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PROCEEDINGS
OF THE
CALIFORNIA ACADEMY OF NATURAL SCIENCES.

VOL. 1. SAN FRANCISCO. 1854.

SEPT. 4th, 1854.

Dr. A. KELLOGG in the chair:

Mr. W. J. Steene, by the Ed. of the *Pacific*, presented a curious specimen of cabbage, grown on the Sacramento bottoms, which, instead of a head formed of leaves in the usual manner, has a globular head formed by an enlargement of the top of the main stock, five inches in diameter, and weighing some two pounds or more, perfectly sound, with a thin rind, and of the consistency of the inner portion of a common cabbage stump. It has the shape and appearance of a round, field turnip, except that it has perfectly formed cabbage leaves on its sides and top, occurring at intervals, as on the ordinary cabbage stock.

Dr. Kellogg exhibited a drawing and specimens of a plant from the sea shore and salt marshes of the Bay of San Francisco, the *Frankenia grandifolia*. This plant is often coated with crystals of salt, which has given it the common name of Salt-weed. It is a low herb very much branched, the limbs opposite, with dense clusters of somewhat wedged-shaped leaves folded back or rolled up; within these, are unbosomed small pink flowers—stamens usually 6, pistils 3.

Dr. Ayres presented descriptions of the following species of fish, believed to be new:

Labrus pulcher, Ayres. This species, one of the finest of our fishes, makes its appearance in the market about the first of August, and continues in season till nearly the close of February. They are sold by the fishermen under the name of Blackfish, and are also not unfrequently called Sheepshead.—Specimens are often seen weighing six to eight pounds. My description is taken from one sixteen and a half inches in length, weighing two pounds and a half.

Form very similar to that of *Tautoga Americana*. Greatest depth one-fourth the total length. Length of the head, five inches and one-fourth. Forehead protuberant, especially in large individuals, from an accumulation of fat immediately above the eyes.

Lips thick, loose and fleshy.

Teeth on the intermaxillaries and in the lower jaw alike—consisting externally of a single row, stout and conicle, of which the two anterior pairs are much larger than the others and project forward; within this external row is a band of blunt, rounded teeth, not arranged in regular rows, scarcely projecting above the membranes. No teeth on the palatine bones or the vomer. Teeth on the pharyngeals, merely flat, tesselated tubercles; on the inferior pharyngeal, a few of the anterior ones are distinct, conicle.

Edges of the *operculum* and *preoperculum* destitute of spines or serrations. *Scales* deeply imbedded, not conspicious, elongated subquadrangular, covering the body, the operculum, and the sub-operculum; extending but slightly on the verticle fins.

The rays of all the fins are enveloped in a thickened, partially opaque membrane.

The spinous portion of the dorsal fin is four inches and four-tenths in length; the spines are stout and strong, and one is continued by a fleshy prolongation one to two-fifths of an inch in extent; thus making the height of this portion

Soc. Roy. Lond.

of the fin about an inch and one fourth. The membranous portion is two inches and one-fourth in length, rounded, two inches and one-fourth in height of the central rays.

The *anal* fin, coterminal with the dorsal, is two and three-fourths inches in length, two and a half inches in height.

The *pectorals* are nine-tenths of an inch in length, two inches and three fourths in height.

The *ventrals* a little posterior to the pectorals are four-tenths of an inch in length, two inches and one-fourth in height.

The *caudal*, slightly concave, is two inches and a-half in height of the external rays, four inches in breadth when expanded.

D. 12-10; A. 3-12. P. 18 V. 1-5 C. 14.

In *color*, this fish is of a dark blackish brown, lighter beneath, with the chin nearly white. In many specimens, a broad, vertical red band encircles the body from the angle of the operculum half way to the caudal fin; this character, however, is not constant.

Labrus pulcher is not taken in our immediate vicinity. Those sold in our markets are brought chiefly from near San Diego, and I am not able to learn that the species is found north of Point Conception. Indeed there is reason to believe that that cape will be shown by future observation, to indicate a sort of barrier in our maritime fauna, separating the north from the south.

