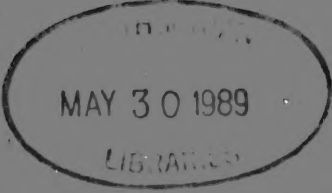


QH
95.3
.W516
MOLL

West American Scientist
V. 6 (whole no. 49)
Nov. 1889



Division of Mollusk
Sectional Library

VOLUME VI. NOVEMBER, 1889. WHOLE NO. 49.

THE
West American Scientist.

*A popular monthly review and record for the Pacific Coast.
Official Organ of the San Diego Society of Natural History.*

C. R. ORCUTT, - - - EDITOR.

CONTENTS:

	PAGE
Notes from the San Diego Biological Laboratory II.....	
.....C. H. & R. S. Eigenmann	147
Obsidian Cliff.....	151
Fauna and Flora of Colorado—III.....	
.....T. D. A. Cockerell	153
Preliminary Notes on the Geology of the Anacapas.....	155
Briefer Articles—Earliest Americans; Communism in Ohio; Salt Mountains of the Colorado; The Cable Circuit of Africa; Modern Cave Dwellers in Germany; A Wonderful Lake; An Electric Plant.....	156
Proceedings of Scientific Societies.....	160
Bibliography.....	160
Editorial.....	162
Notes and News.....	162

SAMUEL CARSON & CO.,
PUBLISHERS.

No. 208 POST STREET, - SAN FRANCISCO, CALIF
No. 1134 Fifth Street, San Diego, Calif.

PRICE 10 CENTS. PER YEAR, \$1.00.

[Entered at the Post Office at San Francisco as second-class matter.]

ANGLO-NEVADA ASSURANCE & CORPORATION,

OF SAN FRANCISCO, CAL.

FIRE AND MARINE.

Capital Fully Paid, \$2,000,000.

OFFICE, 410 PINE STREET.

LOUIS SLOSS, - - - - - President.
C. P. FARNFIELD, - - - - - Vice-President.
Z. P. CLARK, - - - - - Secretary.

BANKERS: The Nevada Bank of San Francisco.

THE EVENING BULLETIN SAN FRANCISCO, CAL.

ESTABLISHED 1855.

Is the leading evening journal in circulation and influence west of the Rocky Mountains. It is the recognized authority in mercantile and financial circles. Its high character, tone, and general worth commends it to, and has obtained for it, an entrance into the refined and cultured home circles, and made it the most popular family newspaper in California. The only journal publishing the Supreme Court decisions in full.

THE WEEKLY BULLETIN

Is the largest and best weekly newspaper published in the west, and is in every respect a first-class family paper, appealing to the interest of every member of the household

The Semi-Weekly Bulletin is the regular Weekly, Bulletin, and Friday's issue of each week.

TERMS OF SUBSCRIPTION

THE DAILY BULLETIN is served by carriers in San Francisco and the large towns of the interior at 25 cents per week.

Daily, by mail or express,	- - - -	per year, \$6.00
Weekly, alone,	- - - -	" 1.50
Weekly, with Daily of Friday,	- - - -	" 2.00

Parts of a year in proportion

Advertising Rates made known on application.

SAN FRANCISCO BULLETIN CO.

622 MONTGOMERY STREET,

SAN FRANCISCO, CAL.

Books for SCIENTISTS and NATURALISTS.

BEGINNINGS WITH THE MICROSCOPE.

A Working Handbook containing Simple Instructions in the Art and Method of Using the Microscope, and Preparing Articles for Examination. By Walter P. Manton, M. D. Illustrated. 50 cents.

FIELD BOTANY.

A Handbook for the Collector Containing Instructions for Gathering and Preserving Plants, and the Formation of a Herbarium. Also, complete instructions in Leaf Photography, Plant Printing, and the Skeletonizing of Leaves. By Walter P. Manton. Illustrated. 50 cents

THE HUNTERS' HANDBOOK.

Containing lists of provisions and camping paraphernalia, and hints on the fire, cooking utensils, etc.; with approved receipts for camp cookery. By "An Old Hunter." 50 cents.

WHAT IS TO BE DONE.

A Handbook for the Nursery, with Useful Hints for Children and Adults. By Robert B. Dixon, M. D., Surgeon of the Fifth Massachusetts Infantry; Physician to the Boston Dispensary 50 cents; Paper, 30 cents.

INSECTS.

How to Catch and How to Prepare Them for the Cabinet Comprising a Manuel of Instruction for the Field Naturalist. By Walter P. Manton. Illustrated. 50 cents.

TAXIDERMY WITHOUT A TEACHER

Comprising a Complete Manuel of Instruction for Preparing and Preserving Birds, Animals, and Fishes, with a Chapter on Hunting and Hygiene; together with instructions for preserving Eggs and Making Skeletons, and a number of valuable Receipts. By Walter P. Manton. Illustrated. 50 cents.

OUR COMMON INSECTS.

By A. S. Packard, Jr. New Edition, with illustrations. 1 vol., 12mo, cloth, \$1.50.

FERNS IN THEIR HOMES AND OURS.

A popular introduction to the study of this fascinating subject. Fully illustrated. 1 vol., 12mo, cloth, \$1.50.

KEY TO NORTH AMERICAN BIRDS.

By Elliott Coues, M. A., M. D., Ph. D. Contains a concise account of every species of living and fossil bird at present known on the continent north of the boundary line between Mexico and the United States, including Greenland. Third edition, revised to date. With which are incorporated General Ornithology, and outline of the structure and classification of birds; and Field Ornithology, a manual of collecting, preparing and preserving birds.

The new edition presents the nomenclature of the American Ornithologist's Union, in the most convenient form for comparison with that of other editions. Illustrated.

Coues' "Key" is too well known as a leading and authoritative treatise to require remark, having for twelve years held its place as the standard work of reference for professional ornithologists as well as for students and amateurs. The latest and most exhaustive American Ornithology. Indispensable to every sportsman, amateur and working ornithologist. 1 vol., royal octavo, vellum cloth, \$7.50

THE COU'S CHECK LIST OF NORTH AMERICAN BIRDS.

With dictionary of the etymology, autography and orthoepy of the scientific names. Revised to date and entirely rewritten by the author 1 vol., royal 8vo, cloth, \$3.00

FOR SALE BY

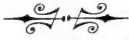
SAMUEL CARSON & CO.,

208 POST STREET. San Francisco.

San Francisco Chronicle,

The Leading Newspaper on the Pacific Coast.

The Circulation of the CHRONICLE is equal to that of all the other San Francisco Morning Newspapers combined.



—THE—
SAN FRANCISCO
DAILY CHRONICLE

is the most important newspaper on the Pacific Coast, one of the few in the United States that may be said to stand in the front rank of American Journalism.

Harpers Mag. Oct., 1888.



The Daily Chronicle
(including 16 page Sunday Edition) delivered by carrier for

15 Cts. per week,
in all principal Cities and Towns on the Pacific Coast.

BY MAIL,
POSTAGE PAID.

Daily Chronicle,	
1 year,	\$6 70
6 mos.	3 35
Weekly Chronicle,	
1 year,	\$1 50
6 mos.	75

Send for Premium List



M. H. DE YOUNG, PROP.

SAN FRANCISCO, CAL.

NEW DIRECTORY !!

WE are engaged in compiling a NEW Oologists' and Ornithologists' Directory, to be issued August 5th, 1889. We desire the addresses of all Collectors. Names inserted free. Do not neglect this opportunity to increase your collections by exchanges from all parts of the world. Exchange notices a special feature, 10 cents each for 25 words or less. Extra words at same rate. This will be the largest and best Directory ever published. Order now. A limited number of reliable advertisements inserted at reasonable rates. Write for terms Address all communications to

MENEFEE & CORLESS,

SAN JOSE, CALIF.

THE WEST AMERICAN SCIENTIST.

VOL VI

NOVEMBER, 1889.

No. 49.

NOTES FROM THE SAN DIEGO BIOLOGICAL LABORATORY.

II.

ADDITIONS TO THE FAUNA OF CORTEZ BANKS.

In a trip to the Cortez Banks, subsequent to the one on which the fishes noted in the first part of these notes were collected, Captain Carter obtained the following species.

45. SPHYRNA ZYGAENA. (L.) August.

46. ECHENEIS REMORA. L. On *Sphyrna zygaena*.

47. DITREMA ATRIPES, Jordan & Gilbert. A single specimen of this species was caught with hook and line in 45 fathoms. August, 1889.

It differs somewhat from the description of aripes. The lips are black, a black spot at root of mandible. Pectorals hyaline, a narrow black bar at their base, especially well defined on their inner surface. Ventrals dusky, most so at tip. Upper third of first ten anal rays black. Caudal dark. Sides gray, lighter below, the back being bluish.

D. X, 22; A. III, 28½. Scales 7-70-15.

From *D. orthonotus*, this species differs in its arched back and less inclined anal basis.

48. CHROMIS PUNCTIPINNIS (Cooper)—A single specimen. It is undoubtedly identical with Cooper's *Ayresia punctipinnis*. It differs from the specimens described by Jordan and Gilbert. (Syn. Fish. North Am. 611) in having the dorsal XIII, 11 instead of XII, 11 and the depth 2¾ instead of 2⅓. Since writing this, Dr. Jordan has examined a specimen in his collection with the dorsal as above XIII, 11 and the depth 2¾.

