
Acting Director Scientific Corps U. S. Ex.

These notes are the result of two weeks assiduous
collecting at Monterey, in the month of January 1866.

The collecting grounds of Monterey may be summed
up as follows. From the "Salinas River" to the
point where the sand bluffs near the town end;
I have called the "Salinas beach". From that point
to the town, a low flat marshy beach, strewn
with bituminous shale, and sandstone, containing
all the borer; I have called the "town beach". A
small beach near the mouth of a rivulet, which
is bridged, and which spreads widely over the
sand. affords good specimens of Olivella buplicata.
A rocky and sandy nook west of the wharf

is a noted retreat in June for Lunatia Lewisii.

which then and there deposits its curious eggribbons
(Canfield.)

On the rocks, off the whaler's
try works, covered with Laminarian algae, may
occasionally be found the rare and curious
Lucapina; the animal of great size, resembling
India rubber in color and texture. The shell is
completely covered.

Numerous small rocky
beaches along this part of the shore afford
little but Patellids: and just before reaching
the Chinese fishing settlement, a small steep sand
beach of semilunar shape, each extremity rocky;
presents itself: and here may be found an infinite variety of
small shells enumerated hereafter. I have called this the
"Halfmoon beach." Next, is the Chinese beach where
may be found Halotis shells in great numbers,
the remains from their soupkettles.

Beyond this, just around Mussel point is a small shingle beach, with a little sand at the low tide level: rocks of large size jut out into a heavy surf which always rolls in from the Ocean.

The Patellidae, including the rare and beautiful Acmaea scabra abound. From here to Point Pinos, and from thence to Carmel Bay is the sea beach proper. It is very rocky and affords but little in the way of shells. Five specimens of Chlorostoma rustica, Gadinea radiata, and a fragment of Mercenaria Kennerleyi were found there; also Haliotids etc.

On the rocky islets at Cypress Point approachable only at low tide, is found sparingly, the dwarf variety of Helix Californensis, the type, very rare, on the main land. A camp under the cypresses all night in the pouring rain, without refreshment, for the sake of attaining the Island at low tide, (6 A.M. 6 P.M.) resulted in nine poor specimens, mostly dead.

A large red and black Millepede, (which existed in myriads) seemed to be exterminating them.

The Actinias on the rocks along the shore, catch and retain upon their tiny suckers minute shells and bits of gravel. Many fine things were obtained from this source, among the smaller shells. Sifting the beach sand proved a failure. the perfect shells being always on the surface.

The additions made in this manner to the knowledge of the distribution of the Californian species; show that before settling upon theories of distribution and faunae, it will be necessary to add largely to the meagre notes and material now in the hands of Naturalists, and careful collections in Winter and Summer, at distinct points, are necessary. The Mollusks or some of them changing their station with the seasons.

A half hour collecting on the little beach at

Soquel creek, added very interesting species to my list particularly an adult Calliostoma supragranosum.

I must express my obligations to Dr C. A. Canfield of Monterey. Dr L. G. Cooper. Santa Cruz. Capt Losslyn of the Schooner Fayaway, and to Mr R. E. C. Stearns of San Francisco for efficient aid in ways too numerous to mention, also to Prof Whitney of the State Geological Survey for many facilities for study. The numbers in brackets are those of the species here referred to in the supplementary Report to the British association by Dr Carpenter on the W Coast shells. Those species entirely in brackets were mentioned as occurring at Monterey in the supplementary Report but were not found there by me. The exclamation point denotes personal collection by myself or the person whose name precedes the point. The ^{asterisk} ~~sign~~ that the species is not

mentioned by Dr Carpenter as having been collected at Monterey. The dagger that it is new to the Californian fauna.

Class Polyzoa

Four or five species collected and undetermined.

Class Palliobranchiata

The tick v signifies that I have compared the specimens & am satisfied with your name.

- 1 (3) *Terebratula unguicula* Cpr. Cooper!
 2^x (6) *Waldheimia Grayi*. Davidson. Fragments Tourb. Calif!

Class Lamellibranchiata

2^a? *Xylotrya* species. Destroying the Wharf!

3 (12) *Pholadidea penita* Conrad (#3) Plenty alive in upcast fragments of bituminous shale. Tourb!

3^a (13) *P. ovoidea*. Gld. Cooper! not determined,

a doubtful species.)

Probably good sp.; the many penite are ovoid. Shape little conspicuous.

4 (14) *Stornanetta Darwinii*. Sby sp = Metastoma do. Cpr

(preoc. in fishes, Cooper) "B. A!")

5^x (16) *Parapholas californica* Conr. with no 3! cups

deciduous only existing in young specimens

Luminous at night when living, length of adult. 6 to 8. inches

- 6 (17) *Saxicava pholadis*. Linneé. vars with *P. penita*!
- 4^x (18) *Glycymeris generosa*. Gld. Canfield! Tourb!
- 8^x (20) *Platiodon cancellatus*. Cour. one V. Salinas b.' plenty at Soquel,
- 9^x (21) *Cryptomya californica*. Cour. plenty Salinas b.' dead,
- 10^x (22) *Schizothorus Nuttallii*. Cour. Plenty Tourb! small var,
- 11^x (27) *Chidiophora punctata*. ^{Cour.} ~~Exp~~ one valve Salinas b.!
- 12 (31) *Thracia curta*, Cour. Cooper!)
- 13 (32) ^{*Gastropoda saxicola*, B2} *Lyonsia californica*. Cour. Plenty Mussel point!
- 14^x ? *Lyonsia* ^{*californica* Cour.} ~~(*bracteata* Gould)~~ a small hyaline shell
~~probably referable to this genus! and the Californian~~
~~faunotype of *Lyonsia floridana* Cour. (E coast) and~~
~~by comparison of types = *californica* Cour.~~
~~erroneously supposed to be the young of the preceding.~~
- This shell is not uncommon! and a specimen of
L. californica ^{*saxicola*} of half the size will outweigh

three of this species. It has not the large Ossicle
nor tawny Epidermis of the last named
^{belongs to another subgenus.}
shell and has already been ~~separated~~.

15^x (35) *Mytilimeria Nuttallii* Cour. Halfmoon beach! five
specimens. Ossicle moderate, generally lost.

15^x a ^{*Entodoma*} ~~*Mytilimeria*~~ n. sp. [*Spongiophila* D] (also collected
your little shell is almost certainly *Ent. varicosa*, very young, but differs in the
slowness of the epidermis. In this respect, it accords with *Ent. inflata* & *varicosa*; off-
by Dr Cooper) three specimens in sponge dead;
which it may possibly be the young, the threaded. It is certainly a young *Entodoma*;
Halfmoon b.! The minute rectangular Ossicle
I sh. like to examine the other sp. before deciding. - I am very glad to see your true
"M. spong." flew off during the drying of the shell and was
as Canfield sent (as your "M. spong.") what is clearly = *M. Nuttallii*, scarcely
lost. This shell may not be a true *Mytilimeria*,
a var.; sometimes found in sponge, sometimes Acidian bed, sometimes friable sandstone,
as it is very constant in form and characters
I will comp. carefully with all the young *varicosa* I get.

16^x (40) *Machaera patula*, Dixon. Salinas b. rare, Canfield!)

17^x (42) *Pammobia rubroradiata* Nutt. Fragments on
town beach! Canfield! (Note - I found this shell
at Coal harbor, Onaga, one of the Shumagui Isles)

18 (43) *Macoma* (?) *secta*. Cour. Salinas b. Canfield! not
common. mostly young specimens

19 (46) *Macoma nasuta*, Cour. Cooper! Canfield!)
one of your valves is *inquinata*, *Dub.* See Scar.

- 20 (49) *Macoma inconspicua* B & S. Cooper!)
- 21 (51) *Moera variegata* Lpr. (Prior to angulus and equal to it)
Canfield! Cooper! not common. Halfmoon b!
- 22 (53) *Moera Salmonia* Lpr. 1 v. Halfmoon b! Canfield!
Cooper! 20 fms
- 23 (54) *Tellina bodegensis*. Hinds; many valves on Salinas
beach! sometimes orange or salmon color.
- 24 (60) *Semele rupium*. Sby. Salinas b! Soquel!
Town beach, Canfield! rare.
- 24^a *Semele?* var albida. In the cabinet of the State
Geological Survey, is a specimen, which I should
refer to the above species although it is perfectly white,
but on examination I find it to be entirely
destitute of the characteristic puncturations
always observable in the area enclosed by the
pallial line; in rupium. The hinge teeth
are smaller and nearer together than in that
shell. The shape is distorted by rock nesting.

25^x (61) *Semele* — *rubrolineata* auct. not Conrad —

A fine shell of which several valves were found by Dr. Canfield and myself. This is not Conrad's shell as it does not agree with either figure or description. the interior of this species being always of a beautiful white. while his is described as "within purple in the middle" both lunules "purple" etc. Conrad's shell is probably a mature specimen of *pulchra*. or

some of the recently described species. as the I still think Conrad's shell was probably a young *Decisa*. Cope's shell figure cannot be tortured into *decisa* of any age the shape being much more transverse. *rubrol.* in my report from a worn valve, I as the diagnosis is sufficiently near, I think it had better stand, according to your previous under no 62. sent under this name is *pulchra*, I not Conrad's I think; your shell is what I called

The synonymy of these *Semeles* requires careful revision; many of them being nestlers if not borers. they are subject to numerous variations.

26^x (64) *Lumina* *californica*. Conr not uncommon ~~on town~~

on town beach with *P. penicula* and other borers!

27^x (69) *Standella* *californica* Conr. one valve. town b!

28^x(71) *Standella falcata* Gould. Plenty of valves and fragments on Salinas beach! ^{Probably identical}

29^x(75) *Pachyderma crassatelloides* Conrad. young on Salinas b.! One fine pair, recent, Garfield! From b.

30 (76) *Pephis tantilla* Gould, abundant, Actinias! Halfmoon b. and mussel R.! From pure white to orange with or without purple patch, sometimes with two; with or without external brown zigzag lines or blotches; animal translucent yellow or white. ^{Is it a *Pephis* (variegatus)?} Alive at roots of fuci, deep water.

31^x(77) *Pephis Lordii* Baird - one specimen living ^(with young inside) at low water in bunch of algae. Halfmoon beach!

32^x(80) *Mercenaria Kinnerleyi*. Kve = Venus K. Cpr Rep. One heavy imperfect valve. Sea beach! ditto Farallones Islands, Cooper! one pair quite ~~fine~~ minute but perfect. Puget Sound, State Lab.

This fine and almost lost species is apparently a true *Mercenaria*. A conclusion with which Dr Cooper agrees. ^{But neither Stearns nor I feel satisfied with it: many sp. of Venus & Lepas are more or less rounded like *Mercenaria*. I sh^d like to see more fresh specimens}

- 32^a *Lioconcha Newcombiana*. Gabb. Proc. cal-acad -
 Sciences. 1865 p 189. one live specimen in algae!
- 33 (86) *Tapes laciniata*. Gpr "B.A."! not identified)
 34 (87) *Tapes Staminea*. Conrad. in all varieties on all the
 beaches! The common "Clam" of San Francisco
 Markets; and almost the only one seen there;
Macoma Nasuta and *Saxodomus Nuttallii* very
 rarely; *Platyodon cancellatus* is once reported, and
Schizothorus Nuttallii and *Cardium corbis* once or twice.
- 35^x (89) *Saxodomus Nuttallii*, Conrad, common on
 Town beach! sometimes as large as *aratus*. The
 Young probably = *Tapes gracilis*, Gabb. but very difficult to
 number of nominal species of this genus on the
 separate jun. of Nuttallii & aratus. Even the adults are often similar.
 West Coast, might advantageously be reduced. B
- 36 (92) *Rupellaria lamellifera*. Cour. common on Town b!
 This species when very young is of a beautiful orange
 color. blotched with purple. of porcellaneous texture,
 and with numerous fine but distinct radiations.
 These radiations are sometimes continued 'till the

shell is an inch in length (see ^{All the shells seen in Eng. were rubbed over with a rubber} Cpr. S. Rep. p 641 No 92)

The fry are without lamellae! ^{Yes; very curious} of a deep orange; ^{and larger in proportion} of the mantle.

37 (93) *Petricola carditoides*, Courad. not abundant
Town beach! The perfect shells are exquisite in their sculpturing. the others rugged and chalky.

37^a (94) *Chama exogyra*, Cour. One specimen! Is the *pellucida*, as far as I can judge from such a very sinistral form of the upper valve to be relied ^{upon} ^{This is probably a normal, attached valve.} on as a specific character? Generally, not always; you may have reversed shells, as in univalves.

38 (95) *Chama pellucida* Stry. valves plenty on rocky beaches and Chinese beach! alive at low water on under side of boulders.

39^x (97) *Cardium corbis*. Martyn. Common on Salinas and town beaches! alive between tides.

40^x (98) *Cardium (quadragenarium)*, Cour. Fragments ^{I think your & Canfield's fragm. are only of large corbis} Town beach! also Canfield!

41^x (104) *Lio-cardium substriatum* - Cour. one valve
Halfmoon beach!

42 (110) *Lazaria subquadrata*, Cpr. Town to Mussel

point and Seabeach. abundant! alive in gravel under stones at low water. vars- with dark internal blotches like Ps. tantilla and pale yellow without the brown surface markings.

43+

? (Trapezium) n. sp. (Chaliotica D) Halfmoon beach! dead. Burrowing in Chaliotis rufescens. two

perfect specimens. also Cabinet Canf. This beautiful

Yes, quite; very curious & beautiful. I wonder little species is quite distinct from anything whether it grows larger in other places. The pholads are dwarfed when burrowing. reported from this coast before. I place it ^{in the collection}

(one of Gray's sections of doubtfully in) Trapezium: see paper in (I think) PZS not worked out yet.

44^x (111) Lucina Nuttallii Conrad. a few dead valves.

may be referred to this species. Halfmoon b!

45^x (112) Lucina Californica. Conr. all along the shore very common. Alive at low water in sand.

46+

Lucina sp. (sent previously by mail by

Dr Cooper from Coll. Dall & Stearns) small,
divaricate. Probably described. Halfmoon beach!
a few valves.

47^x

Peptis, probably *salmonia*, var. I will compare.
Undetermined bivalve. Halfmoon beach!
I have not worked out the small bivalves yet.
Two valves, apparently allied to the Teneridol.

48^x (118) *Orbella californica* Gld. (= *Diplo-donta orbella*)
It is not allowed by the Int. rules to appropriate a name once given to a species to a genus. We can't help the fact. I consider it a typical *Diplo-donta*.
Cpr. Rep p 643) Town beach! boring, two specimens.

49 (119^a) *Hellia Laperousii* Cesh. Plentiful. Town beach!
ful, angled!

with borers, all varieties from strong transverse,
to thin orbicular.

49^a (120) *Hellia rotundata* Cpr. S. Rep. not identified.)

50^x (122) *Lasea rubra* Mont. Halfmoon beach! dead.
yes, normal
and in roots of algae and fuci. Gregarious.

Twelve specimens maroon to translucent white.

May like my *L. Dionceum*, but perhaps distinct. I will compare it carefully with figures.
Let you know. Adams calls such shells *Montanata* (not *stellata*?)
57^x (124) ? *Lepton mercurium* Cpr. from Actinia! one valve.

Not Tellinys. This is a true Lepton in all respects except its
 irregular habits, resembling Saxicava. I am glad to inspect the pair.
 52^x (125) ? Tellinysa tumida. Cpr. Halfmoon beach! dead!
 I we will call it Lepton rude, Dall, if you have no objection. I wonder
 one valve and one specimen - minute
 whether its irregularity is accidental. We had better wait for more specimens.
 If constant, it may be worth a subgenus.
 triangular ossicle is lost. Shell has the appearance
 of a nestler.

53 (127) Mytilus Californianus. Conrad. Seabeach
 Plenty! Beautifully pearly -

54^x (128) Mytilus edulis Linné - all along shore! small
 probably a large shell of glomeratus, G.D. Most likely =
stunted edulis.
 but common.

55^x (129) Septifer bifurcatus. Ree. Large, alive at
 Mussel point beach! also dead at Halfmoon b!

56^a (131) Modiola Modiolus Linné. Jewett! ? Cooper!
 not
 not detected)

56 (132) Modiola fornicata, Cpr. Plenty, Halfmoon
 beach! alive at Mussel point! Bearded -
 The sp. from which I described was on the beach.

57^x (133) *Modiola recta*. Bour. Fragments on Salinas beach! ditto Canfield!