This species is somewhat closely allied to *Tautoga Americana* (of which it may perhaps be deemed the Pacific representative) though the arrangement of the teeth, and the scaly surface of the operculum and preoperculum will not allow it to be included in the same genus. It is distinguished from *Lachnolaimus* by the structure of the pharyngeal teeth, and from *Cossyphus* by the scaling of the fins, and the smoothness of the preoperculum.

Hemitripterus marmoratus.—Ayres. This is altogether the largest and finest species of *Sculpin* found in our markets. They are not unfrequently taken of six to eight pounds' weight; the largest I have seen was twenty inches in length. My description is drawn from one of only six and one-fourth inches.

Body rather strongly compressed; *head* somewhat depressed, its greatest height being scarcely equal to its width.

The *spines* of the head are simply the nasal, and those of the preopercnlum. Each nasal bone is prolonged into a tolerable acute spine, directed upward and backward, about one-tenth of an inch in length. At the angle of the opercnlum is a firm short spine, directed backward and slightly upward; below it is another, not quite so large; and below that sometimes another still smaller. Except these, the head is smooth; the flat point of the operculum is not spinous.

The *cirrhi* of the head are a single pair; one about one-fifth of an inch in height, fimbriated, at tne posterior superior border of each orbit. The whole head has much less of a spinous and grotesque appearance than that of its eastern congener, *H. Acadianus*

Scales none. *Skin* smooth. *Lateral line* uninterrupted, concave upward. *Teeth* fine and crowdod in the lower jaw, on the intermaxillaries, the palatine bones, and the vomer.

The *first dorsal* is one inch and a-half in length, seven-tenths of an inch in its greatest height. From the first ray there is a gradual shortening to the fourth; the fifth is then nearly as high as the first, and thence the fin decreases to its termination–thus showing a partial division, though this division is less than in the *Acadianus*. The *second dorsal* may almost be deemed a continuation of the first. It is two inches in length, eight-tenths of an inch in height, becoming lower posteriorly. The first dorsal arises half an inch anterior to the angle of operculum.

The *anal* terminates half an inch from the caudal, its last ray being on the same plane with the last of the second dorsal. It is one inch and three-tenths in length; six-tenths of an inch in greatest height, becoming lower at each end.

The *pectorals*, of the cottoid form, are three-fourths of an inch in length; seven-tenths in height.

The *ventrals*, half an inch posterior to the pectorals, are nine-tenths of an inch in height.

The *caudal*, nearly square, is an inch in height.

In *color*, this fish commonly shows a mottling of light and dark greenish olive, with darker (often blackish) blotches. The fins partake of the hue of the part where they are situated; all exhibit either bands or blotches. The *rays* of the first dorsal are feebly spinous; those of the second dorsal, anal, and ventrals are articulated, simple; a few of the upper rays of the pectorals show a slight tendency to division: those of the caudal are branched.

D, 11-17, A. 13; P.14, V. 6. C. 10.

This species appears to represent on this coast *H.Acadianus* of the rocky shores of our Atlantic States. It is, however, entirely distinct from it, the structure of the head alone being enough to separate it at once; it is in all respects a finer looking fish.

SEPTEMBER, 11. 1854.

Dr. Kellogg in the chair.

The Committee on Botanical Garden reported progress and was continued.

Mr L. W. Sloat exhibited a proof-sheet of the proceedings of the last meeting, (taken from the columns of the *Pacific*) as a specimen of the manner in which the proceedings of the Academy

may be published in a permanent form, and at a trifling expense.

On motion of Dr. W. P. Gibbons, it was

Resolved, That the Publishing Committee be directed to publish 250 copies of the Proceedings of the Academy, (in the form exhibited by Mr. S.) and that the subscription of the same be three dollars a year.

Dr. Kellogg presented a drawing of a plant given him by Mr. Wallace of Los Angeles, called by the Mexicans, *Chia*. It belongs to the Labiated family, but the genus is unknown.

The seeds, that are about the size of flax seeds, are said to be very mucilaginous, and are used medicinally in fevers and dysenteries, and other irratations of the bowels. Dr. K. thought it deserving the attention of the Academy as a remedial agent.