49. OPHIODON ELONGATUS Girard—One specimen from the Cortez Banks.

50. ZANIOLEPIS FRENATUS sp. nov. Type, one specimen, .165 m. Cortez Banks, Capt. Carter, Coll.

This species is very closely related to *Z. latipinnis* of Girard. It differs from that species in the less convex profile, the more slender shoulder, lower dorsal spines and color.

D. XX, 1-12; A. III, 16½; head 4⅓; depth 6¾.

General form of *Z. latipinnis*, the body less compressed, the dorsal outline less arched. Profile gently arched; nasal spines

prominent. Eye longer than snout, 3 in the head. Mouth small, lower jaw included, maxillary reaching to the anterior margin of pupil. Three preopercular spines, the lowest flat, triangular, the others conical.

Second and third dorsal spines highest, $1\frac{1}{5}$ in length of head, the spines gradually shortened to the 20th. Ventrals reaching front of anal; pectorals scarcely to tip of ventrals.

Color in alcohol, olivaceous; suborbital and preorbital black, (the corresponding region in latipinnis, bluish silvery.) Dorsal and anal with large blackish spots; posterior half of pectorals dusky.

51. *FIERASFER DUBIUS* Putnam—A mass of larvæ and eggs imbedded in a transparent jelly-like matrix may be provisionally referred to this species.

ADDITIONS TO THE FAUNA OF SAN DIEGO, WITH NOTES ON
SOME RARE SPECIES.

SPHYRNA ZYGAENA (L.)

MYCTOPHUM—Sp. A single specimen from the Cortez Banks which was referred to *M. townsendi* differs from that species in some respects. The occiput is more elevated, the preopercular margin is less inclined, agreeing with *M. californiense*. As far as evident, the phosphorescent organs agree with those of *townsendi*; there is, however, no light area along the base of the anal. D. 13. A. 15. A single specimen of this species was taken out of the mouth of a Rock Cod caught a few miles off Point Loma.

MENIDIA TENUIS (Ayres)—This species has not been observed by us during the past year before Sept. 11th, when a large number were brought into the market. All the specimens examined by us have distinct bands of teeth and if the alleged absence of teeth in this species is the only character, as stated by Jordan and Gilbert, Syn., N. A. Fishes, 405, separating this species generally from *Menidia*, it must be placed in that genus.

ECHENEIS REMORA L.—Found on every specimen of *Sphyrna zygaena*.

XENISTIUS CALIFORNIENSIS (Steindachner)—Raspers.

This species has so far been very rarely found. Steindachner found it in San Diego Bay, (Ichthyol. Beitr. III. 3. 1875) and Streets at Cerros Island, (Bull U. S. Nat Mus., VII. 49), since then the species has been noted but once, having been collected by Rosa Smith in '85. The specimens collected by her are now in the Museum of the Indiana University. On May 3d, '89 we procured a single specimen; the latter part of August and during September of this year they were very abundant about the wharfs in San Diego Bay, as many as twenty being caught in a day by a single person with hook and line. When they are pulled from the water they grate their pharyngeals together producing a noise like that of a rasp. Silvery below, steel blue above, lateral stripes rust color.

RHACOCILUS TOXOTES Agassiz—A single specimen. October 3d.

SEBASTICHTHYS MELANOPS (Girard)—Not rare in the markets in Summer and Fall.

SEBASTICHTHYS OVALIS Ayres—Not rare.

SEBASTICHTHYS RUBER (Ayres)—Not rare, usually large individuals brought to the market.

SEBASTICHTHYS LEVIS Eigenm and Eigenm—Equally abundant as *S. ruber*, none but large individuals seen.

SEBASTICHTHYS ROSACEUS (Girard)—Common.

SEBASTICHTHYS ELONGATUS (Ayres)—Not rare.

SEBASTICHTHYS RUBROVINCTUS Jordan and Gilbert—The rarest of the Rock Cods.

XYSTREURYS LIOLEPIS Jordan and Gilbert—Three specimens, Sept. 30th and Oct. 3d.

FISHES OF ÆTNA SPRINGS, NAPA COUNTY, CALIFORNIA.

PHOXINUS (Tigoma) CLEVELANDI sp. nov.—Types, three specimens .10-.12 m. to base of caudal. D. Cleveland, Coll.

Closely related to *Ph. hydrophlox* (Cope) associated with *Leucus bicolor* (Girard)

D. $9\frac{1}{2}$; A. $10\frac{1}{2}$; head $4-4\frac{1}{4}$; depth $3\frac{3}{4}-4\frac{1}{4}$; teeth 2, 4-5 or 5, 2; scales 10-59-6.

Mouth oblique, jaws equal, maxillary reaching front of eye or somewhat farther in the largest specimen. Eye $4-4\frac{1}{4}$ in head, $1\frac{1}{2}$ in the interorbital space. Pectorals reaching ventrals in male, much shorter in female.

Color in alcohol; chocolate above, bordered on the sides by a darker stripe; a black band from tip of snout to base of middle caudal running along the lateral line in front and on the tail, above the lateral line along the abdominal region; a light band from upper angle of eye between this and the dark of the back. Sides below the dark lateral band silvery, more or less peppered with black or chocolate. Dorsal and caudal dusky. Anal and ventrals light. The rays chiefly dusky. Upper surface of pectorals dusky, the color becoming more intense toward the outer ray which is black; lower surface of pectorals white. All markings most intense on male.

FISHES OF ALLEN SPRINGS, LAKE COUNTY, CALIFORNIA.

A few specimens were collected by Mr. D. Cleveland, at Allen Springs, Lake County, California.

PTYCHOCHEILUS OREGONENSIS (Richardson.)

SALMO IRIDEUS (Gibbons.)

URANIDEA SEMISCABRA CENTROPLEURA var. nov.

Two specimens .072 and .08 m. long

Head $3\frac{1}{2}$; depth $4\frac{3}{4}$ D. VIII, $17\frac{1}{2}$; A. 14; V. I, 4. Pectorals $3-3\frac{1}{4}$ in length; ventrals 5, caudal 4.

Spinous dorsal pale at base and tip, the median region black. A band of prickles along the median line of the body to near pos-

terior margin of anal; the rest of the body without villi or prickles. Lateral line complete. Ventrals reaching $\frac{2}{3}$ - $\frac{4}{5}$ to vent, which is nearer to base of caudal than to tip of snout, otherwise as in semiscabra.

THE YOUNG STAGES OF SOME SELACHIANS.

SQUALUS ACANTHIAS L. Captain Carter of the *Azalene* obtained the young of this species from its mother in August. They were far along in their development.

Total length .22 m; dimensions of the yolk. 02 x .04 m. The upper surfaces are blue, the lower white; a series of white spots along the sides. A light streak on sides above the ventrals. Anterior portions of dorsals black, the posterior margin and tip white. Upper margin of caudal and anterior margin of its lower lobe white; tip of upper lobe black; a white and then a black band between the black tip of the upper lobe and the anterior margin of the lower lobe. Upper basal portion of ventrals dark blue, the remainder of the fin white. Pectorals largely blue above, the posterior margin being white, their lower surfaces largely white a median blue spot on its outer half. Snout broad and rounded.

TRIACIS SEMIFASCIATUS Girard. A female of this species about 1.5 m. long, caught Sept. 6, 1889, contained a number of young measuring .095-.105 m. Each embryo is surrounded by a delicate membrane filled with a hyaline watery albumen. The yolk is pyriform and measures .03 x .07 m. In the smallest individuals the external gills are still present; the spiracular gills have, however, disappeared. In the proportions, position of fin and coloration these embryos greatly resemble the adult. The asperities of the skin are entirely wanting. The ventral surface with the paired fins, the anal and lower lobe of the caudal are plain. A dark cross bar between the spiracles; three cross bars between this and the first dorsal fin, one on the middle of the first dorsal, another at its posterior margin, two between the dorsals, a dark cross bar on the anterior and posterior margins, of the second dorsal, four behind the second dorsal fin. In the larger specimens there is a spot on the middle of the lower caudal lobe and two or three along the sides anteriorly. The remaining color marks of the adult are not yet developed.

RHINOTRIACIS HENLEI Gill. A specimen of this species about 1.5 m. in length was caught off the wharf Sept. 7th, 1889. It contained six young, three in either uterus. They are .115 m. long and possess most of the characters of the adult. The tips of the caudal and dorsal fins and a median dorsal band behind the second dorsal are dark blue, otherwise the embryos are colorless. The external gills have disappeared. The umbilicus is very long .14 m. The yolk is bright yellow; it is intimately connected with the walls of the uterus. As the young of this species are attached by a placenta it may be generically distinguished *Triacis* from in which the young are free.

GALEORHINUS ZYOPTERUS Jordan and Gilbert. This species is common in San Diego Bay, but, as with most sharks it is most abundant in the latter part of Summer. Few males are caught; all the specimens examined by us were females. Two individuals taken August 30th, 1889, were with young which average .05 m. in the one, .08 m. in the other. The yolk is a large spheroid measuring .05 x .08 m., and, as in the case of *Triacis*, is surrounded with a loose, delicate membrane. The embryos are colorless. The position of the fins agrees with the adult. All the young, including the largest, have external gills still persisting at the gill openings and spiracles. The head is comparatively shorter and broader than in the adult and the eye much larger.