58 (134) *Adula falcata*, Gould, Sour beach! in sandstone
 5³/₄ inches long. Common.

58^a (135) *Adula stylina* Cpr. "S.I."! not detected)

58^b (136) *Lithophagus plumula* Hanley. "S.I."! not detected)

58^c (143) *Axinea intermedia*, Broderip. Cooper! not detected)

58^d (147) *Leda coelata* Hinds. Cooper! not detected)

58^e (148) *Leda cuneata* Sby. Cooper! not detected)

59^f *Lima* sp. Halfmoon beach! two fragmentary valves. This is not dehiscens Bour., as per Cooper's

dredged, live, specimens. (? = Orientalis Ad & Rve)

Your fragments appear to me distinctly threaded & not grooved. I see no Dehiscens, has threaded sculpture, and this is grooved - more difference than common in variety of station by the *Lima* from very different localities can scarcely be separate, like the *Lima*. *Dehiscens* also much thinner and apparently more is prior to *orientalis*, but has been considered as a sp. of *Mod.* sp., being considered from Payson. I will examine into the *U.S.* shells more thoroughly, and also the *orientalis*.

1875

1. The first of the year was a very cold one, with a heavy snowfall on the 1st and 2nd inst. The weather was very disagreeable, and the wind was very strong. The snow was very deep, and the roads were very slippery. The people were very much distressed, and the cattle were very much starved. The farmers were very much annoyed, and the merchants were very much disappointed. The government was very much alarmed, and the army was very much surprised. The navy was very much surprised, and the people were very much surprised. The world was very much surprised, and the universe was very much surprised. The whole world was very much surprised, and the whole universe was very much surprised.

gaping [Is not Dehiscens prior to Orientalis?]

60 (158) *Pecten hastatus*, Sby - one valve Halfmoon beach!
typical (not var. rubiculus #53)
ditto Canfield!

61^x (162) *Pecten californicus*. Conrad (not Carpenter see S
This is the monotimicus, as Nuttall & I settled it, & generally
Rep P. 645 - no 162) Plenty at seasons when
accepted in Europe, where it is common in cal.
the currents and winds bring the Kelp on
Philippe rediscovered it as from Sandv. I.
which they live, into the Bay of Monterey.

Otherwise only occasional dead valves - In Aug
1865, the number thrown up was so great that they
were largely collected as food, for several days.
Lown beach! Canfield! about a peck - (This is the
smooth and indistinctly ribbed species, well
described, and badly figured by Conrad in
Phil. Acad. Journal Vol VII p 238 Pl 18 fig 9) It has
been confounded with the following (?) species -

62 (162^h) *Pecten montimeris*. Conrad. (not Carpenter -)

Halfmoon beach! Three specimens, one adult,

Either this species is a variety of the preceding when things are ill defined & have to be rectified the names (which stand as per first rectifier, your *latiauritus* is the monimeris of my report p 645. All Nuttall's specimens were clearly conspecific specimens which I obtained, and which answer

well to the description but not to the wretched

figures (Pl. 18. f 10) must take the name. It

is likely that Conrad's shell was not distinct

and that this is a new species, but it is

better to use up the old synonymes when it
I quite agree with this //

can be done legitimately than to add to
Stearns (I am nearly convinced) thinks that certain large dead puzzling valves,
brought by Jewett from "Sta Barbara" are the adult of the small shells (generally found
the already overburdened nomenclature
over as juv. of *latiauritus* ^{Conrad}) which are *latiauritus* V&A Rep.

N.B.

62^a (164) *Sanira dentata*. Sby. not detected) [Dr Cooper does

not recognize this shell as of his collecting].? *P. purpuratus*

- Junior. beech. worn. *Purpuratus* occurred abundantly as from S. Fran-
in E.C. Col. but being a special Chilean shell,
I regard them (I also gave beach shell) as impor-
tations.

63 (165) *Hinnites giganteus*. Gray. large and fine
Stearns is sure that a large number of so called Montoreyan beach shells are imports. Of
Mussel Point! Lower beach! Young. Halfmoon
corner I think so!

beach! plenty). Animal dark muddy orange
color. The young ^(163a) can hardly be divided from
young *Pecten hastatus* except by the slight
attachment along the posterior edge.

64^x (168) *Placunanomia macrochisma* Desh. Soquel!

Mussel Pt! Lower beach! common. [From Alaska
to San Diego] Undersides of rocks below low tides -

Class Pteropoda (Omitted)

Class Gastropoda

Genus *Formatella*

Formatella ~~idea~~ n. sub. gen

Shell *Formatelloid*, thin, without labial

callous. the columella twisted and truncate,
forming a pseudocanal - Animal?

I cannot see that this shell differs, subgenerically even, from the
65^x (176) Type Tornatella puncto-coelata Lopr. Same
ordinary species!!

Diego, Cooper! Monterey. Halfmoon b! and

particularly Actinias! 20 specimens and
fragments all dead.

66 (177) Tornatina culcitella. Gld., not detected
probably not the adult of the next species)

67 (178^b) Tornatina cerealis Gld., one specimen. Actinia!
But may be worn; & the amount of grooving varies
differs from T. culcitella jr in want of grooves -

68^x (? 179 var) ? Tornatina ? ^{yes} a sp. (Charpa-D) Three
good species; like carinata, but sculpture
specimens. Halfmoon beach! dead. This shell
the plait exists, but appressed, as in many of the species
has not the plait of Tornatina developed, does

not ^{no} agree with Utriculus, Gb. & A. Ads. but
The Olivoid groove is characteristic of many species of Tornatina.

is a horny shell, more like *Laminea*, but spined?
 may be (Akera) *O. müller* (Chena.) Its longitudinal
 (not revolving) striae are curious and suggest

the name. *Neptune* me
 In the map of loose shells, I don't know whether *Fabiana* or *fabriana*, was 192 of
 183 *Volvula cylindrica*

68^b (180) *Cylindracylindracea* Linne, not detected)

69^x (189) *Doris albopunctata*. Cooper - one specimen,
 rocks at low water! also Canfield!

70 (196) *Doris montereyensis*. Cooper - two specimens
 with the preceding).

71^x (197) *Stellina opaliscens*. Cooper two specimens with
 No 69

71^a (184) *Neaplysia californica* Cooper, after storms. Canfield! plenty,
 Class Pulmonata

72 (P33) *Helix californiensis*. Lea. Cypress point and
 island! Original locality. [a subsequent visit
 has not added a single specimen. They appear,
 at least on the island to be exterminated

- only fragments remaining where prints of
 young shells might ^{have} been obtained a year ago [Camp]
 72^b (#35) *Helix Dupetichouarsi* Desh. with the above?
 73^x *Pupa californica* ^{Kew} Sand hills near Salinas

beach on sticks, Canfield!

- 74^x *Aridinax columbianus*, Gld. Gulches where
 springs run down to the beaches Canfield -

- 75 (199) *Melampus olivaceus*, Cpr, one dead specimen
 Salinas beach! seven do Canfield!

Class Prosobranchiata -

- 75^b (202) *Dentalium indianorum* Cpr, not detected)

- 76 (206) *Cryptochiton Stellerii* Midd - Mussel pt b!

valves Salinas and town beaches! plenty after storms,

- 77^x (207) *Katherina tunicata*, Wood, (not Sby) - one

specimen dead but perfect - Chinese b! [no

series of named Chitonidae having yet reached

California, it is impossible to make out any of the new or less plainly distinguished species. Only those well known to Dr Cooper and myself are mentioned]

78 (208) *Lonicella* ~~ella~~ *lineata* Wood. Plenty under stones low water Mussel pt! valves plenty Halfmoon b.!

79 (210) *Mopalia muscosa* Gld, Plenty on rocks under kelp! half tide to low water ~

80 (213) *Mopalia Lindsayii*, Gray, ~ Two specimens with preceding!

80^a (216) *Mopalia lignosa*, Gld, not thoroughly determined
 In place of *Trachydermus pseudodentatus*
 "marked" *M. galensis, juv* is certainly not that species or section. I can
 valves halfmoon b.!) not decide without dissection; but externally
 it resembles *Leptochiton mexus*.

81 (220) *Nuttallina* ~~Leanthopleura~~ *scabra*? Roe - abundant, with

the following species, at Mussel Point on rocks!
 where they can hardly even be sprinkled with

spray except in storms. Inhabits holes and
 crevices and grows thus of irregular shapes. Also
 Cypress Point in similar situations, not found
 on low rocks which may be covered with water
 by high tide, and delights in exposed head-
 lands, where the breeze comes damp and
 strong from the sea. <sup>very curious indeed; like Melanophe
 among wrinkles; how then does it become so
 very moist, especially on frost water, as though
 some heat had fastened on it?</sup>

82 (222) ^{Ichthyophaga} ~~Ichthyophaga~~ ^{Rabbit} ~~magdalensis~~ ^{magdalensis}. Herms. of large
 size at Mussel pt b! and rocks, generally near
 low water mark. Varies very much in

sculpture and colors. <sup>Same paper of loose valves can
 form Multallina scabra, Tomicella
 divisa, & var. like submarmorata, Calliochiton pulchellus (slightly not clear); Mopalia
 Merula (marmorata lignosa); Mopalia Kemmerleyi, & var. Macanensis. H</sup>
 83^x ^{no} ~~Acanthochites~~ ^{no} ? arragonites - Halfmoon beach!
Mopalia muscosa, Gld. jun
 one specimen

84^x (238) Nacella instabilis, Gld. one specimen
 Halfmoon beach! dead -

85- (239) Nacella inessa Horrido (inessa in error?)

Plenty on halfmoon beach! dead - an abnormal growth of A. patina Jun. simulates this shell, but may always be separated by the fine striae or the acmea - This variety is to A. patina what A. asmi is to A. pella

86^x (242) Nacella paleacea, Gould. seven specimens dead Halfmoon beach!

87 (242ⁿ) Nacella triangularis (= var. tr. cpr S. Rep)

20 specimens Halfmoon beach! dead - This

I wonder whether it really is a Nacella?

is a good species - and well marked although

the varieties run from wide oval and flat

(to narrow triangular and compressed,) the

black apex seems to be constant although

the brown markings are not -

88^x

Nacella n. sp. (vernal's I) Halfmoon beach!
 I cannot see any difference between this & my *Acmaea rosacea*
 This is the fine plate; the others shaggy & dead
 some fresh, all dead, one adhering to *Laminaria*
A. virginea ^{major} differs exactly in the same way.

which was slightly excavated under it, thirty

P.S. I have since examined fresh shells in series; there are certainly 2 sp. of which one must I
 specimens agreeing in appearance - Epielermis
 think stand as *rosacea* sp.; the other as *pilcolus*, Midd. Tho' Midd's sp. was probably mixed up of
 both; & his types in Eng. don't accord with his description.
 bright grass green when fresh; smooth or

wrinkled and extending over and round the edge!

89 (243) *Acmaea patina* Esch [These, which you mark "patina" and var. like *Nacella*
 var. *nacelloides* Dall, are simply a var. of *patina*; at least such is the larger one, the
 young one may probably be a hybrid, yet I call it *patina*, a little between the common state
 & *Armi*.] *patina* Abundant on rocks between tides from

Town to Mussel Pt.! Max. diam. long. 2.03 in

diam lat. 1.72 in, of largest specimen -

90 (244) *Acmaea pelta* Esch *Armi* and var. *Armi*. Type between

tides all along rocky shore! Var. *Armi* Halfmoon beach!
 Hearn considers *Armi* a good sp.
 dead, three specimens.

91^x (245) *Acmaea persona* Esch - not common - on

small rocks at low water! twenty specimens

- 92 (246) Acmaea scabra. Ree. 30 specimens, rare at
Mussel point! including var. lineatula Cpr -
- 93 (247) Acmaea spectrum. Ree, not common; between
tides! twenty specimens -
- 94 (248) Acmaea rosacea, Cpr. Plenty on Halfmoon beach!
See notes on your 88* A. vernalis
dead! a good species - 50 specimens -
- 95 (249) Lottia gigantea, Gray - Mussel Pt! 100 specimens
large and fine -
- 96 (250) Scurria mitra, Esch. All along sandy shores!
very common but all dead - Sometimes overgrown
with nullipore which radiates from the apex in
regular lines or ridges of nodules, often of a rich
rosy color which tinges the whole shell, and
suggests a difference which is merely apparent -
- 97 (252) Gadinia (Novellia) radiata, Cooper. Sea b!

97^x

near high water mark a colony of 48. all alive
and of various shapes and fantastic forms,
caused apparently not so much by irregularities
of the rock as by rapid growth at some seasons

and rest at others. This shell resembles. G

Coll. Newcomb is full of the gravest errors. The Gulf pentag. sh^{ls} stellata, v. Rep. - If
Newcomb's shell is hexagonal, it is probably G. reticulata from L. Cal.; your specimens are
Pentagonostoma in Coll Newcomb. from Gulf
so like that, unless it is proved that animal is different, I sh^d regard them as conspecific,
& call yours Rosellia reticulata (1844)

Calca - Dr Cooper's original specimens were all

very immature - of these Max height 0.7 in

width 1.3 in - The animal exuded a most

profuse milky slime from all parts of the body -

98 (253) Fissurella volcano. Rev, one specimen alive

rocks low water! Abundant dead Halfpenny

& I am obliged to defer to the opinion of Starns & Canfield that this is
not young *Luc.*; but I want to see young *Luc.* to make sure. They think
there are 2 sp. of *Clypidella*, for which my ^{MS} name may stand as one & yours
the other. & Mar 9-69

and Chinese ls! ~~Dark var - vitacea Esch.~~

- 98^a + *Clypidella*? n sp. (*biaculata* Q.) Halpnoor
 Unless it is proved to the contrary, I shall believe that there shells
 beach! 25 dead and broken - no trace of apex or most
 on the young of *Lucapina crenulata*; & that it is only partially covered by
 minute specimens, jun-var - has ribs sharper, and
 the animal when young, fully when adult. I had already written a diagnosis
 somewhat cancellated, Length of largest (frag) 1.1 in
 of your shell as a *Clypidella* from a living sp. in alcohol, but have forgotten to
 publish it, till I could get more information about young *Lucapina*. P.S. off
 99^x (254) *Glyphis aspera* - Esch - not uncommon dead, Soquel!

very large Halpnoor b! small but numerous -

- 100 (255) *Glyphis densiclathrata*, Kre 3 specimens,
 I am doubtful whether this is Kre's species; I think it most
 likely that his shell is the fine var. of *aspera*; but perhaps the name may be kept.
 Halpnoor beach! dead - South to C. St Lucas,
 At any rate of shell is quite distinct from *aspera*.

- 101 (256) *Lucapina crenulata*, Sby. rocks off the Whaler's
 trawls, not common, Canfield!

- 102 (258) *Puncturella cucullata*, Gld, not detected, Cooper!

- 103 (260) *Haliotis cracherodii*. Leach, Every where dead,
 alive on rocks between tides! Extremely abundant -

- 104 (261) *Haliotis splendens*, Kre, Cooper! not detected

105 (263) Haliotis rufescens. Swains, abundant dead,
 but being an article of food and exportation
 with the Chinese, not so common as He-
cracherodii which they do not use.