SCYLLIORHINUS VENTRIOSUS Garman. On January 19th, 1885, Mrs. E. D. Buell hatched a shark from a flat egg case which she gave to Rosa Smith. The shark may be said to have been "hatched" although the embryo had not absorbed the vitelline sac and it may have been not quite matured as Mrs. Buell pried open the case to let out the shark which was still alive. The shark was provisionally identified as *Scylliorhinus ventriosus* and the egg case sent to Mr. S. Garman to be figured.

The young shark differs from the description of the adult sharks in a few very prominent characters, i. e., the caudal is not continuous around the tail, the tip of the tail is margined by a series of flat spines and there is a series of rather strong spinelets along the sides of the back from in front of the second dorsal forward to the head. The central portion of the dorsal fins, the anal and the paired fins dark blue. Back and sides with dark blue double cross bars which are more or less interrupted, those of the tail extending upon both lobes of the caudal.

Length .085 m. Diam. of yolk about .02 m. Greatest depth .12 of total length; greatest width .14; length of head .17; width of head .18; length of snout .06; length of branchial area .09; width of mouth .14; distance from snout to first dorsal .49; length of base of first dorsal .07; length of caudal .26; length of pectoral .12; length of ventral .10.

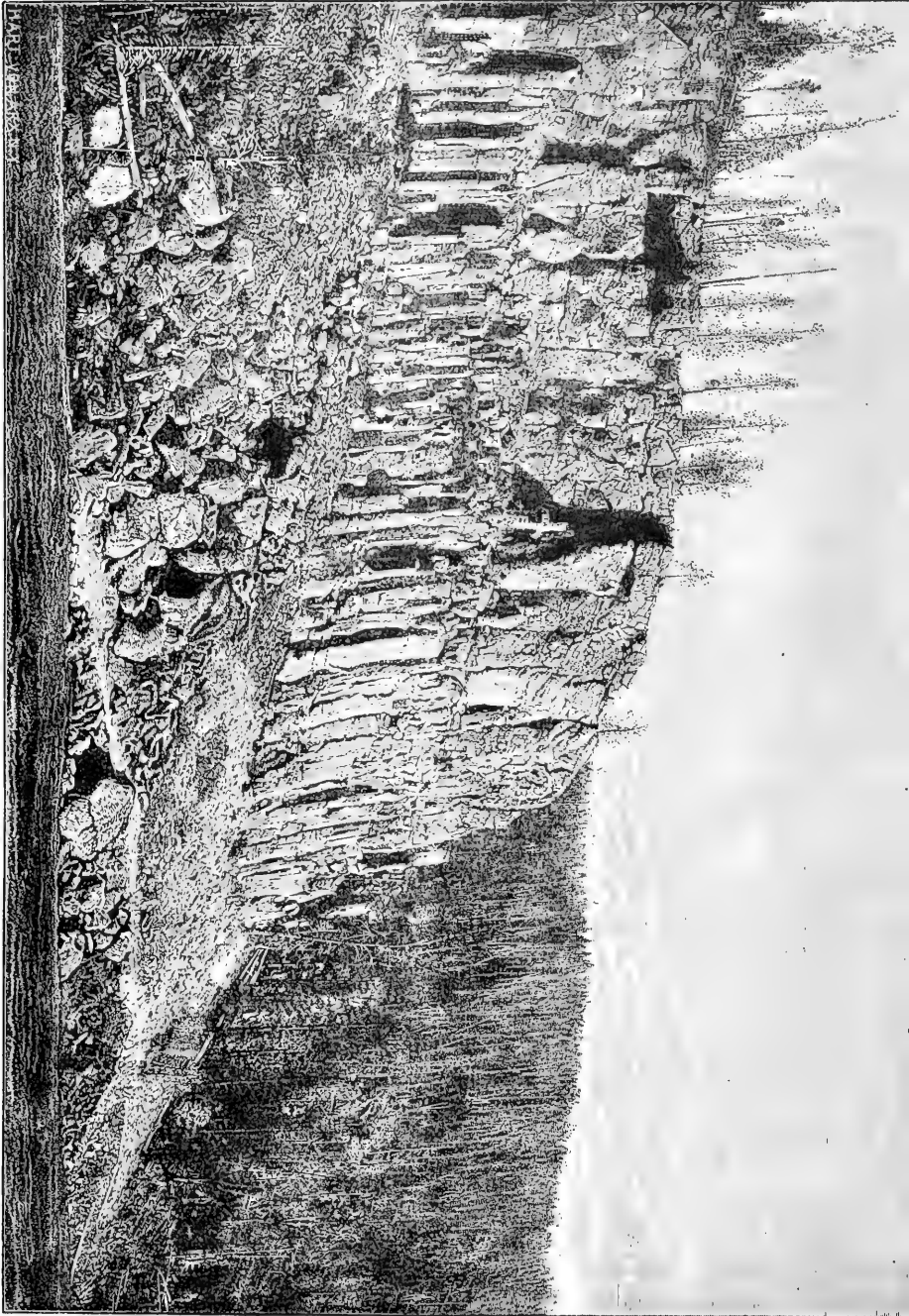
C. H. & R. S. Eigenmann.

*OBSIDIAN CLIFF.**

Obsidian Cliff is at the northern end of Beaver Lake, in the Yellowstone National Park, about eleven miles south of Mammoth Hot Springs. The cliff extends for half a mile, rising from one hundred and fifty to two hundred feet above Obsidian creek and falling away gradually to the north; the upper half is a vertical face of rock, the lower portion a talus slope of the same material.

The southern end is formed of nearly vertical columns of black

*) From the seventh annual report of the U. S. Geological Survey.



obsidian, or volcanic glass, which has resulted from the rapid cooling of a perfectly fused, igneous rock. From this, great blocks have fallen and accumulated at its base in a talus slope, over which has been built what is popularly known as the glass road, the material of which it is made, being as true a glass as any artificially produced. The colors and structure of this natural glass not only make it the most interesting rock the visitor will find, but the phenomena of its occurrence in this locality are of special scientific importance.

What was the original thickness of this lava sheet it is not possible to say. The dense glass or obsidian forming the lower portion is from seventy-five to one hundred feet thick; the porous and pumiceous upper portion has suffered more or less erosion, which was in part the result of ice action, the evidence of glaciation being more marked along the lower western slope of the plateau than on the top of it. The surface of the plateau is mostly pumice, with little, if any glacial debris scattered over it; but along the western slope the rock has been worn down to the massive obsidian, and the top of the cliff is covered with planed and striated glacial drift from a great variety of sources.

Half a mile southeast of Obsidian Cliff, on the plateau, about five hundred feet above the level of Beaver Lake, is a circular pit one hundred feet deep, the mouth of it being three hundred feet wide by three hundred and fifty feet long; its sides stand at an angle of thirty-five degrees and appear to be formed of pumiceous obsidian, the angular masses in the bottom being pumice. The rim of the pit does not rise above the level of the surrounding surface, and one comes upon it quite unexpectedly in the timber. The general appearance is that of a small crater which has been but slightly affected by glaciation.

In the Solfatara Creek valley, the lava flow is exposed in a cliff the lower portion of which is black and red obsidian.

*CONTRIBUTIONS TOWARDS A LIST OF THE
FAUNA AND FLORA OF WET MOUNT-
AIN VALLEY, COLORADO.*

(Compiled for the Colorado Biological Association.)

III. ALGÆ.

The locality cannot be said to be rich in forms, although the irrigation ditches and creeks yield a certain number of species. Most of the species are of general distribution elsewhere. For identification we are greatly indebted to the Rev. F. Wolle, while one species was kindly named by Dr. W. G. Farlow.

1. *Conferva vulgaris*, Rab., near Ula.
2. *Cladophora glomerata*, Kg., well distributed; also found in Pueblo Co.
3. *Mesocarpus scalaris*, DeBy., near Ula.
4. *Hyalotheca disilliens*.
5. *Draparnaldia plumosa*, in Swift Creek, over 8,000 feet alt.

6. *Zygnema anomalum*.
7. *Spirogyra quinina*, Ag., near Short Creek, 8,200 feet; West Cliff.
8. *Spirogyra nitida*, West Cliff.
9. *Oscillaria froelichii*, Kutz.
10. " *gracillima*, Kg.
11. *Vaucheria geminata*, Short Creek.
12. " *dichotoma*, West Cliff.
13. *Nostoc sphaericum*.
14. " *interruptum*.
15. *Navicula viridis*, Kutz., near Ula.
16. " *rhomboides*, (Ehrenb), Greg, near Ula.
17. " *dactylus*, West Cliff.
18. *Nitzschia amphioxys*, Sm., near Ula.
19. *Epithemia turgida*, Sm., near Ula.
20. " *gibba*, Kutz, Short Creek, 8,200 feet alt.
21. *Synedra ulna*, Ehrenb., near Ula and Short Creek.
22. *Gomphonema acuminata*, Ehrb.
23. " *dichotomum*.
24. *Cocconeis pediculus*, common, and also found in Pueblo Co.
25. *Fragilaria capucina*, Sm., West Cliff and Short Creek.
26. *Diatoma (Odontidium) hiemale*, Kutz., Short Creek.
27. *Closterium acerosum*, Ehr., near Ula.
28. " *leibleinii*, Kutz.
29. " *cucumis*, Short Creek.
30. *Cosmarium nitidulum*, DeNot.
31. *Euastrum ansatum*, Ehr.

IV. PTERIDOPHYTA.

1. *Botrychium lanceolatum*, Angst., Willow Creek, 8,200 feet (M. E. Cusack.) A syrphid larva, about 10 mill. long, pale, the dorsum dull orange, was found on this plant.
2. *Cryptogramme acrostichoides*, (Spreng.) R. Br., Porter and Coulter, Fl., S. Colorado.
3. *Woodsia oregana*, Eaton, Porter and Coulter, "Fl. Colorado."
4. *Pteris aquilina*, Linn., somewhat local at about 8,400 feet alt.
5. *Cystopteris fragilis*, Bernh., Porter and Coulter, "Fl. Colorado."
6. *Equisetum pratense*, Ehrh., West Cliff.
7. *Equisetum laevigatum*, Braun, Grape creek (Demetrio), Ellis and Everhart. This species has priority over *E. laevigatum*, Lesqx, fossil at Golden. The fossil species may be amended to *E. perlaevigatum*, so as not to conflict with the recent one.
8. *Equisetum arvense* L., Willow creek and elsewhere. Some of the specimens are not typical.
9. *Equisetum hiemale*, L., Willow creek and elsewhere, common.

V—GYMNOSPERMÆ.

1. *Juniperus communis* L., abundant at 8,200 feet and upwards. The berries form part of the food of robins (*merula migratoria*).
2. *Picea engelmanni* (Parry) Eng., Short creek and Willow creek.
3. *Picea pungens*, Eng., Short Creek and Willow Creek.
4. *Pinus ponderosa* var. *scopulorum*, Eng., abundant, Short Creek, Willow Creek, etc. T. D. A. Cockerell.

WEST CLIFF, October 7, 1889.

PRELIMINARY NOTES ON THE GEOLOGY OF
THE ANACAPAS.

(Read before the Santa Barbara Society of Natural History, August, 1889.)

The group of islands known as the Anacapas are more exclusively of volcanic origin than any other of the Channel Islands, the base from the exposure above the level of the ocean being composed of black vesicular basalt, capped in many places by a trachytic rock of a more recent lava flow, and at some points on the most elevated portions of the islands covered by a drift formation, among which are found jasper, chalcedony, and other fragmentary metamorphic rocks.

Where these metamorphic rocks are found there is abundant evidence that the aborigines, who inhabited the islands, frequented the place of deposit for the purpose of selecting rocks suitable for the manufacture of their arrow and spear points.

An unimportant deposit of limestone exists on the middle island, and a vein of chalcedonic quartz was found near the eastern end of the larger island; this was also used for the manufacture of weapons and knives.

Amygdaloides of chalcedony are very abundant, filling the almond-shaped cavities in the basalt.

An article on the geology of the Channel Islands, including the Anacapas, with geological sections, the result of the studies of the islands during the past twelve years, is being prepared, and will be presented to this society at its next meeting.

There are many things connected with the fauna and flora of these islands which are of much interest to students of natural history, and the scenery equals in variety and grandeur many of the most noted localities of other countries, a fact which our local artists are making known.

The land shells of the islands are peculiar; the only helicoid land shell found on the Anacapas, *Helix Ayresiana*, heretofore noted from San Miguel, Santa Rosa and Santa Cruz, is found but sparingly on the Anacapas, but the writer brought a few living specimens and planted a colony in the foothills of the Santa Ynez Range, back of El Montecito, where it is hoped they may

increase and furnish specimens of this beautiful snail for future generations of conchologists.

Owing to the steep and rugged shores, and a lack of suitable conditions, marine mollusks are not plentiful, except a few littoral species, which attach themselves to the rugged surface of the basalt rocks.

A list of the known mollusca of the islands is also in preparation.

We did not find any ferns upon the Anacapas, but, as adverse circumstances prevented our landing upon the western extremity of the group, where the conditions seem the most favorable for their growth, we cannot state positively that no ferns grow there. An article on the ferns of the Channel Island will shortly be published.

Lorenzo G. Yates.

BRIEFER ARTICLES.

(From Demorest's Monthly Magazine.)

EARLIEST AMERICANS.—The knowledge that America was inhabited by a highly civilized people many centuries before its occupancy by the race of red men which the earliest European settlers found here, is not new. Yet it was not until lately that actual records of information concerning this people were found, and for more than four hundred years all that we have known of them was gathered from a careful study of the relics of their greatness,—the ruins of their edifices, which have been found scattered over the entire western hemisphere. But the earthen tablets found in Peru, Central America, and Mexico, engraved on plastic clay in perfect Phœnician characters, and afterwards burned to render them imperishable, extend back nearly two thousand years before Christ. According to these records, these people, the Toltecs, came from some remote country and settled in South America. They were an eminently civilized and religious people, vesting the laws of their government and their theology in the same persons, and believing in one God, the creator and ruler of all, and in a mediator (Tzuma) who was to come to guide and teach them aright. Two distinct classes existed among them, the "Olptecs," or workers, and the "Orptecs," or thinkers, the latter including not only their priests and rulers, but their architects, artisans, engineers, and nobility. The "Olptecs" were serfs with no voice at all in the government or public affairs. These people rapidly increased, and by the year 400 B. C. had settled nearly the entire South American continent and spread over Mexico, where they found an aboriginal race dwelling on the banks of the streams and living upon the natural produce of the soil and upon fish and game. For over a thousand years the Toltecs occupied the land, until in the last century before Christ, the Aztec invaders sailed up the Amazon, claiming to have come from an Oriental country which they called "Aztlan." The Aztecs soon overruled the Toltec government, and in the course of two or three centuries the Aztecs were the dominant people.

Their supremacy lasted for seven centuries, and then, through luxurious abundance, their commerce and industries became less active and extensive, and their power commenced to wane. In 800 A. D. a savage horde from the north and west came down upon the Aztecs, and wiped out the primeval civilization in a savage war of extermination, lasting for years. The remnants of the stricken people fled to the mountains, where they became cliff and cave dwellers, and others became amalgamated with the destroying race, the Chicimecs. This is but a sketch of the wonderful history these long-hidden records relate. It was reserved for the progressive and enduring Indo-European branch of the Aryan race to open the pages and read for us the instructive history of these thirty forgotten centuries during which America was peopled in turn by the Hamitic branch of the Semite race, then by the Semites proper, and these finally exterminated by the fierce Turaneans from Chinese Tartary, until to-day nearly every vestige of their existence is being crushed out of the world's history by the rapid paces of an advancing civilization.

COMMUNISM IN OHIO.—In Tuscarawas county, Ohio, about eighty miles south of Cleveland, in a quaint little village called Zoar, is an obscure communistic colony of about three hundred inhabitants. It was founded in 1817, by two Germans, who selected this location, comprising some of the richest land in Ohio, and called their settlement Zoar, because it was to be to them a place of refuge from the world. The people, descendants of the pioneers who first settled there, are frugal and industrious, strongly attached to their beautiful home, and work for the community, which owns and controls not only the village proper but thousands of acres outside. The money is received into one common treasury, and the necessaries of life, including food and clothing, are furnished by the officials, consisting of three trustees and a committee of five, who are annually elected by ballot. They are Christians, accepting the Old and New Testaments, but they have no minister or ceremonies of any kind, and their place of worship is not called a church, but a 'congregation-house.' In marriage, the contracting parties procure a license, according to the laws of the State, and the marriages are solemnized by a Justice of the Peace, who is a member of the community. Years ago their rules were very strict, and the members all dressed alike; but now, although simplicity is the rule, they are not uniformly attired. They manufacture their own wool garments, and boots and shoes, and each family raises its own produce. If any need money for any reason, they make application for it. They run a flouring mill, two grist mills, two woolen mills, and a tannery. They have two good schools, and keep a large hotel accommodating many summer boarders. Altogether they are a happy, independent people, content to live apart from the world. Every person in the community knows his place, is assigned to his duty, and performs his work according to his ability. Nearly all the present members were born in

Zoar, although outsiders may join if they can pass satisfactorily the year's probation which is demanded. Yet this quiet, secluded life does not seem to accord with the desires of most men and women, although the Zoarites profess to be perfectly satisfied.