106^x (264) Haliotis Kamchatkana, Jorras - rare - dead on
 Salinas and Torre beaches! ^{Exactly agrees with the} Not the Northern
 specimens I have seen from Kamchatka region & Vancouver
species, found in Alaska. ^{Variable in markings.}

107 (265) Phasianella compta Gld, vars. Abundant dead,
 Halfmoon b! Alive at lowest water under stones,
 all varieties containing yellow, green, purple,
 white, crimson, and black in various proportions,

107^a (266) Romanulax undosus. Wood, Nuttall! ^{on your part.} A mistake

Mr Nuttall [evidently] obtained the [young of the

He may have mistaken the locality.

next species which without the [operculum, ^{in fresh condition,}

Perhaps it is better, in quoting the work of careful naturalists, who may be as well
 informed as yourself, to qualify your statements a little. H

sometimes ^{quite distinct} cannot be distinguished from this shell)

- 108 (267) *Pachypoma gibberosum*. ~~Chem~~ Sea beach! alive
on rocks between tides, feeding on algae and
Laminaria. Common. Muzzle - short-squarish
muscular, Tentacles moderate, pointed bases
covered by, but not connected with, two small
semilunar lobes, (the rudiments of the "veil")
Eye pedicles above and outside of tentacles, both
being cylindrical thick and now retractible;
Cloak divided behind; with a single tentacular
filament on each side at the posterior point,
Foot moderate rounded - regularly granulated
at the sides - color of foot, on the sides, red and
purple mixed, lighter on top of head and edges of
cloak. Mantle large, yellow as well as the body

of the cloak; The edges of the mantle a very brilliant yellow, Eyes black. The young is stellate and resembles Imperator (? Imp serratus quite possible: I want to see a series to connect. Cpr S. Rep no 268)

- 109 (269) Leptothyra sanguinea, Linné (= ~~Leptorhynchus~~ S. Cpr. S. Rep. 269. Recd for seals Cooper) Live at low water under stones. Mussel Point! Animal yellowish white, dotted with black; Tentacles long, filiform, Eyes sessile on inner bases, small black, very sluggish and timid - Dead, abundant ~~at~~ Halfmoon beach! This shell runs through a large number of varieties in color quite as worthy of mention as the one denominated "pupurascens" - One of the most remarkable generally of a larger size than the type, is red

and white marbled or banded in very curious fashion, the color running a little away crimson then white or cream color, then dark purple brown almost black, I have seen two completely white specimens but the apex is always dark colored, With regard to the geographical distribution of this shell some apparent confusion exists — [Mr. J. Hepburn a veteran and accomplished collector who has dredged extensively at Vancouver, ^{Very common in Japan A. A.} and who has collected all along the coast, ^{Properly common at Neesh Bay, Swan.} tells me that he has never obtained it north of the Saralones,] ^{Quite Different} [The similarity of the young specimens of Margarita pupella may have caused the mistake.] It is certainly ^{not} "rare further South" ^{So it seems; till your oct came in, we had only 2 or 3 sp.} being very common at Monterey

and Santa Barbara, found at San Diego (Cooper!) and I have three small delicate specimens which

I have every reason to suppose came from the

^{Gulf of California} I don't know it: can you let me see one?

Gulf of California. It is rare at the Farallones, and not

yet found at Bolinas or Bodega - [That the

Mediterranean specimens so rare and [doubtless

from the Swedish Consul.

He got Alpine shells in his Mus. at Linnean Soc.

unknown] in Linné's time can be conspecific. I

I can only say that I compared them side by side with Linné's own sp. I could detect no difference, nor could Hantley; nor could Cumming. H. & C. were our two most experienced men.

doubt, N. B. This is not the only Californian

of which you find the correction; but [These are European shells, migrants to the Pacific]

shell described by Linné; see Mytilus edulis,

whereas probably L. sang. is a N. Pac. shell, which the rare Med. shells are a died-out colony.

Modiola modiolus [is doubtful] Bulla cylindracea. [Perhaps are Carolina,

not confined to provinces] teleanus, etc.]

110^x

Your sp. are very wrinkled, but are I sh. think quite distinct from Leptothyra or. sp. (parvicostata, L.) & dead sanguinea; if you get a fresh one, please comp. mouth & note oper. It was found

Hoafmoor beach! This little shell which has been set down by Dr Cooper as the young of the preceding, is undoubtedly a distinct species,

no approach to it has occurred among the
 thousand or more specimens of L. sanguinea
 from Monterey which I have examined Its uniform
 spotted buff color, mature lip and few revolving
 ribs make it impossible to confound the two

I have seen about twenty specimens all of
 I see there are perfect sp. in Confield's lot. which I had marked as n.s.
 which are uniform in color and size,

111^x (271) Liotia fenestrata - Cpr. Halfmoon beach!

rare, three specimens dead ~

111^a (272) Liotia acuticostata - Cpr. Cooper! not detected)

111^b (275) Trochischus Norrisii, Sby. Nuttall! no one has

since found this shell at Monterey and we
 may well believe the locality mark an error.

An alcoholic specimen of this species kindly
 furnished by Dr Cooper proved beyond a

doubt that it is not a *Proboscifer*. A careful drawing of the lingual ribbon was rendered impossible by an accident, but the formula was 5, 18, uncini 90 - the central tooth being rather shield shaped, without cusps or projecting points, and attached by nearly all its under surface to the membrane - The following notes were taken on colors and anatomy - Tail, short, black edged with crimson, one cirrus at posterior end, Edge notched or serrated, almost fringed anteriorly, Gill very large on the left side, single
Are you sure? If so, it must be moved from the order. Probably you use the term pectinate. Excretory canal simple cylindrical, in a different sense: compare its gill with that of Chlorodroma or Pachyporus. Large on the right side of neck, Muzzle short muscular, dark purple brown, Foot blotched

and spotted with black and crimson with a few long granules on or near the edge. They may be found feeding on the floating kelp, and present a most beautiful sight in the water. They have not been found to my knowledge north of San Pedro, dead or alive.)

- 111^c (276) *Trochiscus convexus*, Cpr. Jewett! not detected.
 = *Collonia Tricketti*, Cpr. posica. It is neither a *Trochiscus* nor a *Collonia*; AAD made a genus for it & congeners.
- 112 (277) *Chlorostoma funebre* A. Ad. Very common

on rocks between tides! Sutureal full sometimes absent.

Not the rustica form as understood in Eng. Kiener made

- 113 (279) *Chlorostoma* [rustica] Gmelin. nom: prior.
 several many determinations, & no wonder, Gmelin's species being very often spurious, & generally ill-defined. Except Martyn's shells, from the early voyages, none from your coast were known in Gmelin's time. Your shell is perhaps Kiener's; not Gmelin's; but certainly Phil. (font type) which should stand. I consider your *fluctuata* r. Gmel. Hab. ? (= *Chl. brunneum*, Phil. Cpr a var., as you name it on the ticket. Such var. are common in *Chlorostoma*.

Sup. Rep. p. 652) Rocks! rare alive sea beach!

Phil is I think ante Kiener, when Troch monograph came out rather recently. not common, dead. A variety *fluctuata*, has

the spire depressed, base broader and with

more striae, and the upper whorls undulating;
the young are frequently nearly black with
a strong umbilical rib, but no pit

(= *Strochus Montereyensis* Kerner Pl. 33. fig

114 (280) ? *Chlorostoma Pfeifferi*. Phil. Mussel Pt.

^{I think Phil is right}
1 two views young shell Fig 2. two views

alive, Canfield! rare. Dead, rocks and

The larger of your specimens is *Phorus pulchra*.

Halfmoon b! not common - The large

umbilicus gives this shell a very un-Chlorosto-

-moid aspect - Some S. American species have an
umbilicate & a non-umb^{to} form, test Gray.

114^a (282) *Omphaliris fuscescens*. Phil. Jewett! not

found by any one at Monterey, so far as I

could ascertain. The number of "Jewett"

shells which are located by him to the North
of their present habitats suggests a doubt

as to the correctness of his labels - It is difficult

to understand why the species preceding

this in Dr Carpenters Catalogue is

denominated Chlorostoma aureolineum,
 The distinction between the groups is not so much the presence or absence of
 umbilicus, as the habit & sculpture; testis A.D. I tried to find them together, but
 It appears to be a good Omphalius - The
 they are best grouped apart.

orange spot is in the umbilicus; not the
 aperture as far as I have seen.)

115+ (Ptychostylis caffa - Gabb. Proc. Cal. Acad. 20
 belongs to a genus previously established by A.D.
 fms. rare. Cooper! not detected)

116+ ? ^{Gibbula} ~~Calliostoma~~ ^{in to H} ~~in sp.~~ (Canfield diff. D.). ~~testis off.~~ Shell seven
 whorled; the last whorl comprising more than
 half the entire shell. Above: sutures small but
 deeply channelled, smooth, with three revolving
 ribs close to the suture, three to four, on the
 lower part of the whorl. Color pearly with
 bronze-yellow pencillings, obliquely to the suture
 Surface of the whorls rather flattened. Base

semicarinated convex umbilicated. with nine
basal revolving ribs. Umbilicus strongly
carinate internally smooth narrow and
small. Aperture rhomboidal, pearly with
grooves answering to the exterior ribs.

Columella straight with a slight callosity
but not reflected, Height .4 Majdian .4 Minidjian .3

Dir $70^{\circ} 40'$. One specimen of this modest little
species was found dead on Calymon b. I take

pleasure in dedicating it to a friend who has
done so much for science with such slender

means. The umbilicus and operculum

(as yet unknown) may remove it from *Calliostoma* ^(to Gibbula)

Calliostoma tricolor, Gabb, Proc. Cal. Acad. Sci. 1888.

two specimens! frag Halfmoon b! the larger

specimen from Soquel though broken is to be
 As far as I can judge from the ^{dd} extreme ^{dd} ~~spec~~ ^{spec} which alone I have seen, this
 noted as the largest yet obtained —
 sp. of fabbs (which I had not seen before) is the adult of my splendens. If fabbs
 thinks his name ought to stand, I have no objection.

118 (283) Calliostoma canaliculatum. Martyn, Soquel

two fine specimens! Small specimens rare at
 Halfmoon b!

119 (284) Calliostoma costatum. Martyn. Very common

at Mussel Pt. b! also dead on sandy beaches, and

sparingly alive on rocks at low tide. The most

common variety of this shell, at Monterey is

of a uniform chestnut brown, with a reddish

dash in the umbilical region and the ribs

of a yellowish cast. There are however two

varieties well worthy of mention for their beauty

if for no other reason. In one the color is

interrupted on the upper part of the whorls by a regular succession of ~~blotches~~ of a much darker brown, immediately after which occurs a lighter patch of color particularly upon the ribs. The other variety has the upper portion of the shell - although quite perfect, of a beautiful blue, in lines or patches alternating with dark brown and light yellow, patches. I saw Always recognized, however worn, by the blue on the spire, which, there none of the reddish specimens which as you say, in some var? comes to the outer surface. appear to have been distributed as the type, and reddish is the charact. of worn *M. pupilla*. at first hardly recognized the shell. When the outer coat is removed it leaves the nacre of a remarkably brilliant blue -

120 (285) *Calliostoma annulatum*. Martyn. Small fragments Haeftenbeach! one dead Loguel!

This exquisite species is found on the growing kelp, and large numbers of fine specimens were brought in by fishermen while I was at Monterey, but despite my endeavors, having been given to a lady, they were all ruthlessly sacrificed to that ? artistic monstrosity, a "shell frame" which was not for sale —

121⁺ (287) This is a very fine species; not seen before. I doubt however if it is the *Calliostoma supragranosum*, Gpr. Soquel! adult of my *supragranosum*, of which I have no sp. to compare. It does not fit the One large specimen. Mussel Pt. ^{two} adult specimens *Diogenes*; but shells often alter much in growing.

dead. To the description of this beautiful species, now found adult for the first time may be added as follows —

Shell six whorled, acute, whorls gently rounded, with fine

revolving threadlike ribs; anterior three to five,
granulate, Last whorl roundly carinate, base
flattened with about twenty five revolving
striae. Columella thick, not reflected, but
base around it somewhat excavated -
Aperture about one third the length of the
whole shell; rhomboidal, pearly, smooth,
Shell of a beautiful light salmon color -
ornamented near the suture and carina
with alternate patches of faint yellow and
chestnut brown - Alt. 1.1 in Maj diam 0.9. Infl. 62
Angle of carina 98°

122(289) *Calliostoma splendens*, Cpr., Halfmoon beach! Two broken
I did not see this sp. in your collection. See notes under
dead specimens - *C. tricolor*.

11
\$ Stearns brought over all his conchae difficillious, & we had a great
go over them; especially this race, Pleurotomidae etc. We got out all his,
yours, Canf's etc etc; & came to some conclusion about them, but I am
not sure what. Even his (St.) shells are generally such worn beach shells
that we can make little of them; & as to yours & Canf's, probably
no ordinary snail collector w^d admit them into his cabinet, still
less describe from them. It is always dangerous, (if difficult for our
successors) to describe from worn beach shells.

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123 (290) Phorcus pulligo. Martyn - Halfmoon b! dead

three specimens (why not Phorcus Pfeifferi which
 Umbilicus & base quite distinct when perfect, in all ages & vars;
 with Pfeiffer's note
 can hardly be distinguished when young? When

did Philippi describe Pfeifferi? I find no

I will hunt up, and ask Adams who knows most on
 mentions of it in the Reports, Kieners name and
 the family.

figures, published 1846. may be prior -)

^x124 (294) Gibbula succincta Cpr. Mussel Pt! alive under
 + G. parvifida, var. + G. funiculata, I describe my Gibbula
 stones at low water, Halfmoon b! dead. 40 specimens.
 & Margarita from very few & poor spec? & I won't say they are right.

125 (298-986) Margarita pupilla Gould. Low to Mussel

Pt! dead. 30 specimens, Mussel Pt! alive five

Note & spec

specimens, all varieties insensibly passing

into salmonia var — quite likely that they are conspecific

126 (299) Margarita acuticostata, Cpr. Mussel Pt!

Most of the sp^s are vars of Gibbula parvifida (the diagnosis of which
 must be greatly extended. Some appear to be Gibbula funiculata & some were
 at low water mark under stones with G. succincta
Gibbula succincta. A few may be Margarita lirulata; but all the specimens
 are too worn to determine. They are extremely puzzling.

MS

Of your 2 shells marked "Spiralis, ined", the ribbed one is Vermiculum anellum, Möb., which I strongly suspect to be the first stage of Scrpularia squamigerus, Gm. Please examine.

The smoother one appears a Vitrinella, or some allied genus, but is too worn to identify or describe. Both are Molluscan.

rare. Dead, plenty from Lown to Halfmoon
beach! on sandy beaches -

126^b (305) Crucibulum spinosum. Hy. Nuttall! (not detected)

127 (307) Crepidula ? dorsata. Brod. (Cpr) Halfmoon b!
Common, dead,

128 (309) Crepidula adunca. Hy. Halfmoon b! not
common - dead - Frequently strongly striated

longitudinally if grown on a ribbed shell; also the
ribbed shells may be incised.

129 (311) Crepidula navicelloides. Nuttall - Lown beach!
in all imaginable varieties; in borers' crypts,

130 + Galerus ? conicus Brod. one specimen. Halfmoon b!
yes

not contortus as per type in State Coll, nor

fastigiatus as per description in Mazatlan

A tropical species imported
catalogue, common in shells from Lower Cal

beaches, imported for "shell work",

130^a(313) *Galerus contortus* Cpr. Cooper! not detected)

131(314) ? *Hipponyx cranioides*. Cpr. Halfmoon b! dead

9 specimens { May from a very aberrant var. of *antiquatus*
 nucleus { two; but (till I get better specimens) I think them
 distinct.

131^a(315) *Hipponyx antiquatus* Linné (not determined)

Specimens among 131 & 132. ; very large & like the W Indian

132(317) *Hipponyx tumens*, Cpr. Halfmoon b! dead 15 specimens
 ✓ Yes; a few others intermixed

133(322) *Caecum crebricinctum* - Cpr. Actinia! one sp.

134+ *Cerithium* ^{versicolor, C. A. D.} species - Halfmoon beach, one specimen
 This specimen { certainly lived in the W. Indies; ballast
 has not the aspect of a Monterey
 shell; it is unknown { except by importation
 as yet from Cal. and I
 doubt ^{not that} but it is an importation -

135(329^x) ? *Bittium filozum* Gould. Mussel Pt! rare
 alive under stones, Plenty dead on beaches.

(also var *esuriens*.)

136? { *Cerithiopsis tuberculata* + *C. fortier*
 ? *Bittium* sp indet. Halfmoon b! dead.

137 { *Biporia purpurea* + *Bittium* *spurius* + *Cerithiopsis munita*, probably. See much
 ? *Bittium* sp indet. Halfmoon b! dead. ^{rather to determine}

Within & Conchiduses are very difficult to make
out from such muddled specimens.

* The natural inference to a stranger comparing off material with
such names, & then reading off very confident criticisms of Rye's & Currier's
work on the much more difficult Trachipoda, would be "first cast off," etc.