THE SALT MOUNTAINS OF THE COLORADO.—Upon a tributary of the Colorado River, the Virgin, are situated the salt mountains which are destined to be the source of great wealth to someone. They cover a stretch of about twenty-five miles on both sides of the Virgin River, seven miles up from the Colorado. The salt they contain is pure and white, and clearer than glass, and it is said that a piece of it seven or eight inches thick is sometimes clear enough to see through to read a newspaper. Over the salt is a layer of sandstone from two to eight feet thick, and when this is torn away the salt appears like a huge snowdrift. How deep it is has not yet been ascertained; but a single blast of giant powder will blow out tons of it. Under the cap-rock have been discovered charred wood and charcoal, and matting made of cedar bark, which the salt had preserved, evidently the camp belongings of prehistoric men. The rocks toward the salt mountains are painted and carved with hieroglyphics, the meaning of which is known only to the Mojave, Yuma, Piute and other Indians. From the reports of recent explorers it seems that there are stretches of hundreds of miles on the Colorado River as little known as the heart of Central Africa. The walls of the El Dorado Canyon, where the river is three hundred and fifty feet wide, are so high that neither the sun nor the moon can shine in. The Colorado is the greatest field for explorers on the North American Continent beside the Arctic regions, and the wonders yet to be unearthed there will probably much more richly reward the attention of the scientist than even the unknown spaces of the frigid North.

THE CABLE CIRCUIT OF AFRICA.—The report of the United States Vice-Consul to St. Paul de Loando, concerning the district of Mossamedes, on the West Coast of Africa, practically an unknown country to Americans, includes the important information that a cable has just been laid between the Cape of Good Hope and Mossamedes, touching at Port Nolluth, and continued from Mossamedes to Loando, completing the telegraphic circuit of Africa. It is expected, since the completion of this new line, that a message can be sent *via* the West Coast more expeditiously than by the old route to the Cape *via* the Red Sea and Zanzibar. The district of Mossamedes, of which a considerable portion of territory has been lately ceded by Portugal to Germany, is situated between $13^{\circ} 50'$ and $17^{\circ} 25'$ south latitude. The principal port and town is called Mossamedes. It has anchorage for any number of vessels, and good pier facilities. Its commerce chiefly consists of the exchange of cattle, dried and salted fish, dried beef, and agricultural products for goods and provisions that come from Europe. A line of railway from Mos-

samedes to two hundred miles into the interior has been projected. It will cross the Schella Mountains at a distance of one hundred and twenty miles from the coast, beyond which the country is said to be magnificent, and salubrious for Europeans, who are able to work in the fields.

MODERN CAVE-DWELLERS IN GERMANY.—Cave-dwellers in civilized Europe? It seems incredible; and yet, just above the thriving village of Langenstein, in the Hartz Mountains, and forming a part of it, are about ten dwellings hewn in the rocks. They are called the "Burg," or "castle," and here some forty persons have their home. In the face of the solid rock is to be seen a row of regular-shaped doors and windows, one door and one window belonging to each dwelling. The most ancient of these dwellings is the work of a young married couple whose extreme poverty gave them no other choice than to seek a home in the rugged mountain-side. Their work must be held deserving of respect, for it was no light task to pick away the rock bit by bit, as one workman must with no tool but his pick-ax. Through the doorway one enters a narrow, straight hallway, at the right of which another doorway leads into a good-sized room with a window, the only one in the dwelling. Opposite this doorway, at the left of the entry, is a shell-shaped hollow, which serves as a sleeping-room, in which, however, straw supplies the place of a bed. Back of this, at the left, is a store-room; opposite it, adjoining the living or sitting-room, is the kitchen, with fireplace and chimney; and back of the kitchen is another sleeping-room. The latter has no opening for light, yet, as the house-door is usually open the greater part of the year, there is light enough to see by. The walls are of the natural rock, and the apartments are perfectly dry, and not badly ventilated with the door, window, and chimney, which create a slight draft through the dwelling at all times. The place is warm in winter and cool in summer, and the inmates are rosy and healthy. Some of the cave-dwellers have whitewashed their houses, and made little gardens outside, so that the exterior does not display a forbidding appearance. At any rate, these cave-dwellings are quite as comfortable (and certainly more sanitary) habitations as the cellars of our cities, which are leased to wretched inmates, and are only caves of masonry.

A WONDERFUL LAKE.—'The 'Walled Lake,' as it is called, is the greatest wonder in the State of Iowa. It is situated in Wright county, twelve miles north of the Dubuque and Pacific Railway, and one hundred and fifty miles west of Dubuque City, and occupies a surface of two thousand eight hundred acres, with a depth of twenty-five feet in some places. The lake is from two to three feet higher than the earth's surface, and in some places the wall surrounding it, which gives it its name, is ten feet high. The stones used in its construction vary in weight from one hundred pounds to three tons, and the wall is fifteen feet wide

at the bottom and five feet wide on top. The mystery about the lake is that no one knows who built these massive walls that inclose it, or where the stone was obtained from, unless they were taken from the immediate vicinity; for surrounding the lake, to the extent of five or ten miles, there are no stones, although everywhere else in Wright county there are plenty of them. Another singular fact is that, although the water in the lake is always clear and fresh, no one has been able to ascertain where it comes from or where it goes.

AN ELECTRIC PLANT.—In the forests of India there has been discovered a very strange plant, which manifests a most astonishing magnetic power. Anyone who breaks a leaf from it receives immediately a shock equal to that which is produced by the conductor of an induction coil. A magnetic needle at a distance of twenty feet is affected by it, and near by becomes very much deranged. The intensity of this singular influence is very variable. It is most powerful about two o'clock in the afternoon, and almost without force at night or during rain. No bird or insect is ever seen to alight on the electric plant; some instinct seems to warn them of the danger of sudden death. None of the magnetic metals, iron, cobalt, or nickel, are found where this plant grows, so that the electric force undeniably belongs exclusively to the plant. The mysteries of light and heat, magnetism and electricity, make the leaf and blossom of this wonderful Indian plant a rare botanical problem.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

(San Diego Society of Natural History, October 4, 1889.)

The meeting was held at the residence of the Vice-President, Rev. B. F. McDaniel. Dr. C. H. Eigenmann made some remarks on his trip in the Azalene to the Cortez Banks, describing the embryology of the rock cods and the surf perches, both of which bring forth their young alive. The vice-president presented fine specimens of Indian relics from El Cajon valley, describing the locality whence they came. Tourmaline in quartz was scattered over the hillside and it was evident the Indians had mined there for flints for arrow heads.

BIBLIOGRAPHY.

MALVA ROTUNDIFOLIA, The occurrence of this imported weed in a pasture at Trinidad, Colorado, is announced in *Field and Farm*, September 21, 1889. It is exceedingly abundant in some localities in the East, as at Niagara Falls, but we had not definite news of it before in Colorado. T. D. A. C.

JOSEPH P. NUNN. The Fertility and Coloring of Birds' Eggs. *Science Gossip*, September, 1889, p. 204. Statistics are given of

various clutches of *Merula merula*, and the author concludes that "the greater the fertility, the darker the color of the eggs."

THE MAMMOTH NOT EXTINCT. In *Science Gossip*, September, 1889, p. 214, is quoted a clipping from the *Saturday Journal*, to the effect that the mammoth (*Elephas primigenius*) still exists in Alaska! A certain Mr. Fowler, it seems, has interviewed a man who killed two of them. But the public unkindly scoffs and makes mention of the horse marines!

DIORCHIDIUM TRACYI, DE TONI. *Journ. of Mycol.*, June, 1889, vol. 5, p. 95 and pl. x.: Good figures are given of this species from New Mexico, which is the only North American species of its genus known. We confess, however, that we do not quite see on what grounds it is called *D. tracyi*, since it was apparently first described by Tracy and Galloway as *Puccinia vertisepta*, last year. The name ought surely to be *Diorchidium vertisepta*, (T. & G.), *vertisepta* not being preoccupied or otherwise inappropriate. Dr. De Toni's ideas of priority are, we hope, not those of most other mycologists. The same number of the *Journ. of mycol.* that contains the description of *P. vertisepta* has an article on *Doassansia* by him in which he proposes to alter *D. punctiformis* (Niessl, 1872) to *D. Niesslii*, De Toni, because an Australian species was named *D. punctiformis* by Winter in 1887, *D. punctiformis* Niessl not being at that time recognized as belonging to the genus! It is the Australian *D. punctiformis*, Wint., that must be changed—say to *D. Lythri*, as it was found on *Lythrum*.
T. D. A. C.

R. K. MACADAM. North American Agarics. *J. of Mycol.*, June, 1889, p. 58. Descriptions and localities are given for 11 species of *Russula*, only three of which are quoted from anywhere on the Pacific Slope. There is probably a great deal yet to be done among the Western Agarics.
T. D. A. C.

H. J. ELWES. Notes on genus *Erebia*. *Trans. Entomological Society of London*, 1889, p. 317. This very interesting paper deals with this genus of butterflies at considerable length, and gives a list of the species. There are also remarks on the geographical distribution of the genus, which number altogether 57 species. A new var. *brucei* of *E. epipsodea* is described from Colorado. It is smaller, without ocelli, and the red band is almost obsolete. It is possibly a distinct species. T. D. A. C.

D. W. COQUILLET. The Imported Australian Ladybird, (*Vedolia cardinalis*). *Insect Life*, Sept. 1889, p. 70. Of this article on the imported Australian Coccinellid, and the wonderful work it is doing in destroying that pest, the *Icerya*, in California, we need only say that it is of the greatest interest, and ought to be read by all who care for the welfare of agriculture on the Pacific Slope.
T. D. A. C.

EDITORIAL.

The development of a system for the utilization of the arid lands of the west is one of the most promising of numerous projects now under consideration for the material improvement of the condition of mankind. Not only is the west interested in the numerous discussions and actions taken on this subject, but the whole nation is becoming awakened to the necessity of rendering this vast area capable of sustaining human life.

It has been estimated that within historic times some seven millions of square miles along the shores of the Mediterranean, once highly fertile, have been changed into worthless deserts, and for nearly 2,000 years the inhabitable portion of the earth has decreased at the average rate of 3,500 square miles. This has been produced by the direct agency of man, the evil being chiefly due to river floods caused almost exclusively by the destruction of land-protecting forests.

It is right that America should set the example of reclaiming desert lands and thus increase earth's capacity for supporting the human race. *Irrigation and tree-culture must go hand and hand in this work.*

The value of irrigation has been abundantly proved by the past experience of the human race and is to-day sufficiently demonstrated in Southern California to convince the most skeptic. Not only is irrigation recognized in the west as the solution of the arid lands question, but agricultural papers are already pointing out the desirability of the system for the eastern States, where it is much less vital and was long considered needless.

The necessity for tree-culture is equally imperative with irrigation, and the arid lands question will never be satisfactorily settled without the recognition of this principle in its solution. The men who advocate the construction of a vast system of storage reservoirs for irrigation purposes, refuse to recognize the value of mountain forests as natural storage reservoirs and distributors of the water supply, and hold that it would be just as well to destroy them entirely, are not the men needed in this exigency of our country. The system of irrigation proposed is well, but if left to their own devices in the latter respect, the country will have reason for regret. America can ill afford to ignore the experience of other nations in this respect and forestry should receive equal consideration with irrigation.

NOTES AND NEWS.

An event anticipated in Plymouth for more than fifty years took place there on the 1st of August. It was the dedication of the

monument in honor of the Pilgrims, by the Masonic Grand Lodge which laid the corner-stone thirty years ago.

The four hundredth anniversary of the discovery of America by Columbus will be celebrated by a World's Fair in 1892. New York city is confident of being selected as a site for this great exposition, but Chicago and St. Louis are both rivals for this honor. St. Louis claims to be more centrally located than any other city of its size in the United States, and to possess a greater population and two and a half times as many miles of railroad within a radius of 500 miles, than either New York or Chicago.

Rev. M. J. Berkeley, a distinguished English cryptogamic botanist, is dead.

Prof. F. H. Knowlton is collecting fossil plants in Western New Mexico, Arizona and California, according to the *Botanical Gazette*.

Prof. E. L. Greene spent the summer months in an exploration of the forests of Colorado, Montana, Oregon, Washington and California.

Dr. George Vasey has returned to Washington, D. C., from his tour through the West.

There are about 100 species of mosquitoes in the world, occurring in all climes. Eight or ten species have been known to inhabit England for more than fifty years—in fact since they were first studied—and no new species have been recorded in Britain in that time. One well-known British species has been recorded from Mexico; though no tropical species has ever visited England.

Dr. Field, a celebrated physician, is reported to have used nothing but common flour of sulphur, a teaspoonful mixed with the finger in a wineglassful of water, and given as a gargle, when diphtheria was raging a few years ago. In ten minutes the patient was out of danger, and he never lost a case of this disease. Sulphur destroys the fungus in man and beast. In extreme cases dry sulphur was blown down the throat through a quill, and sulphur burned in a shovel so that the patient could inhale it, when a gargle could not be used.

About 150 colors are obtained from coal tar, which has now almost entirely supplanted vegetable and animal dyes.

IMPORTANT NOTICE.

Botanists, Nurserymen,
SEEDS MEN AND FLORISTS.

Cycas revoluta, *C. circinalis* (tree ferns), *Al ophila*, *crinata*, *A. gigantea*, *Cythea hemititia*, *Dendrobium maccartheae*, *D. Aureum*, *D. cruminatum*, *D. macro*, *stachys*, *Vanda spatulata*, *Vanilla phalarnopsis*, *Eria bicolor*, *Cleistoma maculosum*, and over 40 of the best varieties of *Lycopodiums*, *Ferns*, *Palms*, *Pandanus*, *Euphorbia*, *Opuntia*, and other varieties of seeds and plants supplied.

We will pack and deliver free at any sea-port:

- A case of 250 Orchids, 20 varieties.....\$100
- “ 500 “ 30 “ 150
- “ 200 *Cycas circinalis*, stems 6 inches. 100
- “ 500 “ “ “ 4 to 12 inches high..... 250
- A case of 1,000 Bulbs, 10 different varieties, such as *Crium Oranatum*, *C. Asiaticum*, *Pan-cartium*, *Gloriosa*, *Methonica*, *Alocasias*, &c. 175

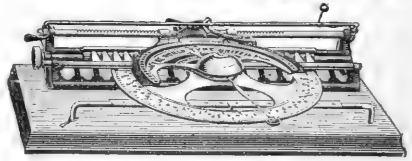
Coffea arabica, *C. Liberica*, *Thea Asamica*, *T. Hybrida*, *T. intiginians*, *Cichona*, *Legeriana*, *Cardamomum piperinigrum*, *Myristica*, *Clove of Commerce*, *Caselpinia sappan*, *C. Davidivi*, *E. coca*, *Theobroma cooa*, *Coccos mucifera*, *Vanilla planifolia*, *Sarcinia maugostana*, and over 50 different varieties of FRUIT TREES. Price list of seeds and plants can be had on application to **C. R. ORCUTT, Seedsman, San Diego, California**, to whom all orders should be addressed.

Also, Bird Skins and Eggs, Shells, Bones, etc., supplied from Ceylon and elsewhere.

J. P. ABRAHAM,

Grand Pass, Colombo, Ceylon.

THE WORLD
TYPE-WRITER



YOU CAN BUY THE
WORLD FOR \$10.00

Single case Machine \$10.00; double case Machine writes 72 characters, Price \$15.00; walnut case, \$2.00 extra.

Simple, Practical, Durable, Rapid.

Machines sent by express, C. O. D., upon receipt of \$1.00 or more to guarantee charges. Send for Descriptive Circulars and Testimonials.

THE SAMUEL HILL COMPANY
General Agents,

725 Market Street, History Building, San Francisco.

General Dealers in Fine Linen Papers and Type-Writer Supplies, and Agenus for the "Caligraph" Type Writing Machine.

Mention the Publication,

REAL ESTATE—Bought, Sold,
Rented and Exchanged.

Buyers and Sellers are placed in direct communication with each other. Stamp for Terms.

ADDRESS,

THE NATIONAL EXCHANGE, Orville, Ohio.

BOOK CHAT!

Brentano's, Publishers, 5 Union Square, N. Y.

Book Chat contains monthly a complete index to the periodical literature of the world. Indispensable to Botanists, Conchologists, Geologists and Scientists generally. \$1 a year; 10c. for a single copy.

—THE—

AMERICAN GEOLOGIST!

IS A MAGAZINE

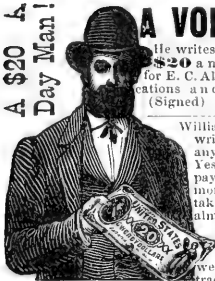
Devoted to Geology and Allied Sciences--the only one in America--published by a number of Professorial Geologists distributed over the central part of the United States. Three Dollars a Year.

Address THE AMERICAN GEOLOGIST,
Minneapolis, Minn.

The Combination Microscope.—With Insect Holder, magnifying fifty diameters, or twenty-five hundred times, is truly a wonderful optical discovery. It can be used as a Florescope for examining Flowers, a well as Insects and Water. It is simple, durable powerful, and cheap. Every boy and girl wants one Price by mail, \$1.00. Agents wanted.

Address, H. A. MUMAW, M. D., ORVILLE, OHIO.

A \$20 A Day Man!



A VOICE from Ohio. Here is a portrait of Mr. Garrison, of Salem, Ohio. He writes: "Was at work on a farm for \$20 a month; I now have an agency for E. C. Allen & Co's albums and publications and often make \$20 a day." (Signed) W. H. GARRISON.

William Kline, Harrisburg, Pa., writes: "I have never known anything to sell like your album. Yesterday I took orders enough to pay me over \$25." W. J. Elmore, Bangor, Me., writes: "I take an order for your album at almost every house I visit. My profit is often as much as \$20 for a single day's work." Others are doing quite as well; we have not space to give extracts from their letters. Every one who takes hold of this grand business piles up grand profits.

Shall we start YOU in this business, reader? Write to us and learn all about it for yourself. We are starting many; we will start you if you don't delay until another gets ahead of you in your part of the country. If you take hold you will be able to pick up gold fast. **Read—**On account of a forced manufacturer's sale **125,000 ten dollar Photograph Albums** are to be sold to the people for **\$2** each. Bound in Royal Crimson Silk Velvet Flush, Charming decorated insides. Handsomest albums in the world. Largest Size. Greatest bargains ever known. Agents wanted. Liberal terms. Big money for agents. Any one can become a successful agent. Sells itself on sight—little or no talking necessary. Wherever shown, every one wants to purchase. Agents take thousands of orders with rapidity never before known. Great profits await every worker. Agents are making fortunes. Ladies make as much as men. You, reader, can do as well as any one. Full information and terms **free**, to those who write for same, with particulars and terms for our Family Bibles, Books and Periodicals. After you know all, should you conclude to go no further, why no harm is done. Address E. C. ALLEN & CO., AUGUSTA, MAINE.