- 138^x(331) ^{The black sp. are} *Pittium quadrifilatum* { Cpr. Halfmoon b! dead,
^{the rest are resurrectus.}
- 139^x(332) ^{Specimen is probably} *Pittium armellatum*, Cpr. Halfmoon b! plenty dead
^{the rest are Cerithiopsis munita, Gm. I have not yet seen the shell perfect.}
- 140(335-) *Litorina planoxis* Nuttall, Mussel Pt! Rocky
 shore! Seabeach! very large and plenty, Has a
 green patch sometimes, close to the columella.
- 141^x(336) *Litorina litchana* Phil. Mussel Pt! 3 alive, one
 dead Halfmoon b! Canfield four specimens,
 From Spanish women, two specimens. The ribs
 are generally finer than in the Litka
 variety. I saw no smooth ones at Litka.
- 142(337) *Litorina scutulata* Gld., Every where Rocks!
 alive, beachs! dead, plenty, Variegated much like
^{but different texture}
Phasianella, with yellow, white, black, and olive green.
- 143^x(338) ^{*Odostomia straminea*, Gm.} *Assiminea?* *subrotundata* Cpr. Feeding on
^{Not at all like an Assiminea! You can see the fold, & sinistral apex}
^{with the naked eye! *}
 minute fungi on the backs of *Haliotis rufescens*

Seabeach only! Six specimens mostly
immature, do Canfield all immature -

144^x(341) Lacuna porrecta Epr. ^{yes}Halfmoon b! dead, rare -

145 & 146 Lacuna ^{most of them are unifasciata & var.}indet. Halfmoon b! dead, 14 specimens -
^{+ plentiful}

(3 young imperfect specimens mixed with the other lots may belong to)
146^x(342) Lacuna solidula Loven. in variety, Halfmoon b! plenty,

147^x(342^b) Lacuna ^{var}compacta, Epr. Halfmoon b! dead, plenty,
^{most of them; some were unifasciata; a few variegata, var.}

148^x(344) Lacuna unifasciata, Epr. Halfmoon b! dead
^{almost all then variegata. A few others mixed}

many varieties, all plentiful on Kelp fronds

in deep water, alive - ^{plenty is not an adj.}

149^x(345) Isapis fenestrata Epr. Halfmoon b! one dead,
^{yes.}

149^a(346) Isapis obtusa Epr. Cooper! not determined)

149^b(347) Rissoina interfossa Epr. Cooper! not found)

150^x(350) Alvania ^{no}indet. Halfmoon b! one dead

^{this may be a young Chrysomelina, but is probably a Murexide. Will report afterwards.}
150^a(353) Fenella pupoidea Epr. Cooper! not obtained)

157(361) Diala marmorea Epr. Halfmoon b! dead
^{yes + part of 156.}
{ Part of your spec. on Barbatia subtennis, Lant.
twenty specimens varying greatly in color -

Part are perhaps *D. acuta*; but I have no sp. to compare. The rest are *D. marmorata*,
and *Barleeia subterranea*.

152 (362) *Diala acuta*. Cpr. Halfmoon b! ten specimens.

153 (366) *Trinia californiana* Gray. Mussel Pt. Twenty
five dead specimens, three or four fresh - one
dead. Salinas b! Called "Frijoles" by the Spanish people.

154 (368) *Erato vitellina* Hinds. Mussel Pt! five dead.

155 (369) *Erato columbella* Mke - Halfmoon b! three dead.

156⁺ *Surcula Carpenteriana*. Gabb. Low beach
fragment. Carfield! (Also Santa Barbara, Hepburn)

157 (374-74^a) *Drillia torosa*, Cpr., Mussel Pt, ten
specimens and fragments, not uncommon. This
shell passes so gradually into the orange
colored variety that it cannot be regarded as
granted. I only saw the extreme
even a permanent variety worthy of a name.

Alive at low water in fuel -

157^a (382) *Mangelia angulata* Cpr. Cooper! not determined.)

- 158⁺ *Mangelia hexagona*. Gabb, one sp. Halfmoon beach! dead (Cal Stearns)
- 159⁺ ^{Very like a *Borognia*} *Mangelia* indet (X) 12 sp. Halfmoon b! dead
This is sent us by Canf. as your *M. Canfieldi*. I think it a good sp. (tho it resembles *M. craticulata*.)
- 160⁺ *Mangelia* indet (XX) one sp. Halfmoon b! dead
Probably *M. interfossa* worn. The species is perhaps *Clathurella*.
- 161⁺ *Mangelia* indet (XXX) five sp. Halfmoon b! dead
This is probably *M. variegata*, *angulata*, angles worn off.
- 162⁺ *Mangelia*? n. sp. (Montereyensis. D.) (XV) two sp-
I think this new: it is perhaps a *Bela*.
Halfmoon b! dead
- 163⁺ *Mangelia* indet (XVI) two sp. Halfmoon b! dead
one sp. may probably be a worn *M. interfossa*.
- 164⁺ *Clathurella*? n. sp. (Canfieldi. D.) one sp.
This is my *Mangelia variegata*, normal. Had you not better give the name *Canfieldi* (or *Canfieldi*, for so it pleases the good doctor) to no. 159?
Halfmoon beach! dead as accepted by Stearns & Canf.?
- 165(385) *Mitromorpha aspera*, Cpr. C? = *filosa* var)
Very worn. types seem quite distinct. but there are intermediate forms.
Halfmoon beach! four specimens dead
- 166(386) *Mitromorpha filosa*, Cpr. Halfmoon beach!
Not unlikely there are "3 species of *Mitromorpha* but almost all the sp. are worn.
fragment, and the may probably have come from this species.
Most of them are *M. aspera*.
dead, fifteen specimens
- 166⁺(388) *Conus californicus*. Kinds, Mussel Pt! not

common. Young with delicate brown
network pencillings -

167⁺(392) Odostomia ^(nd) gravidula Gould, Actinias!
_{muciformis, Cpr.}

Halfmoon beach! dead, twenty specimens,

One alive under stone at very low water -

Operculum shaped like shell of ^{Really? Perhaps abnormal.} Dolabella Rhynchophii.

168^x Odostomia ^{gravidula, G.D.} indet. Halfmoon b! five specimens.

"169"
"169⁺" Odostomia ^{inflata, Cpr.} indet. Halfmoon b! seven specimens -
"169" Odostomia ^{probably Ostrumica} foulouii, Cpr.

170⁺(396) Chrysallida ? cinicta Cpr. Halfmoon b! one dead.

This appears to be a Muriola, I must be compared with AA's Japanese. When I
have diagnosed it under microscope, will report.

170⁺(399) Chemnitzia tridentata, Cpr. Cooper! not found)

170^b(403^b) Chemnitzia var stylina. Cpr. Cooper! not found)

171 Chemnitzia ^{stylina, Cpr.} ? gracillima. Gabb. Proc. Cal. Acad -

Halfmoon beach! one dead -

171^a Chemnitzia ^{Probably fragments of a Rubimella. Too imperfect to determine.} indet. Halfmoon b! two fragments -

171^b(407) Eulima rutile Cpr. Cooper! not found)

172⁺(408) Eulima ? chrysilla. Cpr. (testi Cooper) Halfmoon b! one dead
_{compacta, Cpr.}

51

54

tristis, Gm.172^a
tristisEulima tristis, Actinia! one specimen dead.most likely the young state of Theridion, Gm.173
tristis, Gm.Eulima tristis Halfmoon b! one sp. dead.174 (409) Scalaria Indianorum Gpr. Mussel It!

alive at lowest water. Halfmoon b! dead.

175 (410) Scalaria ^{var.} tincta. Gpr. Halfmoon b! very plenty

Alive rarely at Mussel Pt. lowest water - a good species.

176 Scalaria ~~videt.~~ ^{Cunninghami} Hoalpmoon b! four spec. dead

176^a(411) Scalaria subcoronata Cpr. Cooper! not found)

176^b(412) Scalaria crebricostata Cpr. Cooper! not found)

177⁺(414) Opalia borealis Gld. Mussel Pt! seven dead -

178(415) Opalia ^{borealis juv} ~~insculpta~~ Cpr. Hoalpmoon b! 9 specimens -

178^a(416) Opalia spongiosa Cpr. Cooper! not found)

179⁺(424) Cerithiopsis assimolata. C.B. Ad. Hoalpmoon

beach! one specimen -

179^a(419) Cerithiopsis tuberculata. Mont. Cooper! not

determined) ^{W.H.}

There was 1 sp. of C. fortior in your lot.

179^b(420) Cerithiopsis columna Cpr. Cooper! not determined)

180 *Cerithiopsis* ^{*tuberculata*} ~~indet.~~ ^{seven sp.} } Hoalfmorn b.! dead -
+ part of 136. }

181 *Cerithiopsis* ~~indet~~ one sp - Hoalfmorn b.! dead -
This may prove to be the young of *C. tuberculata*; but I have no
sp. at hand to compare. It is evidently young. I will report, if new.

182 (423) *Triforis adversum*. Mont. Hoalfmorn b.! one dead,
may be; but too worn to determine.

Rissoiella n. s. gen

Shell like *Cerithiopsis* when young. Thin.

A large part of the exotic Rissoinae have then characters, I think
sculptured, lip broad, reflected, thin,
the genus may be conveniently divided; but it ought to be by A Adams, or some one well
acquainted with the finest forms from the I. S. - Any how, I think you had better

Peristome continuous, not sinuous - ^{quite young!}
not make a compound diminutive, *Risso* } We have also *Rissoella*! *Risso* has too
Rissoa } much honour already; he was a careful shell.

183 Type (422) [*Rissoiella* ~~*purpurea*~~] Cpr. sp = *Cerithiopsis*

I had already noted that the shell was a *Rissoina*; I have my doubt whether
it be not merely a coloured var. of *R. insipida*!
purpurea Cpr. Sup Rep. five specimens.

Your shells are (what I regard as a new species of) *Alvania*. Not a *Rissoina*.

Hoalfmorn beach! dead -

But the *R. purpurea* appeared as part of 137, p. 4

183^a (Cancellaria *Cooperi* Gabb. Roc. Cal. Acad.

Cooper! beach, not found)

184 (429) *Velutina laevigata* Linné. Hoalfmorn beach!
young

twenty five specimens dead (probably young of *prolongata* among them)
(= var? of same)

185 (432) *Lunatia Lewisii*. Gld. close to wharf on sand

among rocks! rare. Abundant in June and July
when they come up to deposit their cup shaped
egg ribbons on the sand, in this particular
corner only. Canfield -

- 1867 Lunatia sp. Halfmoon b! two specimens,
one alive. [?]not the young of Lewisii; and
(How do you know this? Some of the young Lewisii are so
close that I sh. not venture to describe it. Lewisii is an extremely variable
apparently undescribed. Colls Stearns and
sp. The spec. sent is broken, so as to show more callarity, I polished.
Canfield - Stearns says "certainly young Lewisii.")

- 1877 ~~Recluziana~~ ^{Recluziana} ? n. sp. (alla D.) Salinas b! one
specimen dead. State Geol. Survey Coll. two
perfect specimens - This shell is perfectly distinct
It appears to ^(and to Stearns) be identical. Many well known Recluziana (e.g. the Florida
dupl. spec.) go through similar changes.
from N. Recluziana and I cannot find
any reference to such a shell in the books or
notes within my reach -
Glutina prolongata, Gr.
1887 430 Lamellaria n. sp. (Stearnsii D.) Halfmoon b!

one dead. This extremely distinct species
^{I should think so!}
 differs from the typical Lamellaria in its
color and slight epidermis; and may be
 is a well-made Velutina, or a form not yet eliminated,

189* Lamellaria, n. sp. (orbicula D.) Halfmoon

beach! dead seven specimens,

As far as can be told from the shells alone, I sh^d regard these 3 as conspecific.
 The British sp. varies in much the same way.

189^a* Lamellaria? n. sp. (rhombica Dall) Halfmoon

You may know of differences in the animals. Can you diagnose the
 shells from similar species elsewhere?

beach! eleven specimens — ^{RS. Both Calif. I sh^d say that the animals are distinct, so I am quite willing to accept the species}

190* Lamellaria? n. sp. (depressa D.) Halfmoon beach!

dead, two specimens —

191* (Sigaretus debilis Gld. Cooper! not detected)

192(435-) Pruine Oregonensis. Redf. Salinas b! fragments

not uncommon. Invariably decollate —

193*(436) Ranella californica, Hds. Salinas and

four beaches! fragments not rare —

194⁺(437) Mitra maura, Swainson, Mussel Pt! Halpmon

b! dead and worn, rare, four specimens,

195(438) Marginella Jewettii, Halpmon b! common, 35

specimens collected personally, hundreds by others,

at times,

196(439) Marginella subtrigona, Cpr. Halpmon b!

rare, five specimens - dead - So far as I have

observed, The perfectly fresh specimens of this

pretty species are always more or less

pellucid and salmonaceous -

197(440) Marginella regularis Cpr. Halpmon b!

All these agree with the types.

common 50 specimens! Coll. Stearns. 200. specimens,

198⁺(441) Volutella pyriformis, Cpr. Halpmon b! dead

25. specimens -

199(443) Olivella buplicata, Sby. Mussel Pt to Town!

dead. Alive - small sandy beach near town where a brook spreads over the sand. The number of folds in this shell is by no means constant, varying from one to eight, the younger ones having less - In nearly all specimens the additional folds will be found back of the column, out of sight. It varies in color from purple to white - and is variegated with a deep orange, and particularly when young with zigzag brown lines. In short it is protean

200. (444) Olivella baetica. Gpr. Haffnorn and Salinas beaches! This shell is sometimes dull purple, sometimes nearly white, often ornamented with zigzag lines of brown like *luricolata*. It is almost impossible to distinguish some varieties

of it young, from young ^{much more slender} O biplicata. Silka alive
seven fathoms - mud,

201(445) Nassa fossata. Gld. Salinas beach! Large and
fine, five specimens. After storms -

202(446) Nassa perpinguis. Hds. Halfmoon b! rare
one or two specimens -

203(448) Nassa mendica. Gld. Halfmoon and shingly
beaches! very common after a heavy blow. 100 specimens.
Stearns will have it that Cooperi = mendica, var. There are plenty of
intermediate specimens.
204(449) Nassa Cooperi. Gbs. Halfmoon and other beaches,
common, 150 specimens mostly dead -

205(451) Amycla carinata. Hinds. 1843 (= gausapata (Gld)
Among your shells was 1 carinata, several Hindsii, & the rest gausapata
Apr. 1848 [+ californiana, Gask. 1857]#. Hindsii

See Back
(Kre) Gpr). Halfmoon b! abundant. 100 specimens,

Bought from the Spanish women by Mr Stearns,
over ten thousand; collected for shell work,

The careful and critical examination of the

I am glad to know your opinion, which is certainly the easiest, but we must not be too hasty. You say nothing about the animals or spec of these shells; & they may not even be congeneric. You can barely distinguish Nitidella fouldii by the shell from gausapata; yet the spec belongs to another family. I dare say I have gone over 20,000 from the Vancouver district, & am not yet satisfied. Certainly the live spec brought by Lord & USS & Kennerly of gausapata are quite distinct from fresh spec of carinata. It is hard to believe that the small keeled orange carinatas from Skye are conspecific with these large gausapatas from the north.

Califana is a very doubtful species, resting on a very few specimens. gausapata is the northern form, gradually becoming Southward carinata is the extreme southern; rare even at Monterey. Hindii the ordinary Californian condition.

I sh^d be disposed to regard carinata + Hindii as one
gausapata + Califana as another
Nitidella fouldii, a third.

But again I say, we must not be positive till the animals of each form have been carefully compared, & their spec also.

gausapata is certainly an Amycla.

fouldii

"

Nitidella

car. + Hind. may be Columbella or Amycla, or Amphissa. I have not yet seen good examples with spec.

largest number of these shells, probably, ever brought together, confirms me in the conclusion that there is no place to draw the line between these varieties. It is easy to pick out and name two or three extreme forms; but ~~there~~ are thousands to each one of them, which will equally well fit either diagnosis. Found living on a floating buoy in the harbor - 2. fms -

206. (453) *Amycla tuberosa*. Gpr. Halfmoon b! not uncommon,

Passes from translucent white to dark brown, with

every imaginable variety of color and markings -

206^a ? *Amycla* n. sp. (aurantiaca G.) Halfmoon b! 3 specimens dead, uniform. ^{I take them to be the young of the orange var. of *A. tuberosa*}

207. (456) *Amphissa corrugata* (Roe) Adels. Halfmoon

b! three specimens, This I take to be the ^{yes} type
Profoundly common at Vancouver.

and probably distinct from the following -

455
208 (456 pars) *Amphissa* ^{undata, Gpr.} *versicolor*? n. sp. Dall. Halfmoon b! ^{See next page.}

I am of the opinion that this is distinct from *corrugata*, but I am not yet certain you are right. I want a similar description of animal & oper. of *corrugata* it may prove only a degraded Southern form, as often happens with Brit. shells in the Mex. Shells incline to this view. A few undated appear in the N. Cal. Bay etc. 50 specimens: at times very abundant. Bought of

Spanish women, Stearns. 2000. specimens.

This shell differs from the northern type above-

mentioned in shape, size, coloration, habit.

and faunal centre: being most abundant at

Monterey, and never found far north, where

the *corrugata* flourishes. The Animal is

white Buccinoid, eyes very small and

black, siphon nearly three times the length

of the shell. Proboscis very long also. Operculum

I wish you could send one an oper., or a good drawing showing the nucleus.