**DR. LORYEA'S
NEW HAMMAM**

FOR LADIES AND GENTLEMEN.

218 POST STREET,

Bet. Dupont and Stockton, SAN FRANCISCO.

The Finest Turkish, Russian, Electric, and Medicated Baths in the City.

Single Bath, \$1. Six Tickets, \$5.

Open for Gentlemen, Day and Night, Sundays included. For Ladies, from 8 A. M. to 6 P. M.

—THE NAUTILUS—

FOR CONCHOLOGISTS.

(Formerly "The Conchologists' Exchange.")

IMPROVED! ENLARGED! ILLUSTRATED!

Issued monthly. Subscription \$1.00 per annum

H. A. PILSBEY, Editor,

Address W. D. AVERELL, Manager.
Mt. Airy, Philadelphia Pa.

BIRDS, SKINS AND EGGS.

NEW PRICE LIST OF FRESH SOUTHERN CALIFORNIA Bird Skins sent for stamp. Charles H. Marsh, Dulzura, Cal

Our A, B, C's—Accuracy, Brevity, Completeness.

WEST AMERICAN SCIENTIST

"Decidedly the best of its class."

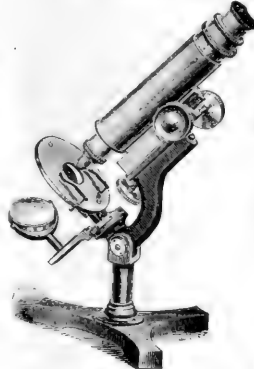
An illustrated monthly magazine of popular science—the only one in the West.

\$1.00 year; 10 cents a copy.

For shells, fossils, plants, bulbs, ferns, cacti, seeds, etc., address the editor, Chas. Russell Orcutt, San Diego, California.

**The Acme No. 3 Microscope,
FOR FINEST WORK:**

With 3.5 inch and 1.5 inch objectives, 2 eye-pieces power 60 to 700), glass slides and covers, in case. \$ 83.00
With same outfit, but with addition of the 1-15 oil immer-ion objective and substage condenser (power 50 to 1600) 150.00



**The Acme
No. 4
Microscopes,**

As illustrated, a thorough instrument for professional or educational use:

With 1 in. & 1.5 in. objectives, two eye-pieces (power 40 to 600), glass slides and covers in case. \$55.00

The Acme No. 5 Microscope,

An instrument of simple but thorough construction, with good lenses, and at a minimum cost:

With 1 inch and 1.5 inch objectives, 1 eye-piece (power 40 to 360), in case \$28.00

Send for complete catalogue of Microscopes, sample copy of the *Microscopical Bulletin*, and clearance-sale list.

In the Acme Microscopes, we especially pride ourselves on the accurate fitting and smooth working of the focal adjustments, which are vital points in a microscope. Our rack and pinion is unexcelled for perfect action.

JAMES W. QUEEN & CO.,
Manufacturing Opticians,

924 Chestnut St., Philadelphia, Pa.

DO YOU READ

THE COSMOPOLITAN,

That Bright, Sparkling Young Magazine.

The Cheapest Illustrated Monthly in the World.

25 Cents a Number. \$2.40 per Year.

THE COSMOPOLITAN is literally what the press universally calls it, "The Best and Cheapest Illustrated Magazine" in the World.

Subscribe—AN UNUSUAL OPPORTUNITY—Subscribe

The *Cosmopolitan*, per year. \$2 40
THE WEST AMERICAN SCIENTIST, per year. 1 00

The price of the two publications. \$3 40
We will furnish both for only. \$2 75

The *Cosmopolitan* furnishes, for the first time in magazine literature, a splendidly illustrated Periodical, at a Price hitherto deemed impossible.

TRY IT FOR A YEAR.


Do you want a first-class Magazine, giving annually 1300 pages by the ablest writers and cleverest artists—as readable a Magazine as money can make—a Magazine that makes a speciality of live subjects?

Send \$2.75 to Samuel Carson & Co., 208 Post St., San Francisco, and secure both "The *Cosmopolitan*" and "The *West American Scientist*."

Horstford's **ACID PHOSPHATE**

Prepared according to the directions of PROF. E. N. HORSFORD,
ESPECIALLY RECOMMENDED FOR

Dyspepsia, Nervousness, Exhaustion, Headache, Tired Brain,
And all Diseases arising from Indigestion and
Nervous Exhaustion.

 This is not a compound "patent medicine," but a preparation of the phosphates and phosphoric acid in the form required by the system.

It aids digestion without injury, and is a beneficial food and tonic for the brain and nerves.

It makes a delicious drink with water and sugar only, and agrees with such stimulants as are necessary to take.

DR. E. W. HILL, Glens Falls, N. Y., says: "An excellent remedy for a tonic Dyspepsia, nervous and general debility, or any low state of the system."


DR. D. A. STEWART, Winona, Minn., says: "Entire satisfaction in cases of perverted digestion, loss of nerve-power, mal-nutrition and kindred ailments."

DR. G. H. LEACH, Cairo, Ill., says: "Of great power in dyspepsia and nervous prostration."

 Descriptive Pamphlet Free.

Rumford Chemical Works Providence, R. I.

Beware of Substitutes and Imitations

 Be sure the word "HORSFORD'S" is printed on the label.—All others are spurious.—Never sold in bulk.

JOSEPH GILLOTT'S
Steel Pens

FOR ARTISTIC USE in fine drawing,
 Nos. 659 (Crowquill), 290 and 291.
 FOR FINE WRITING,
 Nos. 303 and Ladies', 170.
 FOR BROAD WRITING,
 Nos. 294, 389 and Stub Point, 849.
 FOR GENERAL WRITING,
 Nos. 332, 404, 390 and 604.

Joseph Gillott & Sons, 91 John St., N. Y.
 HENRY HOE, SOLE AGENT,
 Sold by ALL DEALERS throughout the World.
 Gold Medal Paris Exposition, 1878.

A. WENTSCHER,
 GENERAL COMMISSION
 FORWARDING AND SHIPPING.
 San Diego, Cal.

ARE YOU FOND OF USING TOOLS OR
 Tinkering? If so send One Dollar for THE
 UNIVERSAL TINKER and AMATEUR'S ASSISTANT.
 Tells Amateurs about turning and lathe work,
 Painting, Staining, Book Binding, French Polishing,
 Wood Finishing, Fretwork, Amateur Printing, the
 Magic Lantern, etc. Single copies 10 cts. Address
 HODGSON & BARWOOD, 294 Broadway, New
 York, N. Y.

If you will **Cut This Out!** and mail
 to us with only **ten cents**, (silver or stamps)
 we will send you for six months THE
YOUNG IDEA, the brightest and best juvenile
 magazine published. It is handsomely
 illustrated and contains the most delightful
 of stories. We make this offer to introduce,
 only, **GRANT C. WHITNEY, Pub.,**
Belvidere, Ill.

COLLECTORS

Who wish to obtain first-class European
 or African Natural History Specimens
 will oblige by sending class of desiderata
 to
DR. REED, Jr.,
 Ryhope, Sunderland, England.

FREE **FREE**

\$67 Solid Gold Watch.
 Sold for \$100. until lately.
 Best \$65 watch in the world.
 Perfect timekeeper. Warranted.
 Heavy Solid Gold Hunting Cases. Both ladies' and gents' sizes, with works and cases of equal value.
One Person in each locality can secure one free, together with our large and valuable line of **Household Samples.** These samples, as well as the watch, we send **Free**, and after you have kept them in your home for 2 months and shown them to those who may have called, they become your own property. Those who write at once can be sure of receiving the **Watch and Samples.** We pay all express, freight, etc. Address **Stinson & Co., Box 812, Portland, Maine.**



Consolidated National Bank.

CAPITAL PAID IN, - \$250,000.
SURPLUS FUND, - - 50,000.
Undivided Profits - - 75,961

BRYANT HOWARD, - - - - - President.
 J. H. BARBOUR, - - - - - Vice-President.
 JOHN GINTY, - - - - - Cashier.
 W. R. RUGE S, - - - - - Assistant Cashier.

— DIRECTORS. —
 Hiram Mabury, O. S. Witherby, John Ginty,
 E. W. Morse, James McCoy,
 J. H. Parbour, Bryant Howard.

Exchange on all the Principal Cities of America and Europe bought and sold.

The Savings Bank.
 OF SAN DIEGO COUNTY.

In the Consolidated Bank Building, corner of Hand
 fifth streets.

CAPITAL, - - - - - \$100,000.

: OFFICERS: :
 E. W. Morse, - - - - - President
 J. H. Barbour, - - - - - Vice-President
 John Ginty, - - - - - Secretary and Treasurer

: DIRECTORS: :
 O. S. Witherby, H. Mabury, E. W. Morse
 James McCoy, Bryant Howard.

Interest Allowed on Deposits. Money
 Loaned on Real Estate.