Buccinoid, with some resemblance to that of

If so, not buccinoid!!! I do hope you are as careful in your
Cassis, (*Cornuta* Adds) Under stones at low
observations as you are, incorrect in your determinations, & confident in
your criticisms!! As you propose to print, I hope your critics will not have
water, 'Mussel Pt.' alive with Leptothyra sanguinea,
to clasp you with some of our predecessors!

Gibbula succincta etc. This shell passes through

much the same series of varieties as the

Leptothyra - from pure white, white dotted,
speckled: blotched: with spiral pencillings:
of all colors both as ^{to} ground and markings:

brown, purple, salmon color, crimson, yellow,

white, almost black etc - The apex is usually

dark colored - ^(Corrugata used to be type of *Truncaria* in Mus. Ann.) The genus *Truncaria* must be
then it was found not to be congeneric with *Scorialis* type, so separated as *Amphifera*
more clearly defined before we can refer any

shell to it! Until such definition be made the genus

of Messrs Adams may be provisionally used -

209* (458) *Purpura crispata* Chemn. smooth var. Mussel Pt!

three or four worn and dead -

210* (459) *Purpura canaliculata*. Duclos. Sea beach!

five specimens dead and worn -

211* (460) *Purpura saxicola*. Val - and vars Rocky shores!

30 specimens - alive -

212^{*}(461) Monoceros engonatum. Cour. Rocks! one fine specimen - at times not uncommon -

213^{*}(462) Monoceros lapelloides. Cour. Rocks! five or six living - occasionally plenty -

214^{*}(463) Ocenebra lurida - Midd - and var. ^{yes} Mussel Pt! about 30 specimens. The varieties of this and the next species are very perplexing. indeed, in dead shells.

215^{*}(464) Ocenebra interfossa, Spr. Mussel Pt beach! 12 specimens and vars. { When fresh, quite distinct.

216^{*}(466) Gerastoma monodon. Esch. Mussel Pt! one

live specimen, one dead Salinas beach! This is In the judgment of all the Eng. conchologists I know, & after comparison of the American & Asiatic specimens, it is the same; sculpture & varices greatly not the original Murex foliatus! a specimen vary according to station, as in many similar species. The ^{very} young are the best guides. Stearns is confident of the same. from Sta Barbara exactly accords with that

species as figures in Roe - and Kener. It differs in the sculpture between the varices and in the

character of the varices - The last one more like
Nuttallii and the first like Monodon. The

shell in question is in Colls. Stearns & Newcomb,

217 (470) Nitidella Gouldii. Cpr. Halfmoon beach! three
 your shells are perhaps the young of this species; which can hardly be distin-
 or four specimens of this dubious shell were obtained,
 gathered from the Angela gausapata group by the shell alone.

218 (473) Muricidea Californica. H. C. Mussel Pt!
 part of your sp? an Ocenebra lurida, var. aspera
 part are what you have called McCalif; I am not sure whether rightly.
 a few specimens, I fancy it is an Ocenebra like the others.
 (I have named Taphon squamuliferum from Cooper's specimen.
 The shell I consider = M. Cal. H.B. is quite distinct.

219 (481) Chrysodomus dirus. Rve. Mussel Pt! two large
 worn specimens, also Canf -

220 Tusus geniculus? Canf, Mussel Pt! not
 (I see you, with Cpr. & other good authorities, all give this as distinct from ambustus; but
 you do not tell us in what they differ. From the wrinkled, worn shells I have along
 uncommon, dead and worn. Quite distinct
 seen of your geniculus, I cannot detect specific variation. Tusi generally
 vary greatly in sculpture. P.S. Stearns has shown me better specimens, I convinced
 from ambustus junior - one that they are distinct &
 483 Tusus ambustus; normal perhaps a 3rd undescribed

An examination of this list results as follows

Species

Species collected by me

219

Previously reported but not obtained by me 44

Total known fauna of Monterey 263

Of these were: Species

Not obtained by me 44

Previously reported from Monterey 101

Previously reported from N. & S. of Monterey 29

Previously found only to the N. of Monterey 24

Previously found only to the S. of Monterey 42

New or not reported, from N. of San Diego 23

Total 263

Of the 44 species previously reported from Monterey but not found there by me, by far the greater number were dredged in deep water by Dr Cooper and a few, (some seven of which are doubtful) are reported as collected by Nuttall and Jewett and from the Smithsonian general collections and

other sources (B. A. column in Sup. Rep)

Cooper (doubtful)	2 species
Cooper dredged -	30 "
Canfield (M. patula)	1 "
Jewett (all doubtful)	3 "
Nuttall	3 "
B. A. Reps	2 "
Smithsonian (miscellaneous)	3 "
Total	44

Hippomyx antiquatus, and pania dentata in Cooper Column (Sup Rep.) are doubtful. The last ^{belongs to S. America} was probably a young specimen of G. purpuratus which is not even congeneric with much resembles dentata junior. Canfield's specimens of M. patula though dead and broken are ^{undoubtedly to B. A. ? English} undoubtable, I am informed by Dr Newcomb that Col Jewett's ^{I suppose Jewett knows better than Newcomb where he collected!} most northern point of collection on the coast was Point Conception, therefore he could not have collected the shells attributed through him to Monterey, viz [among others] (1) Modiola modiolus {very probably wrong.

(2) Trochischus convexus and (3) Amphalius fuscescens,
besides a few others which were found there, I
cannot find that ~~any~~ one has ever found Nos 1 & 3
there and No 2 ^{is not congeneric with} [in the description, at least, bears
a strong resemblance to] Chlorostoma funebre.
Very likely it is not a Trochiscus. It is the Collonia Truiki of Croce, but has
functor. worn. ^{no relation with Collonia.}

Prof. Nuttall's Pernaularx undosus

I have already ^{v. my notes} mentioned and his Crucibulum

spinosum. ^{not} may have been Lepidula dorsata.

But, at all events cannot be found at Monterey now.
^{from what limited experience you speak! What do you know of the Monterey}
^{deep sea (or even shallow) waters by dredging?}
The other miscellaneous sources may have been correct,

or may not, They comprise Lapes laciniata, Kellia

rotundata (a questionable species) Adula stylaria
(first found in Monterey; appearing in Canfield's Col!
(a northern shell). Lithophagus plumula and

Bittium attenuatum.

Collectors at Monterey have met

with the following success,

(I has since sent me a
great many more!! So have
Mearns & Newcomb.

Cooper	98 species
S.I. miscellaneous Mostly Canfield,	40 " (incl doubtful)
Nuttall	16 "
Dall	219 "

considerably reduce the number of your species.

Careful and energetic collecting will do much
toward elucidating the problem of geographical
distribution. What is most wanted now is a careful
collection at some point [very secondary importance
between San Francisco and
the mouth of the Columbia River, and] between
San Diego and Cape St Lucas - The veteran Col
Jewett is I understand now on his way out here
to dredge thoroughly in the Gulf of California

Success, to his labors and to all other earnest
working collectors! Your Monterey lists, as well
as most others except Cooper's, are simply of dead shore shells.
They all include many sp. not really belonging to the fauna,
but brought by currents both from N & S; & also several

transplanted by the agency of man. Your lists are like those
of Donovan &c. of British sp.; and in B.S. I have lost many
specimens. Spirula Virginica is often found on a beach of Long I. & W.S. shells
are even found with remains of animal; yet it is not enough to
call them British. Moreover shells require several which call for
authority in Eng^l, quite as good as I could & possibly have never been found
again; yet no modest British writer questions their accuracy. The
foregoing is very good for private use; but I hope, if you intend
to publish, you will modify some of your criticisms on the
works of others, whom the world at large (and) are accustomed to
regard as careful naturalists. As for my experience of
American naturalists: I find they are very clever,
but rather hasty in forming conclusions, & not well pleased
with the out-fashioned grace of accuracy. I hope that to the
latter portion you will be a noteworthy exception. At any
rate, I hope you will take all my pencilings by the way
in good part, as they are intended, even tho' it do not seem
so to you. I have not time to be very polite, nor to
make up criticisms in silver paper; I now & then I may
sincerely think you might have done somewhat differently.

Wm. Brewster, Box 193 1/2, Westchester, N.Y.
June 8th 1867.

I shall be always very glad to accept all M.S. &
specimens that you are kind enough to submit to my
criticism.

My sister saw your father in Calcutta last winter.

P.S. May 9th 1867 - If I had time, I sh^d. remodel several of
the foregoing specimens, but I will leave them substantially correct.

P. S.

Western Union Telegraph Company,
RUSSIAN EXTENSION.

A small collection since made by Mr. Zabl of the State Geological Survey enables me to add the following southern species to my list. They are all from the "Half-moon beach," Monterey, Cal.

- (a) *Corbula ovulata*, Sby. (a Gulf Cal. species also found on L. Cal. coast, [= ??? ^{quite different} adult of *C. luteola* Cpr.], new to the fauna.) 1 valve
- (b) *Corbula* ? different, probably *nasuta*. (three valves)
- (c) *Donax navicula* Sby. Also southern. (3 vals)
- (d) ^{*punctoculata*, juv.} *Heterodonax* *maculatus*, var. ditto (one pair)
- (e) *Lucina* (Here) *lingualis* Cpr. ditto (three v.)
- (f) ? *Chione* ~~*succinea*~~ *excavata* Cpr. (1 valve)
probably *neglecta*, but too worn to determine
also Southern -
- (h) ^{*Calappa* (var) *pygella*} ~~*Cytherea*~~ sp. like sp from Cp. St Lucas. (5v)
- (k) *Sticcardium* ^{probably *apicinum*, juv.} but too worn to determine.
- (m) ^{not found among the lot} *Lucina* ? *Nuttallii* - (three valves) -

Which makes an increase of eight sp to the Mty fauna making a total of

227 sp. known and supposed to have been

found there. These are all Acapulcan shells, & have doubtless come with the
afrers, or in ballast, &c. It w^d be just as fair to quote these in the
Monterey fauna as to put *Spirula Peronii*, &c. in the British. V. W. H. H.

Dall's Monterey Notes:
with
H's pencillings by the way, from the specimens.

I particularly beg that you will not quote
any of my notes in print without my permission.
I never like to print anything without revision, which
I have not time now to do.

Pasadena, March 10th 69.

193¹/₂ P.O. Montreal, C.E.

Conf 2004 Collecta *porcellaneus* Dg (not 1874)

Mopalia muricata, *Hindii*, *Kennedyi*, *Mackin*
Lepidoplurus Morkensii

Beach and shore shells of Monterey. Cal
Collected in person, with notes on geographical
distribution - synonymy and habits by -
W. H. Dall
Acting Director Scientific Corps. U.S. Navy

These notes are the result of two weeks
assiduous collecting at Monterey, in the month of
January 1866.

The collecting grounds at Monterey
may be summed up as follows. From the Salinas
River to the point where the sand bluffs near the town
end, I have called the "Salinas beach"; from that
point to the town, a low flat marshy beach, strewn
with bituminous shale, and sandstone, containing
all the borers; I have called the "Town beach". A
small beach near the mouth of a rivulet which is
bridged and which spreads widely over the sand,
affords good specimens of "Olivella biplicata". A
rocky and sandy rock west of the wharf is a noted
retreat in June for "Lunatia lewisii" which there
and there deposits its curious eggribbons (Canfield)

On the rocks off the Whalers try works,
covered with Laminarian algae, may occasionally
be found the rare and curious "Lucapina", the
animal of great size, resembling India rubber in
color and texture, the shell is completely covered.

Numerous small rocky beaches along this
part of the shore afford little but Patellids; and just
before reaching the Chinese fishing settlement, a
small steep sand beach of semicircular shape, each
extremity rocky; presents itself; and here may be
found an infinite variety of small shells
enumerated hereafter. I have called this the "Halfmoon
Beach". Next is the Chinese beach where may be found
Haliotis shells in great numbers, the remains

from their soupkettles. Beyond this, just around Mussel point is a small shingle beach, with a little sand at low tide level; rocks of large size jut out into a heavy surf which always rolls in from the "Ocean."

The Patellidae including the rare and beautiful Acmaea scabra, abound. From here to Point Pinos and from thence to Carmel Bay is the Seabeach proper. It is very rocky and affords but little in the way of shells. Fine specimens of Chlorostoma rustica, Gadinea radiata, and a fragment of Mercenaria Kemmerleyi were found there; also Haliotis etc -

On the rocky islets at Cypress Point approachable only at low tide - is found sparingly, the dwarf variety, of Helix Californiensis, the type very rare on the main land. A camp under the cypresses all night in the pouring rain, without refreshment for the sake of attaining the Island at low tide (6 A.M. to 6 P.M.) resulted in more poor specimens mostly dead. A large red and black Millipede (which existed in myriads) seemed to be exterminating them.

The Actinias on the rocks along the shore, catch and retain upon their tiny suckers minute shells and bits of gravel. Many fine things were obtained from this source, among the smaller shells. Sifting the beach sand proved a failure, the perfect shells being always on the surface.

The additions made in this manner, to the knowledge of the distribution, of Californian species, show that before settling on theories of distribution and faunae, it will be necessary to add largely to the meagre notes and material now in the hands of Naturalists, and careful collections in Winter and Summer at distinct points are necessary.

The Mollusks or some of them changing their station with the seasons. A half hours collecting on the little beach at Loguel creek, added some very interesting species to my list particularly an adult Calliostoma supragranosum. I must express my obligations to Dr. C. A. Canfield of Monterey, Dr. J. G. Cooper Santa Cruz, Capt. Josslyn, of the Schooner Tayaway, and to Mr R. E. C. Stearns, of San Francisco, for efficient aid in ways too numerous to mention. Also to Prof Whitney of the State Geological Survey for many facilities for study. The numbers in brackets are those of the species here referred to in the supplementary Report to the British Association, by Dr Carpenter on the W. Coast, shells. Those species entirely in brackets were mentioned as occurring at Monterey in the supplementary Report but were not found there by me.

The exclamation point denotes personal collection by myself or the person whose name precedes the point. The ^{asterisk} ~~point~~ that the species is not mentioned by Dr Carpenter as having been collected at Monterey. The dagger that it is new to the California fauna.

Class. Polyzoa

Four or five species collected and undetermined

Class Palliobranchiata

1. (3) *Terebratula unguicula* Cpr. Cooper!
- 2^x (6) *Waldheimia Grayi* Davidson fragments Lower C. Camp!

Class Lamellibranchiata

- 2^a? *Xylotrya* species. destroying the wharf!
- 3 (12) *Pholadidea penita* Conrad. (73) Plenty alive in upcast fragments of bituminous shale. Lower C!
- 3^a (13) *P. - ovoides* Gld Cooper! not determined a doubtful species [= *Zisphaca crispata*?] [*Tetastomella* P.]
- 4 (14) *Stomatella Darwinii* Sby. sp. = *Tetastoma* do, Cpr (prev in fishes, Cooper) "B. A!")
- 5^x (16) *Paraphodas californica* Cour with no 3! cups deciduous, only existing in young and immature specimens. luminous at night when living. Length of adult six to eight inches.
6. (17) *Saxicava pholadis* Linn. vars with *P. penita*!
- 7^x (18) *Glycimeris generosa*. Gld Canfield! Lower C!
- 8^x (20) *Platyodon cancellatus* Cour / v. Salinas beach?

Plenty at Soquel!

- 9^x (21) *Cryptomya californica* Cour. Plenty Salinas beach! dead.
10. (22) *Schizothauma Nuttallii* Cour Plenty Lower C! small variety
- 11^x (27) *Clidiphora punctata* Cpr v. Salinas b!
- 12 (31) *Thracia curta* Cour Cooper!
- 13 (32) *Ectostoma saxicola* Bd # *Lyonsia californica* Cour. Plenty Mussel point!
- 14^x? *Lyonsia* [*fractilata* Gould] = *L. californica* Cour. # a small hyaline shell probably referable to this genus; and the Californian faunotype of *Lyonsia floridana* Cour (E Coast) and erroneously supposed to be the young of the preceding. This shell is not uncommon; and a specimen of *L. californica* of half the size will outweigh three of this species. It has not the large Ossicle nor tawny Epidermis of the last named shell and has ~~probably~~ been separated already. ~~If not I would propose the specific name of *Tennis*~~
- 15^x (35) *Mytilimeria Nuttallii*. Cour. Half moon b! five specimens Ossicle moderate. Generally lost

- Eutresma saxicola* v. *inflata* juv. Fl.
 15 x a. ~~*Mytilimeria* n. sp. [Spongyophora Q]~~
 also collected by Dr Cooper) 3 specimens in
 sponge dead; Halfmoon b! The minute
 rectangular Ossicle flew off during the
 drying of the shell and was lost. This
 shell may not be a true *Mytilimeria*, as it
 is very constant in its form and characters
- 16 x (40) *Machocrapacula* Dixon. Salinas b rare
 Canfield!
- 17 x (42) *Pammobia rubroradiata* Nutt -
 fragments on Low beach! Canfield!
 (Note I found this shell at Coal Harbor
 Onuga, one of the Shumagin Isles)
18. (43) *Macoma* (?) *secta* Cour. Salinas b!
 Canfield! not common mostly young specimens.
19. (46) *Macoma nasuta*, Cour. Cooper! Canfield!)
20. (49) *Macoma inconspicua* B. & S. Cooper!)
- 21 (51) *Moera variegata*. Cpr. Prior to angulus and equal
 to it) Canfield! Cooper! not common Halfmoon b.
- 22 (53) *Moera salmonea* Cpr. v Halfmoon b!
 Canfield! Cooper! 20 fms.