ORCHIDS, CYCADS,
Bulbs, Seeds and Roots.

Dendrobium macartheum; D. aureum; D. crumatum;
 D. macrotachyum; Vanda spathulata, etc., etc.;
 each cluster, 50 cents—by mail, 75 cents. Cycas
 revoluta and Cycas circinalis stems of all sizes from
 \$5.00 to 50 cents. Lilies—Pancartium, Gloriosa
 methonica, each, 50 cents, by mail. Price list on application.

NATURAL HISTORY.
 Bird skins of over 40 species peculiar to Ceylon,
 mounted or unmounted. Curiousities, bird's eggs,
 shells, bones, etc., etc. An assorted collection of 24
 species of bird skins by mail for \$45. All orders
 should be sent to **C. R. ORCUTT, Editor**
The West American Scientist, San Diego, California,
 of whom nurserymen and florists can obtain
 circular on application. Coffee, Tea, Cocoa, Cinnamon,
 Peppers, Palms, etc., etc. Fresh seed always
 in stock. Tree Ferns and Lycopods.

J. P. ABRAHAM, Nurseryman & Florist
 Grand Pass, Colombo, Ceylon.

IT IS IMPORTANT

For collectors to know where they can purchase specimens the cheapest. We invite all to send for our illustrated price lists, etc.

STEARNS' CURIO SHOP,
 Headquarters for Low Prices,
 ELKADOR, IOWA.

NEW YORK
THIRTIETH & N. 4TH ST.

Co-operation Reduces Cost
A Watch for \$38

Fully EQUAL for Accuracy, Durability, Appearance and Service, to any \$75.00 Watch.

PHILA.
\$10 OUR 14-Karat Gold Filled CHAIN is guaranteed to wear 20 Years, and is 33 1/2% 14-Karat Solid Gold

Look for the stamps
—K.W.C. Co. 14 K.F.L.O.—
and buy the BEST.

Philadelphia's building associations have done much toward building it up and making it the city of homes. This same system of co-operation carefully & economically managed, has built up The Keystone Watch Club Co. until they are now selling more Watches to consumers than all others combined. They handle only the

Keystone Dust-proof Watch
which is deservedly regarded as the crown and climax of Pennsylvania's manufactures. This Watch contains every essential to an accurate time-keeper, and many important improvements patented by the Company. They are Dust and Damp Proof, a quality possessed by no other movement in the world. Jeweled with genuine rubies. Patent Stem Wind & Set, strongest and simplest. Sold through authorized agents at \$38.00. Either all cash down or \$1.00 per week. An Ajax Watch Insulator given free with each Watch.

Keystone Watch Club Co
Main Office in Company's Own Building, 904 Walnut St. PHILADELPHIA, PA. Agents Wanted

AJAX Watch Insulator, \$2.00
A perfect protection against magnetism. Fit any watch. Sent by mail on receipt of price. We refer to any Commercial Agency.

DESIGNER: BALTIMORE, MD.
WASHINGTON, D.C.
PHILA.
CHICAGO
ST. LOUIS
BALTIMORE
ST. PAUL
DETROIT

James T. Whittle. D. F. Jones

JONES & WHITTLE
HOUSE AND SIGN PAINTING,
Paper Hanging and Decorating,
Kalsomining and Oil Finishing
Graining and Marbling a specialty.
821 Seventh St., San Diego, Cal.

The California Voice.

A weekly 28 column Journal, devoted to the cause of Prohibition and Political and Social Reform.

Takes the clean and right side of all the labor and other questions that concern the public welfare.

\$100 A YEAR.

Address, **CALIFORNIA VOICE,**
328 Pacific Street, San Francisco, Cal.

ALL FOR 25 CENTS.

A fine Indian Arrow-head, Piece of Pottery, Starfish, Sea-urchin, Shark's Egg, 3 minerals, Chinese Coins, 14-page price-list of curiosities, etc., copy of COMMON SENSE, a 16-page magazine for collectors, 35c per year. F. A. THOMAS, Publisher, Mexico, New York.

ROYAL PALM NURSERIES

The finest and most extensive collection of Tropical and Semi-Tropical Plants in America. Many adapted to Southern California. More than 20 varieties of bananas. 150,000 one year old palms. Fruit, ornamental and economical plants from Australia, Japan, Hong-Kong, India, South Africa, South America and all parts of the tropical world. New and valuable descriptive catalogue of 100 pages, mailed to any address, upon receipt of 10 cts. Address,

REASONER BROS.,
Manatee, Florida.

Geological and Archæological Specimens

—AND—

Scientific Books.

—O—

Corals from the falls of the Ohio a specialty. Can furnish from a single example to one hundred thousand. Correspondence with advanced collectors and professors of colleges solicited. Best of reference given and satisfaction guaranteed or money refunded.

G. K. GREENE,

170 East Third St., New Albany, Ind.

PORTRAITS.

YOUR HOME MADE BEAUTIFUL

By joining them with the
FACES OF LOVED ONES.

The New York Artists' Union is the only organization doing genuine Crayon, Pastels and Oil Portraits of friends living or dead, from photographs, tin-types or any correct likeness. They can fill, and therefore solicit, orders from all parts of the United States. Conscientious work on the smallest as well as the largest contracts is their rule. Satisfaction guaranteed or no pay required. All work done by Graduated Artists. Now is the time to send your order. Send us our illustrated circular of prices, etc., to

The New York Artists' Union,
Mention this paper] 10 East 14th St., New York.

Shells, Minerals and Fossils

—ALSO—

SEEDS AND PLANTS.

C. R. ORCUTT,

Editor "West American Scientist."

SAN DIEGO, CALIF.



Pawnee Hero Stories and Folk-Tales,

With the Notes of the Origin, Customs and Character of the Pawnee People. By GEORGE BIRD GRINNELL.

CLOTH, 417 PAGES. ILLUSTRATED. PRICE, \$2.00.

These tales are as unique as the "Uncle Remus" stories and quite as original, ingenious, characteristic and full of human nature. The race here pictures itself with unconscious fidelity. No such absolutely faithful portrayal of the Indians has ever before been given. For this quality, apart from the popular interest of the stories, the book is destined to make a more profound and lasting impression than even that created by "Ramona."

LOG CABINS. How to Build and Furnish them.

By WILLIAM S. WICKS.

The book is thoroughly practical. Every step in the process of construction is explained. The author is an architect who has himself built log cabins, and very handsome ones, too, as shown in the plates. The designs are numerous and varied. Plans are given for cabins, large and small, with details of exterior and interior finish; and there are also some very useful directions for constructing temporary shelters—the Indian ramp, brush house and bark camp. The furnishing consists of tables, chairs, bedsteads and other articles, all made of the material at hand, and all in keeping with the style of the house. The illustrations are numerous and helpful. Price \$1.50.

Canoe and Boat Building.

A Complete Manual for Amateurs. Containing plain and comprehensive directions for the construction of Canoes, Rowing and Sailing Boats and Hunting Craft.

By W. P. STEPHENS, Canoeing Editor of *Forest and Stream*.

Cloth. Fourth and enlarged edition, 264 pages, numerous illustrations and fifty plates in envelope. Price \$2.00.

611 Hints and Points for Sportsmen.

COMPILED BY SENECA. PRICE \$1.50.

Of this book the *New York Herald* says: "If there are any sportsmen so wise that they cannot learn something from this little book, their modesty prevents their fellow men knowing it. The compiler seems to have thought of everything from managing fine guns to snelling hooks, tying knots and skinning eels. He has chapters on rifles and shotguns, hunting and trapping, fishing, camping, dogs, boating, yachting, camp making, cooking, surgery and medicine, and one headed "miscellaneous" seems to include everything which the others have omitted."

ANY OF THE ABOVE SENT POST PAID BY THE PUBLISHERS.

“My Soul, I mean that bit of *Phosphorus* that takes its place,”

JAS. RUSSELL LOWELL.

The conception of Brown Sequards' "*Elixir of Life*" was borrowed from Crosby's Vitalized Phosphites, which for over twenty years has been made from the *Brain* of the Ox.

Physicians have accepted the fact that this vital nutrient from the Brain of animals is the true restorer of vigor to the human system.

The "Elixir" from the glands of animals was intended only to increase virility; whereas **Vitalized Phosphites** restores vitality and renovates all the weakened functions of both brain and body. It is the true Elixir of Youth.

❧ VITALIZED PHOSPHITES ❧

is carefully prepared from the nerve giving principles of the Ox brain, and the embryo of the wheat and oat; it for more than twenty years has been the standard remedy with physicians who treat mental and nervous disorders.

It has been of great benefit of those suffering from **Nervous Exhaustion, Brain Fatigue, Loss of Memory, Nervous Dyspepsia**, and all mental and bodily weaknesses.

It is a vital nutrient Phosphite, not an inert acid phosphate.

It aids in the bodily, and wonderfully in the mental growth of children.

“Every one speaks well of VITALIZED Phosphites”

—*Christian at Work.*

56 West 25th Street, New York.

For Sale by Druggists.

Or sent by mail, \$1



American Scientist

V. 6 (whole no. 49)

Nov. 1889



3 9088 01425 0823