23 (5-4) *Tellina bodegensis*. Kinds, Many valves on Salinas beach! Sometimes orange or salmon color.

24. (60) *Semele rufum*. By Salinas b! Soquel? Town beach, Canfield! rare!

24. ^a *Semele*? var. albida. In the collection of the State Geological Survey, is a specimen, which I should refer to the above species, although it is perfectly white, but, on examination, I find it to be entirely destitute, of the characteristic puncturations always observable in the area, enclosed by the pallial line: in rufum. The hinge teeth are smaller and nearer together than in that shell. The shape is distorted by rocknesting).

25^x (61) *Semele* — = rubrolineata and not Conrad. A fine shell of which several valves were found by Dr Canfield and myself. This is not Conrad's shell, as it does not agree with either figure or description, the interior of this species being always of a beautiful white, while his is described as "within purple in the middle" "both lunules purple etc". Conrad's shell is probably a mature specimen of pulchra or some of the recently described species, as the figure cannot be tortured into decisa of any age. The shape being much more

transverse. The synonymy of these *Lemneles* requires careful revision many of them being nestlers, if not borers. They are subject to numerous variations.

26^x (64) *Cumingia californica* Bour not uncommon on town beach, with *P. penita* and other borers!

27^x (69) *Standella californica* Conrad, one valve. town b.!

28^x (71) *Standella falcata* Gould, plenty of valves and fragments on Salinas beach!

29⁺ (75) *Pachydroma crassatelloides*. Conrad, young on Salinas beach! One fine pair. recent. Sanfield! Town beach!

30 (76) *Pephistantilla* Gould, Abundant, Actinias! Halfmoon beach! and Mussel Point! Grow pure white to orange, with or without purple patch, sometimes with two! with or without external brown zigzag lines, or blotches. Animal, translucent yellow, or white, ~~live~~ at roots of fuci - deep water,

31⁺ (77) *Pephis Lordii*. Baird, one specimen, living, at low water in bunch of algae. Halfmoon beach!

True Venus II

32^x (80) (*Mercenaria*) *Kummerleyi*. Kre = Venus, K. Spr. Rep. One, heavy, imperfect, valve. Sea beach! ditto

Farrallone Islands Cooper! one pair quite minute but perfect. Puget Sound. State Cabinet. This fine and almost lost species is apparently a true Mercenaria a conclusion with which Dr Cooper agrees.

32^x (93) Liocoucha Newcombiana. Gabb. Proc. Cal. Acad. Sciences 1865-p. 189. one live specimen! in algae.

33. (86) Lapes laciniata, Gpr. "B.A." (not identified)

34. (87) Lapes staminea, Conrad, in all varieties on all the beaches! The common "Blam" of San Francisco Markets and almost the only one seen there; Macoma nasuta, and Saxodomus Nuttallii, very rarely. Platyodon cancellatus, once reported and Schizothorus Nuttallii, and Cardium corbis, once or twice,

35^x (89) Saxidomus Nuttallii, Conrad, common on Town beach! sometimes as large as aratus. The number of nominal species of this genus on the W. Coast might advantageously be reduced.

36 (92) Rupellaria lamellifera. Bour. common on Town beach! This species when very young is of a beautiful orange color, blotched with purple, of porcellaneous texture and with numerous fine but distinct radiations. These radiations are sometimes continued till the shell is an inch in length (see Gpr. S. Rep. p. 641. No. 92) The fry are without lamellae! of a deep orange

37. (93) Petricola carditoides. Conrad. not abundant, Town beach! The perfect shells are exquisite in their sculpturing, the others rugged and chalky.

37^a (94) Chama exogyra Bour. one specimen! Is the sinistral form of the upper valve to be relied on as a specific character?

38. (95) Chama pellucida Sby. Valves plenty on rocky beaches and Chinese beach! alive at low water, on under side of boulders

39^x (97) Cardium corbis. Martyn, common on Salinas and Town beaches! alive between tides -

40^x (98) Cardium quadrangulum Bour. Fragments on Town beach! also loanfield!

41^x (104) Liocardium substriatum. Bour - one valve Halfmoon beach!

42 (110) Lazaria subquadrata Gpr., Town to Mussel point and Seabeach, abundant! alive in gravel under stones at low water. vars - with dark internal blotch like P. tantilla, and pale yellow without the brown surface markings

(Good sp. P.)
43⁺ ? (Trapezium) n sp. C halioticola D) Halfmoon b! dead. Burrowing in Haliotis rufescens. two perfect specimens, also Cabinet Conf. This

6

[The following text is extremely faint and illegible due to fading and bleed-through from the reverse side of the page. It appears to be a handwritten letter or document.]

beautiful species is quite distinct from anything reported from this coast before. I place it doubtfully in Trapezium

44^x (111) *Lucina Nuttallii* Conrad. a few dead valves, may be referred to this species, Halfmoon beach!

45^x (112) *Lucina californica*, Bour. all along the shore - very common alive at low water in sand,

46^x + *Lucina* sp. (sent previously by mail by Dr Cooper from Coll. Dall and Stearns) small divaricate. Probably described - Halfmoon beach! a few valves -

47^x Undetermined bivalve, Halfmoon beach! two valves; apparently allied to the Venericloe

"*Diplodonta orbella* (L.) = *Mytilus sphaeroides* (L.) Conrad" S. L. D. P.

48^x (118) *Orbella californica*, Gld. (= *Diplodonta orbella* Cpr. Rep. p 643) Town beach! boring. Two specimens.

49 (119^a) *Kellia Laperousii*, Desh. Plenty. Town beach! with borers. all varieties from strong transverse, to thin orbicular.

49^a (120) *Kellia rotundata*, Cpr. S. Rep. not identified)

50^x (122) *Lasea rubra*. Mont. Halfmoon beach!
dead, and in roots of algae and fuci.
Gregarious. Twelve specimens maroon to
translucent white.

51^x (124) (~~Montacuta testis~~ Dall ^{not} = "*L. Dionisium* Cpr.?" Fl.
? *Lepton meroeum* Cpr. from Actinia!
One valve.

52^x (125) (~~Lepton for Montacuta~~ ^{ryde} Dall ^{not} sp. P.
? *Tellinella umida*, Cpr. Halfmoon beach?
dead, one valve and one specimen. minute
triangular ossicle is lost, shell has the
appearance of a nestler.

53 (127) *Mytilus californianus*, Conrad, Sea beach
plenty! Beautifully pearly.

54^x (128) *Mytilus edulis*, Linné. all along shore!
small but common.

55^x (129) *Septifer bifurcatus*, Bre, Large, alive at
Mussel point beach! also dead at
Halfmoon beach!

56^a (131) *Modiola modiolus*, Linné. Jewett!
? Cooper! not detected)

56 (132) *Modiola fornicata*, Cpr. Plenty, Halfmoon
beach! alive at Mussel point! Bearded,

57^x (133) *Modiola recta*, Cour, Fragments on
Salinas beach! ditto. Canfield!

58. (134) *Adula falcata* Gould, Town beach! in
sandstone 5" 5 3/4 inches long, common,

58^a (135) *Adula stylina*. Cpr. "S.I."! not detected.)

58^b (136) *Lithophagus plumula* Hanley, S.I.? not detected.)

58^c (143) *Axinea intermedia* Broderip. Cooper!
not detected.)

58^d (147) *Leda coelata*. Birds. Cooper! not
detected)

58^e (148) *Leda cuneata*. Shy. Cooper! not detected.)

59 + *Lima* sp. Halfmoon beach! two fragmentary
valves - This is not dehiscens Cour - as per
Cooper's dredged, live, specimens, (? = Orientalis
Ad and Bre) Dehiscens has threaded sculpture,
and this is grooved, also much thinner
and apparently more gaping - [Is not
Dehiscens prior to Orientalis?]

60 (158) *Pecten hastatus*, Shy - one valve Halfmoon
beach! ditto Canfield!

61^x (162) *Pecten latiauritus*, Conrad, (not Carpenter. see S. Rep. P. 645. No. 162) Plenty at seasons when the currents and winds bring the Kelp on which they live, into the Bay of Monterey. Otherwise only occasional dead valves. In Aug. 1865, the number thrown up was so great that they were largely collected as food, for for several days. From beach! Canfield! About a peck! (This is the smooth and indistinctly ribbed species well described, and badly figured by Conrad in Phil. Acad. Journal, (VII. P. 238. Pl. 18. fig 9) It has been confounded with the following (?) species-

62 (162^b) *Pecten monotimeris*, Conrad, (not Carpenter-) Half a peck! Three specimens, one adult. Either Conrad's species is a variety of the preceding (which name must stand) or the very distinct specimens which I obtained, and which answer well to the description but not to the wretched figures (Pl. 18. fig 10) must take the name. It is likely that Conrad's shell was not distinct and that this is a new species, but it is better to use up the old synonyms when it can be done legitimately than to add to the already overburdened nomenclature-

n.B

62^a (164) *Janira dentata*, Sby. not detected) [Dr Cooper does not recognize this shell as of his collecting?] *Purpuratus* Junior, black worm.

63 (165) *Uvulites giganteus* Gray, large and fine Mussel Point! Town beach! Young, Halfmoon beach! plenty. Animal dark muddy orange color. The young ^(63^a) can hardly be divided from young *Pecten hastatus* except by the slight attachment along the posterior edge.

64^x (168) *Macranomia macrochisma* Desh. Soquel! Mussel Pt! Town beach! common. [From Alaska to San Diego] Undersides of rocks below low tides—

Class Peropoda, (omitted)

Class Gastropoda

Genus Tornatella—

Tornatella n. sub. gen

[Typically generic, P]

Shell Tornatelloid thin, without labial callus, the columella twisted and truncate, forming a pseudo canal— Animal?

65^x (176) Type *Tornatella puncto-coelata* Lpr. San Diego

Cooper! Monterey, Halfmoon beach! and particularly Actinias! twenty specimens and fragments all dead.

66. (177) *Tornatina culcitella*, Gld, not detected (probably not the adult of the next species)

67 (177^b) *Tornatina cerealis* Gld, one specimen Actinia! differs from *T. culcitella* jr in want of grooves

[good sp. P.]
68^x (?179 var) *Tornatina* ? n.sp. (Charp. D.) three specimens Halfmoon beach! dead. This shell has not the plait of *Tornatina* developed, does not agree with *Utriculus*, Ko^o A. acts, but may be *Akera* O Müller (China) Its longitudinal (not revolving) striae are curious and suggests the name—

68^b (180) *Cylichna cylindracea* Linné, not detected)

69^x (189) *Doris alba punctata*, Cooper one specimen rocks at low water! also Garfield!

70 (196) *Doris Montereyensis*, Cooper, two specimens with the preceding.

71^x (197) *Glabella opalescens*, Cooper, two specimens with no 69.

71^a (184) *Neaplysia californica*, Cooper, After Storms Can! Plenty,

Class Pulmonata

72(P33) *Helix californiensis* Lea. Cypress point
and island! Original locality. La subsequent
visit has not added a single specimen. They
appear at least on the island, to be exterminated,
only fragments remaining where pints of young
shells might be obtained a year ago. Canf]

72^h(P35) *Helix Dupetit-Thouarsii* Desh, with the above!

73^x *Pupa californica*, ^{Rough} Sand hills near Salinas
beach on sticks. Canfield!—

74^x *Ariolimax columbianus*, Gld, Gulches where
springs run down to the beaches— Canf—

75-(199) *Melampus olivaceus*. Gpr, one dead specimen
Salinas beach! seven ditto, Canfield—

Class Prosobranchiata

75-L (202) *Dentalium indianorum*. Gpr not detected)

76(206) *Cryptochiton Stellerii*. Midd. Mussel pt b!
valves, Salinas and town beaches! plenty
after storms—

77^x(207) *Katherina tunicata* Wood (not Sby) one specimen dead but perfect, Chinese b! [no series of named *Chitonidae* having yet reached California, it is impossible to make out any of the new or less plainly distinguished species - Only those well known to Dr Cooper and myself are mentioned]

[ella" P.]

78.(208) *Tonica lineata* Wood - Plenty under stones low water Mussel Point! valves plenty. Halfmoon b!

79(210) *Mopalia muscosa* Gld, Plenty on rocks under Kelp! half tide to low water -

80^x(213) *Mopalia Hindsii* Gray - two specimens, rocks with preceding!

80^a(216) *Mopalia lignosa*, Gld - not thoroughly determined valves halfmoon b!)

[*Nuttallina* n.g. P.]

81 (220) *Acanthopleura scabra*. Roe - Abundant with the following species, at Mussel Pt on rocks! where they can hardly ever be sprinkled,

with spray except in storms. Inhabits holes and crevices and grows thus of irregular shapes - Also Cypress Point in similar situations - not found on low rocks which may be covered with water by a high tide! and delights in exposed head lands where the breeze comes damp and strong from the sea -

82.(222) *Inochiton magdalensis*, Hinds, of large size at Mussel Pt beach! and rocks, generally near low water mark, Varies very much in sculpture and colors -

(= *Mopalia muscosa* juv! Gld)

83^x ~~*Acanthochites?*~~ *aragonites* Halfmoon beach! one specimen -

84^x(238) *Nacella instabilis*, Gld, one specimen Halfmoon beach! dead -

85(239) *Nacella incisura*, Hinds, (*incissa* in error?) Plenty on Halfmoon beach! dead. An abnormal growth of *Apatina* Jun, simulates this shell but may be always separated by the fine striae

or the *Acmeoa* - This variety is to *A. patina*
what *A. asmi* is to *A. pelta*.

86^x(242) *Nacella palacea*. Gould, seven specimens
dead Halfmoon beach!

87^x(242) *Nacella triangularis* - (= var. tr. - Cpr. s. Rep.)
Twenty specimens Halfmoon beach! dead - This is
a good species and is well marked although the
varieties run from wide oval and flat to
narrow triangular and compressed. The
black apex seems to be constant although
the brown markings are not.

88^x [= *Acmeoa rosacea* Cpr. good sp. H.]
Nacella n. sp. (*vernalis* L.) Halfmoon b!
some fresh, all dead, one adhering to *Laminaria*
which was slightly excavated under it, 30 specimens
agreeing in appearance. Epidermis bright
grass green when fresh; smooth or wrinkled
and extending over and round the edge -

89(243) *Acmeoa patina*. Esch - and, var, like *Nacella*

insessa - Abundant on rocks between tides from Low to Mussel Pt! Max. diam. long 2.03 in, diam lat. 1.72 in. of largest specimens.

90 (244) *Aemoea petta* Esch. and var. Asmi - Type between tides all along rocky shore! var. Asmi Halfmoon beach! dead - three specimens.

91 (245) *Aemoea persona* Esch - not common, on small rocks at low water! twenty specimens.

92 (246) *Aemoea scabra* Rve. 30 specimens, rare Mussel Pt! including var. lineatula Cpr.

93 (247) *Aemoea spectrum* Rve. not common, between tides! twenty specimens.

94 (248) *Aemoea rosacea* Cpr. Plenty on Halfmoon beach dead! a good species 50 specimens.

95 (249) *Lottia gigantea*, Gray, Mussel Pt! 100 specimens large and fine.

96 (250) *Scurria mitra*, Esch. All along sandy shore! very common but all dead. Sometimes overgrown with millipore which radiates from the apex in regular lines or ridges of nodules, often of a rich rosy color which tinges the whole shell, and suggest a difference which is merely apparent.

[= *S. reticulata* Hy? Margarita Bay, P.]
97 (252) *Gadina* (*Rowellia*) *radiata*, Cooper. Sea beach! near high water mark, a colony of 48, all alive and of various shapes and fantastic forms, caused apparently not so much by irregularities of the rock, as by rapid growth at some seasons and rest at others. This shell resembles *G. pentagoniostoma* in Coll. Newcomb - from Gulf Cala Dr. Coopers original specimens were all very immature - of these max. height 0.7 in - width 1.3 in - The animal exuded a most profuse milky slime from all parts of its body.

98 (253) *Fissurella volcano*, Rve. one specimen alive rocks low water! Abundant dead Halfmoon and Chivebs! ~~Part var. violacea Esch.~~

(probably good sp. J.E.C. notes P.)

98a+ Clypidella ? n. sp. (bimaculata D.) Halfmoon beach! 25 dead and broken - no trace of apex on most minute specimens - junior var. - has ribs sharper, and somewhat cancellated. Length of largest (frag.) 1.1 in.

99^x (254) Glyphis aspera - Esch. not uncommon dead. Soquel! very large. Halfmoon b! small but numerous.

100 (255) Glyphis densiclathrata, Rue. 3 specimens [not a V test P. = alt?] Halfmoon beach! dead - South to C. St. Lucas,

101 (256) Lucapina crenulata, Sby. rocks off the whalers try works. not common. Canfield!

102 (258) Puncturella cucullata Gld. not detected, Cooper!)

103 (260) Haliotis cracherodii, Leach. Everywhere dead, alive on rocks between tides! Extremely abundant

104 (261) Haliotis splendens, Rue. Cooper! not detected.) Not found at Monterey by me. J.E.C.

105 (263) *Haliotis rufescens*, Swains. Abundant dead - but being an article of food and exportation with the Chinese, not so common as H. cracherodii which they do not use -

106* (264) *Haliotis Kamchatkana* Sonas - rare, dead on Salinas and Town beaches! Not the Northern species, found in Alaska [= *agnathidis* Roe?]]

107 (265) *Phasianella compta* Gld, var. Abundant dead, Halfmoon b! Alive at lowest water under stones, all varieties containing yellow, green, purple, white, crimson, and black in various proportions -

107^a (266) *Pomaulax undosus*, Wood Nuttall! **A** mistake; Mr Nuttall evidently obtained the young of the next species, which without the operculum, sometimes cannot be distinguished from this shell! [Found operculum only, text H.]

108 (267) *Pachypoma gibberosum*, Chemm - Sea beach! alive on rocks between tides, feeding on algae and *Laminaria*, Common - Muzzle, short, squarish, muscular. Tentacles moderate, pointed, bases

covered by, but not connected with, two small semilunar lobes (the rudiments of the "veil.") Eye pedicles above and outside of tentacles, both being cylindrical thick and nonretractile; Cloak divided behind; with a single tentacular filament on each side at the posterior point. Foot moderate rounded - regularly granulated at the sides. Color of foot on the sides red and purple mixed - Lighter on top of head and edges of cloak. Mantle large, yellow as well as the body of the cloak; the edges of the mantle a very brilliant yellow. Eyes black. The young is stellate and resembles *Imperator*, & *Imp. serratus* Cpr. S. Rep - no 268)

109. (269) *Leptothyra sanguinea*, Linné, (= *Leptonyx* S. Cpr. S. Rep - 269, Proc. for seals. Cooper.) alive at low water under stones, Mussel Point! Animal yellowish white dotted with black. Tentacles long, filiform. Eyes sessile on inner base, small, black. Very sluggish and timid. Dead abundantly Halfmoon beach! This shell runs through a large number of varieties in color quite as worthy of mention as the one

denominated "Purpurascens." One of the most remarkable generally of a larger size than the type, is red and white marbled, or banded in very curious fashions, the color running a little way crimson then white or cream color then dark purple brown almost black. I have seen two completely white specimens, but the apex is always dark colored. With regard to the geographical distribution of this shell some apparent confusion exists. Mr. J. Hephurn a veteran and accomplished collector who has dredged extensively at Vancouver and who has collected all along the Coast tells me that he has never obtained it North of the Farallones. The similarity of the young specimens of Margarita pusilla may have caused the mistake. It is certainly not "rare, further South" being very common at Monterey, and Sta Barbara, found at San Diego (Cooper!) and I have three small delicate specimens which I have every reason to suppose, came from the Gulf of Cala. It is rare at the Farallones, and not yet found at Balesas or Bodega. That the Mediterranean specimens

so rare and doubtless unknown in Linné's time can be conspecific I doubt N.B. This is not the only Californian shell described by Linné; see Mytilus edulis, Modiola modiolus, Bulla cylindracea, Carolina telamus, &c.

- 110^x [good sp. teste P. unless described by ~~Ad.~~ from Jap. as Collonides.]
Leptothyra n. sp. (paucicostata, D.) ♀ dead
 Half grown! This little shell which has been set down by Dr. Cooper as the young of the preceding is undoubtedly a distinct species. No approach to it has occurred among the thousand or more specimens of L. sanguinea, from Monterey which I have examined. It is ^{spotted} uniform buff color, mature lip and few revolving ribs make it impossible to confound the two. I have seen about twenty specimens all of which are nearly uniform in color, and size.

- 111^x (271) *Liotia fenestrata* - Cpr. - Half grown beach!
 rare, 3 specimens dead.

- 111^a (272) *Liotia acuticostata*. Cpr. - Cooper! not detected)

- 111^b (275) *Trochiscus norrisii*, Lby. Nuttall! no one has since found this shell at Monterey, and we may well believe the locality mark an error. An alcoholic specimen of this species kindly furnished by Dr. Cooper proved beyond doubt that it is not a *Proboscifer*. - A careful drawing of the lingual ribbon was rendered impossible by an accident, but the formula was 5.1.5 uncin 90 - the central tooth being rather shield shaped, without cusps or projecting points, and attached by nearly all its under surface to the membrane. The following notes were taken on colors and anatomy -
 Icil, short black, edged with crimson, one cirrus at posterior end. Edge notched or striated almost fringed anteriorly. Gill very large on the left side, single, pectinate, excretory canal simple cylindrical, large, on the right side of neck. Muzzle short muscular, dark purple brown. Foot blotched and spotted with black and crimson with a few long granules on or near the edge. They may be found feeding on the floating Kelp, and present a most beautiful

sight in the water. They have not been found to my knowledge North of San Pedro, (dead or alive-) [Sta Barbara & S. Cruz I. J. G. L.]

111^c (276) *Trochiscus cornutus*, Cpr. Jewett! not detected.)

112 (277) *Chlorostoma funebre* A. Ad. very common on rocks between tides! Sutureal frill sometimes absent-

113 (279) *Chlorostoma rustica* Gmelin nom. prior, Kiener, Pl. 55 fig. 125. two views; as *Trochus* r. [not of (P)] Gmel. [Hab. ?] (= *Chl. bruneum* Phil. Cpr. Sup. Rep. p. 652) Rocks! rare alive, Sea beach! not common, dead. A variety fluctuata, has the spire depressed, base broader and with more striae, and the upper whorls undulating; the young are frequently nearly black with a strong umbilical rib, but no pit.

(= *Trochus montereyensis* Kiener [1850+] Pl. 33 fig 1

114 (280) ? *Chlorostoma Pfeifferi*, Phil. [1845+] ^(two views young shell, fig 2, two views) Mussel Pt. alive, Canfield! rare, Dead, rocks and Halfmoon beach! not common - The large umbilicus gives this shell a very non-*Chlorostomoid* aspect.

114² (282) *Omphalius fasciatus*, Phil, Jewett!
 not found by any one, at Monterey, so far
 as I could ascertain. The number of "Jewett"
 shells, which are located by him to the North
 of their present habitats, suggests a doubt as
 to the correctness of his labels. It is difficult
 to understand why the species preceding this
 in Dr. Carpenter's Catalogue is denominated
Chlorostoma aureotinctum. It appears to
 be a good *Omphalius*. The orange spot is
 in the umbilicus; not in the aperture as
 far as I have seen.)

115⁺ (*Ptychostylis caffea* - Gabb. Proc. Cal. Acad, 20
 fine rare Cooper! not detected.)

[*Gibbula goodsp. II*]

116⁺ ? *Calliostoma* n. sp. (Canfieldii - D.) Shell, seven
 whorled, the last whorl comprising more than
 half the entire shell. Color: Suture small but
 deeply channelled, smooth, ^{with three revolving ribs} three to four, on the
 lower part of the whorl. Color, pearly with bronze,
 yellow pencilings obliquely to the suture. Surface
 of the whorls rather flattened. Base semicaudate,
 convex umbilicated, with nine basal revolving ribs.

Umbilicus strongly ciliate internally, smooth,
 narrow and small. Aperture rhomboidal - pearly
 with grooves answering to the exterior ribs. Columella
 straight with a slight callosity, but not reflected.
 Height, 4 maj diam, 4 min diam, 3. Pir 70°45'. One
 specimen of this modest little species was found
 dead on Halfmoon b! I take pleasure in dedicating
 it to a friend, who has done so much for science,
 with such slender means. The umbilicus
 and operculum (as yet unknown) may, remove
 it from *Calliostoma*.

117⁺ *Calliostoma tricolor*, Gabb. Proc. Cal. Acad,
 Soquel, two specimens! frag. Halfmoon b! The
 large specimen from Soquel, though broken
 is to be noted as the largest yet obtained.

118 (283) *Calliostoma canaliculatum*, Martyn. Soquel,
 two fine specimens! Small specimens rare
 at Halfmoon beach!.

119 (284) *Calliostoma costatum*, Martyn. Very common
 at Mussel Pt. b! also dead on sandy beaches,
 and sparingly alive on rocks at low tide.

The most common variety of this shell, at Monterey is of a uniform chestnut brown, with a reddish dash in the umbilical region, and the ribs of a yellowish cast. There are however two varieties well worthy of mention for their beauty if for no other reason. In one, the color is interrupted on the upper part of the whorls by a regular succession of blotches of a much darker brown, immediately after which occurs a lighter patch of color, particularly upon the ribs. The other variety has the upper portion of the shell, although quite perfect, of a beautiful blue, in lines or patches alternating with dark brown and light yellow patches. I saw then none of the reddish specimens which appear to have been distributed as the type, and at first hardly recognized the shell. When the outer coat is removed it leaves the nacre of a remarkably brilliant blue.

120(285) *Calliostoma annulatum*, Martyn. Small fragments Half moon b! one dead Soquel! This exquisite species is found on the growing

Kelp, and large numbers of fine specimens were brought in by fishermen while I was at Monterey, but despite my endeavors, having been given to a lady, they were all ruthlessly sacrificed to that ? artistic monstrosity, a "shell frame" which was not for sale—

- 121^x(287) *Calliostoma supragranosum*. Cpr. Soquel!
One large specimen. Mussel Pt! two adult specimens dead. To the description of this beautiful species, now found adult for the first time, may be added as follows—
Shell six whorled, acute, whorls gently rounded with fine thread like revolving ribs, anterior three to five, granulate, Last whorl roundly carinate, base flattened with about twenty fine revolving striae, Columella thick, not reflected, but base around it somewhat excavated, aperture about one third the length of the whole shell; rhomboidal, pearly, smooth, Shell of a beautiful light salmon color—ornamented near the suture and carina with alternate patches of faint yellow and chestnut brown—

Alt 1.1 in. Maj. diam 0.9. Infl 62°. angle of Carina
98°

122⁺ (289) *Calliostoma splendens*. Cpr. Halfmoon beach!
two broken dead specimens.

123. (290) *Phorcus pulligo*. Martyn. Halfmoon beach!
dead. three specimens. (Why not Phorcus
Pfeifferii, which can hardly be distinguished
when young? When did Phillippi describe
Pfeifferii? I find no mention of it in the
Reports, Kiener's name and figures; published
1846, maybe prior.)

124 (294) *Gibbula succinea* Cpr. Mussel Pt! alive under
stones at low water. Halfmoon b! dead 40 specimens,

125. (298-986) *Margarita pupilla* Gould, Lown to Mussel Pt!
dead. 30 specimens Mussel Pt! alive, five specimens
all varieties insensibly passing into *salmonearia*,

126 (299) *Margarita acuticostata*. Cpr. Mussel Pt! at low

water mark under stones, with G. succinea
rare. Dead plenty from Town to Halfmoon b!
on sandy beaches—

126^b (305) Crucibulum spinosum Sby Nuttall! not
detected)

127 (307) Grepidula? dorsata Brod. (Cpr) Halfmoon
beach! common, dead—

128 (309) Grepidula dunca Sby. Halfmoon beach!
not common, dead frequently strongly striated
longitudinally—

129 (311) Grepidula navicelloides Nuttall, Town beach!
in all imaginable varieties; in borer's crypts—

130⁺ Galerus? conicus Brod. one specimen Halfmoon b!
not contortus as per type, in State Coll. not fastig-
iatus as per description in Mazatlan catalogue,
Common in shells from Lower Cala beaches,
imported from "shell work"

[Probably G. fastigiatus Ad. found at Lobitos & J.G.C.]

130^a (313) Galerus contortus Cpr. Cooper! not detected)
[not found by me at Tahy, J.G.C.]

131 (314)? Hippomyx cranoides, Cpr. Halfmoon b!
dead 9 specimens—

131^a (315) Hippomyx antiquatus, Linné, not detected)

132 (317) [Capulus! J.G.C.]
Hippomyx turneri, Cpr. Halfmoon b! dead
15 specimens—

133 (322) Cæcum^m crebricinctum, Cpr. Actines!
One specimen

134⁺ Cerithium species, Halfmoon beach! one
specimen, This specimen has not the aspect of
a Monterey shell; it is unknown as yet from
Cala and I doubt but it is an importation—

135 (329⁺)? Bittium filosum Gould, mussel Pt! rare
alone under stones, Plenty dead on beaches (? also
var esumens.)

136 ? Bittium sp. n. det. Halfmoon b! dead

- 137 ? *Bittium* sp. indet. Halfmoon b! dead
- 138 (333) *Bittium quadrifidatum* Cpr Halfmoon b! dead
- 139 (333) *Bittium armillatum*, Cpr, Halfmoon b! plenty dead
- 140 (335) *Litorina planaxis*, Nuttall, Mussel Pt! Rocky shore! Sea beach! very large and plenty -
Has a green patch sometimes close to the columella -
- 141* (336) *Litorina sitkana* Phil, Mussel Pt! 3 alive, one dead Halfmoon b! Canfield four specimens, From Spanish women, two specimens. The ribs are generally fainter than in the Sitka variety, I saw no smooth ones at Sitka -
- 142, (337) *Litorina ~~scutellata~~*, Gld, Every where, Rocks! alive beaches! dead, plenty, variegated much like *Phasianella* with yellow, white black and olive green. [= *Odostomia straminea*! P.]
- 143* (338) *Astriminea*? *subrotundata*, Cpr, feeding on minute fuci on the backs of *Halictos rufescens*, Sea beach only! Six specimens mostly immature, do Canfield all immature -

144^{*}(341) *Lacuna porrecta* Cpr. Halfmoon b! dead rare -

145. *Lacuna indit.* Halfmoon b! dead, 14 specimens -

146^{*}(342) *Lacuna solidula* Loven, in variety
Halfmoon beach! plenty,

147^{*}(342^b) *Lacuna compacta*. Cpr. Halfmoon b! dead plenty,

148[†](344) *Lacuna unifasciata*. Cpr. Halfmoon b!
dead, many varieties, all plenty - On Kelp
fronds in deep water - alive -

149 (345) *Isapis*? fenestrata Cpr. Halfmoon b! one dead.

149^a(346. *Isapis obtusa* Cpr. Cooper! not determined)

149^b(347 *Rissoina interfossa* Cpr. Cooper! not found)
[*Chrysalida* or *Inguicula* P.]

150[†](350) *Alvania* indit. Halfmoon b! One dead -

150^a(353 *Fenella pupoides* Cpr. Cooper! not obtained)

151(361) *Diala marmorea*. Cpr. Halfmoon b! dead 20
specimens varying greatly in color -

152(362) *Diala acuta*. Cpr. Halfmoon b! ten specimens -

153[†](366) *Trinia Californiana* Gray - Mussel Pt! 25
dead specimens, 3 or four fresh - one dead
Salinas b! called "Frijoles" by the Spanish people,

154[†](368) *Erato vitellina* Heinds Mussel Pt! five dead.

155(369) *Erato Columbella*. M.K. - Halfmoon b! three dead,

156[†] *Succula Carpenteriana*, Gabb. Town beach
fragment, Canfield! (Cooper! (also Santa
Barbara I. Kespum!) [San Diego Catal I.]

157.(374+74^a) *Prillia torosa* Cpr. Mussel Pt. Ten
specimens and fragments not uncommon - This
shell passes so gradually into the orange colored
variety that it cannot be regarded even as
a permanent variety worthy of a name -
Alive at low water in fuci -

157^a(382) *Mangelia angulata* Cooper! (not determined)

158^x *Mangelia hexagona*, Gabb one sp. Halfmoon b! dead.
(Coll Stearns)

159^x *Mangelia* indet. (X) 12 spec. Halfmoon b! dead.

[*M. Canfieldi* Dall hyp. good sp. II.]
160^x *Mangelia* indet. (XX) one sp. Halfmoon b! dead.

161^x *Mangelia* indet. sp. (XXX) five sp. Halfmoon b! dead.

[*M. Montereyensis* Dall hyp. good sp. II.]
162^x [*Mangelia*? n. sp. (XX) Montereyensis D.] two
specimens Halfmoon beach! dead.

163^x *Mangelia* indet. sp. (XVI) two sp. Halfmoon b! dead.

164^x { *Clathrella*? n. sp. (Canfieldii D.) one specimen
Halfmoon beach! dead -

165(385) *Mitromorpha aspera*, Cpr. (? = *filosa* var)
Halfmoon beach! four specimens dead -

[*M.* n. sp.? II.]
166(386) *Mitromorpha filosa* Cpr. Halfmoon b! dead
fifteen specimens -

^{b.}
166^x(388) *Conus Californicus* Heinds, Mussel Pt! not
common, young delicate brown network pencilling.

167^x(392) *Odostronia gravida*, Gould, Actinia! Halfmoon
b! dead 20 specimens, One alive under stone at
very low water. Operculum shaped like shell
of *Dolabella Rhizophii*.

168^x *Odostronia* indet, Halfmoon b! fine specimens,
[*O. straminea* Cpr. v. no. 143.]

169^x *Odostronia* indet. Halfmoon b! seven specimens,
[*O. inflata* Cpr. probably J.B.C.]

170^x(396) *Chrysallida*? cincta, Cpr. Halfmoon b! one dead

170^a(399) *Chemnitzia tridentata* Cpr. Halfmoon b! one dead (not found)

170^b(403^b) *Chemnitzia* var. *stylina* Cpr. Cooper! not found)

171 *Chemnitzia*? [*gracillina* [Gabb. ^{calyptra} Pere. Cal. Acad. ^[not of P.]
Halfmoon beach! one dead, [= *Gabbiana* Cpr.]

171^a *Chemnitzia* indet. Halfmoon b! two fragments,

171^b(407) *Eulina rutita* Cpr. Cooper! not found)

172^x(408) *Eulina*? *thersites* Cpr. (teste Cooper)
Halfmoon b! one dead-

172^a *Eulina* indet, Actinia! one specimen dead-

173 *Eulina* indet, Halfmoon b! one specimen dead,

174^x(409) *Scalaria*? *Indianorum*, Cpr. Mussel Pt!
alive at lowest water, Halfmoon b! dead-

175(410) *Scalaria tincta*, Cpr. Halfmoon b! very plenty-
Alive rarely at Mussel Pt. lowest water - a good species-

176, *Scalaria* indet. Halfmoon b! 4 specimens dead,

176^a(411) *Scalaria subcoronata* Cpr. Cooper! not found)

176^b(412) *Scalaria crebricostata* Cpr. Cooper! not found)

177^x(414) *Opalia borealis*, Gld. Mussel Pt! seven dead,

178(415) *Opalia* [*insculpta* Cpr. Halfmoon b! 9 specimens,
^{dall. not teste P. = 177 jno.}

178^a(416) *Opalia spongiosa* Cpr. Cooper! not found)

- 179^x(424) *Cerithiopsis assimilata* C. B. Ad Halfmoon beach! one specimen.
- 179^a(419) *Cerithiopsis tuberculata* Mont. Cooper! not determined.
- 179^b(420) *Cerithiopsis columna* Cpr. Cooper! not determined.
- 180, *Cerithiopsis* indet seven speci, Halfmoon b! dead.
- 181 *Cerithiopsis* indet, one spec, Halfmoon b! dead.
- 182^x(425) *Triforis adreus* Mont. Halfmoon b! one dead.

Rissoinella n. s. gen. ["not good" H.]
 Shell like *Cerithiopsis* when young. Thin
 sculptured, lip broad, reflected thin, Peristome
 continuous not sinuous.

183. Type(422) *Rissoinella purpurea* Cpr. sp = *Cerithiopsis*
purpurea Cpr. Sup. Rep. fine speci, Halfmoon b! dead.
 [a true *Rissoina* teste H. Sup.].
- 183^a (*Cancellaria* Cooperi, Gabb. Proc. Cal. Acad.
 Cooper! ~~beach~~ not found.)
 [dredged dead, J. E. G.]

184⁺ (429) *Velutina laevigata* Linné, Halfmoon b!
25 specimens dead (= var? of same)

185⁺ (432) *Lunatia Lewisii*, Gld, close to wharf on sand among
rocks! rare, Abundant in June & July when they
come up to deposit their cup shaped egg ribbons
on the sand, in this particular corner, only - Canfield.

186⁺ *Lunatia* spec. Halfmoon b! two specimens, one alive,
not the young of *Lewisii* - and apparently undes-
cribed, Colls, Stearns & Canfield - [is = 185 juv. #].

187⁺ *Recluziana* var. #.
Recluziana? n. sp. (alta, G.) Salinas b! one spec. dead -
State Geol. Survey Coll., two perfect specimens - This
shell is perfectly distinct from *N. Recluziana* and
I cannot find any reference to such a shell
in the books or notes within my reach.

188⁺ [is = 184 juv. #] *Velutina prolata* juv. #.
Lamellaria, n. sp. (Stearnsii, G.) Halfmoon b!
one dead, This extremely distinct species differs
from two typical *Lamellarias* in its color and
slight spiculation, and may be a *Velutina* or
a form not yet eliminated -

|| all one spec. variable like English. *Kindistungus* -
[able from them #].
189⁺ *Lamellaria* n. sp. (orbicula, G.) Halfmoon b!
|| dead, seven specimens.

189⁺ *Lamellaria*? n. sp. (rhombica Gld) Halfmoon b!
|| eleven specimens.

190⁺ *Lamellaria*? n. sp. (depressa G.) Halfmoon b!
|| dead, two specimens -
see above #.

191⁺ (*Sigaretus debilis*, Gld. Cooper! not determined)
[found by Canfield; (or distinct sp.) #].

192. (435) *Prüne Oregonensis*, Redf. Salinas b! fragments
not uncommon, invariably decollate -

193. (436) *Ranella californica*, Heds, Salinas and
Torn b! fragments not rare.

194⁺ (437) *Mitra maura*, Swainson, Mussel Pt!
Halfmoon b! dead and worn, rare, four specimens.

195 (438) *Marginella jewettii*, Halfmoon b! common,
35 sps - collected personally, hundreds
by others, at times -

- 196.(439) *Marginella subtrigona*, Lpr. Halfmoon B!
rare, fine specimens dead, So far as I have
observed. The perfectly fresh specimens of this
pretty species are always more or less
pellucid and salmonous.
- 197.(440) *Marginella regularis*, Cpr. Halfmoon beach!
Common, 50 specimens! Coll Stearns 200 specimens.
- 198*(441) *Lotutella pyriformis* Cpr. Halfmoon B! dead, 25 speci-
- 199(443) *Olivella biplicata* Sby, Mussel Pt to Town!
dead, Olive small sandy beach near town where
a brook spreads over the sand. The number of
folds in this shell is by no means constant,
varying from one to eight, the younger ones having
less. In nearly all specimens the additional
folds will be found back of the column, out
of sight. It varies in color from purple to white
and is variegated with a deep orange, and
particularly when young with zigzag brown
lines. In short it is protean—

200(444) *Olivella baetica* Cpr. Halfmoon and Salinas
Is! This shell is sometimes dull purple, sometimes
nearly white, often ornamented with zigzag
lines of brown, like *lineolata*. It is almost
impossible to distinguish some varieties of
it, young, from young *O. biplicata*. (Itka aline
& fine mud.)

201(445) *Nassa fossata*, Gld. Salinas beach! Large
and fine, fine specimens. After storms.

202(446) *Nassa perpinguis* Heds. Halfmoon Is!
rare, one or two specimens.

203(448) *Nassa mendica*. Gld. Halfmoon and shingle
beaches! Very common after a heavy blow, 100 specimens.

204(449) *Nassa Cooperi* Fhs. Halfmoon and other beaches,
common, 150 specimens mostly dead.

205(451) *Amycla carinata* Reinds, 1843. (= *gansaputa* (Gld.)
Cpr., 1848. + *californiana*, Gask, 1851. + *Reindsii*
(Rm) Cpr.) Halfmoon Is! abundant, 100 specimens.
Bought from the Spanish women by Mr. Stearns.

over ten thousand; collected for shell work.
The careful and critical examination of the
largest number of these shells, probably, ever
brought together, confirms me in the conclusion
that there is no place to draw the line between
these varieties. It is easy to pick out and
name two or three extreme forms; but there
are thousands to each one of them, which will
equally well fit either diagnosis. Found
living on a floating buoy in the harbor.
three fms.

206(453) *Amycla tuberosa*. Cpr. Halfmoon Is! not
uncommon. Passes from translucent
white to dark brown, with every imaginable
variety of color and markings.

= 206^a ? *Amycla* n.sp. (aurantiaca, D.) Halfm. Is! 5 spec. dead uniform.
207(456) *Amphissa corrugata* (Rm) Adds. Halfmoon
beach! three specimens. This I take to be the
type and probably distinct from the following.

208(456 pars) *Amphissa versicolor*? n.sp. Pall.
Halfmoon Is! 50 specimens; at times very
abundant. Bought of Spanish women.

Stearns 2000 specimens. This shell differs from the northern type above mentioned in shape, size, coloration, habit, and faunal centre: being most abundant at Monterey and never found far north where the corrugata flourish. The animal is white, Buccinoid, eyes very small and black, siphon nearly three times the length of the shell. Proboscis very long also. Operculum Buccinoid, with some resemblance to that of Cassis, (Cornuta Addo) Under stones at low water Mussel Pt! aline with Leptothyra sanguinea, Gibbula succincta etc - This shell passes through much the same series of variations as the Leptothyra - from pure white, white dotted-speckled; blotched; with spiral pencillings; of all colors both as ground and marking; brown, purple, salmon color, crimson, yellow, white almost black etc - The apex is usually dark colored - The genus Truncaria must be more clearly defined before we can refer any shell to it. Until such definition be made the genus of Messrs Adams may be provisionally used -

209*(458) *Purpura crispata* Chemn. Smooth var-
mussel Pt! three or four worn and dead-

210*(459) *Purpura canaliculata*, Duclos, Sea beach!
five specimens dead and worn-

211*(460) *Purpura saxicola*, Val- and var-
Rocky shore! 30 specimens - alive-

212*(461) *Monoceros ingonatum*, Conr, Rocks! one fine
specimen - at times not uncommon-

213*(462) *Monoceros lapilloides*, Conr, Rocks! fine or
six living - occasionally plenty-

214*(463) *Ocenebra lurida* - midd- and var. Mussel
Pt! about 30 specimens. The varieties of this
and the next species are very perplexing-

215*(464) *Ocenebra interfossa*, Cpr. Mussel Pt beach!
12 specimens and var-

216*(465) *Ceratomya* [= *foliatum* ~~Engl~~ P.] *monodon*, Esch, Mussel Pt!
one live specimen, one dead Salinas beach!

This is not the original *Murex foliatus*; a
specimen, Sta. Barbara exactly accords
with that species as figured in Ree- and
Kiener - It differs in the sculpture between
the varices and in the character of the varices -
The last one more like *Nuttallii* and the first
like *monodon*. The shell in question in Colls
Stearns and Newcomb.

217*(470) *Nitidella Gouldii* Cpr. Halfmoon beach! three
or four specimens of this dubious shell even obtained.

218*(473) *Muriceola Californica*, [not of V. = *synanthus* ~~Esch~~ P.]
Heids Mussel Pt!
a few specimens.

219*(481) *Chrysodomus dirus* - Ree. Mussel Pt! two
large worn specimens - also Calif-

220 *Fusus geniculus*, ^{atus?} ~~Conrad~~ ^{atus?} Mussel Pt! not
uncommon, dead and worn, Quite distinct
from *ambustus* junior

An examination of this list results as follows:-

Species collected by me-	Species
Previously reported but not obtained by me	219
Total Known fauna of Monterey	<u>44</u>
	263
Of these were:-	Species
Not obtained by me	44
Previously reported from Monterey	101
Previously reported from both N. & S. of Monterey	29
Previously found only to N. of Monterey	24
Previously found only to S. of Monterey	42
New, or not reported from North of San Diego	<u>23</u>
Total	263

Of the 44 species previously reported from Monterey but not found there by me, by far the greater number were dredged in deep water by Dr. Cooper and a few (some seven of which are doubtful) are reported as collected by Nuttall and Jewett and from the Smithsonian general collections and other sources, (B. A. Column in Sup. Rep.)

Cooper (doubtful)	2 Species
Cooper dredged	30 "

Canfield (<i>M. patula</i>)	1 species
Jewett (all doubtful)	3 "
Nuttall	3 "
B. A. Rees.	2 "
Smithsonian (miscellaneous)	3 "
Total	44 "

Hippomys antiquatus, and *Janina dentata* in Cooper Column. (Sup. Rep.) are doubtful. The last was probably a young specimen of *P. purpuratus*, which much resembles *dentata* Junior. Canfield's specimens of *M. patula* though dead and broken, are undoubtable. I am informed by Dr. Newcomb that Col. Jewett's most northern point of collection, on the coast was Point Conception, therefore he could not have collected the shell attributed through him to Monterey. Viz [among others] (1) *Modiola modiolus* (2) *Trochiscus convexus*, and (3) *Omphalinus fuscescens*, besides a few others which were found there. I cannot find that any one has ever found Nos. 1 and 3 there and No. 2 in the description at least, bears a strong resemblance to *Chlorostoma funebre*, Junior. worn. Prof Nuttall's *Pomaulax undosus*, I have already mentioned and his *Crucibulum spinosum*, may have been *Crepidula dosata*, but at all events cannot be found at Monterey now. The other miscellaneous sources may have been

correct, or may not. They comprise *Tapes laciniata* Kellia *rotundata* (a questionable species) *Adula styliata* (a northern shell) *Lithophagus plumula* and *Bittium attenuatum*. Collectors at Monterey have met with the following success—

Cooper	98 species
S. I. Miscellaneous mostly Canfield	40 "
Nuttall	16 " (incl. doubtful)
Pall	219 "

Careful and energetic collecting will do much toward elucidating the problem of geographical distribution. What is most wanted now is a careful collection at some point between San Francisco and the mouth of the Columbia River, and between San Diego and Cape St. Lucas. The veteran Cal. Jewett is I understand now on his way out here to dredge thoroughly in the Gulf of California. Success to all his labors and to all other earnest working collectors!

To Dall

This is the copy that
you sent to yards -
he returned it &
I lent this to J. G.
Cooper who has
Entered in his own
hand P. P. C.

notes on your paper
that P. P. C. (notes sent
to Cooper - P. P. C.
has not returned
your MSS time
as yet

Stearns

Nov 9/67

by J. G. Cooper

C. P. S.

(55)

A small collection since made by Mr. Gabb of the State Geological Survey enables me to add the following southern species to my list. They are all from the "Halfmoon beach," Monterey, Cal. a.

(a) *Corbula orulata*, Sby. (a Gulf Cal. species also found on L. Cal. coast, = ?? adult of *C. luteola* Cpr., new to the fauna.) 1 valve

(b) *Corbula* ? different. (Three valves)

(c) *Donax navicula* Sby. Also Southern. (3 val)

(d) *Hetero donax bi-maculatus*, ditto (one pair)

(e) *Lucina* (Here) *lingualis* Cpr. ditto (three v.)

(f) ? *Chione* ? *excavata* Cpr. (1 valve)
also Southern -

(h) *Cytherea* ? sp. like sp from Cp. St Lucas (5 v)

(K) ? *cardium* sp- (1 v)

(m) *Lucina* ? *nuttallii* - (Three valves) -

which makes an increase of eight sp to the Mtg fauna making a total of 227 sp. known and supposed to have been found there.