Dr. H. Gibbons exhibited a head of bearded wheat, said to grow wild in the mountains. It measured about seven inches in length.—The grains are quite large and nearly half an inch long. Some doubt was expressed whether it belonged to the genus Triticum, or to a new genus.

Dr. Wm. O. Ayres presented the following communication:

In our markets we find fishes constantly offered for sale, in great numbers, under the name of *Rock Fish* and *Rock Cod*. They bear always a high price, and constitute one important item in the sum total of our fisheries, and of course in the resources of the State. They are taken in rocky localities along the coast and in the Bay, and the title Rock Fish applies to them very well. One more inappropriate, on the contrary, than that of Rock Cod, could scarcely have been selected—inasmuch as they are widely removed from the family in which the Codfishes are classed. Five distinct species of them we have already detected here, all belonging to the *Sebastes*, and four of them believed to be new. Of this genus we were not previously aware of the existence of more than one species, (*S. Norvegicus*, Cuv.) in the United States,—it is the *Hemdurgan* of the Massachusetts Bay fisermen. Three of our species are very closely allied; a description is accordingly given of the one that appears most nearly typical (*S. nebulosus*) and of the other two (*S. ruber* and *S. parvus*) the points of specific distinction from *nebulosus* alone are needed.

Sebastes nebulosus.—Ayres My description is drawn from a specimen thirteen inches in length, weighing two pounds and a half, which may be deemed about their average size.

Form compressed; head large, four inches in length; greatest depth an inch anterior to the opercular angle, being there equal to the length of the head; body tapering thence to the tail; width of the head, two inches and three-fourths, width decreasing posteriorly; crests of the orbits elevated.

Scales covering the body, operculum, preoperculum; suboperculum, suborbitals and top of the head to the anterior border of the orbit.

Head spinous; a row of five spines forming a crest on each side of the head, viz: a nasal spine, one at the anterior superior border of the orbit, one on the summit of the orbit half an inch in length, one posterior to the orbit three-tenths of an inch in length, one posterior to this, and nearer the median line eight tenths of an inch in length; the last three are horizontal, and are rather strong ridges with a free spinous apex; the preoperculum is bordered with (commonly) five flat spines about two-tenths of an inch in height; the opercular bone ends in two flat, strong, free spines, the upper one being one-fourth of an inch in length; the membranous operculum projects about four-tenths of an inch beyond these; the suboperculum terminates posteriorly in a concealed spine; even the anterior suborbital shows on its inferior border an indication of spinous points; the bones of the humeral cincture exhibit three well marked spines.

Eyes an inch in longitudinal diameter—*Nostrils* immediately anterior to the eyes, the anterior orifice having a membranous elongation of its posterior border, two-tenths of an inch in height.

Teeth fine and crowded in the lower jaw, on the intermaxillaries, the vomer, the palatine bones, and superior and inferior pharyngeals; those on the superior pharyngeals, are in three patches on each side.

Lateral line nearly straight.

Dorsal fin arising a little anterior to the opercular angle; the spinous portion is four inches and a half in length, the spines stout and strong, increasing in length from the first which is only six-tenths of an inch, to the fourth which is two inches high, the height diminishing thence posteriorly; the membranous portion of the fin is two and a half inches in length, rounded an inch, inch and a half in height. The anterior portion of the spinous part of the fin presents a beautiful serrated appearance, from the fact that the membrane is attached to the anterior border of each spine at some distance from the summit.

The *anal* fin, terminating two inches from the caudal, is an inch and three-fourths in length, which is not quite equal to the height of the soft rays.

Pectorals rounded, two inches and a half in height, three-fourths of an inch in length, the inferior rays are thickened, undivided, free at their tips.

Ventrals a little posterior to the pectorals rounded, two and one-fourth inches in height.

Caudal slightly rounded, one inch and a half in height, three inches and a half when expanded.

Small scales extend far up on all the fins.

Branchial rays seven.

D. 13-13. A. 3-8 V. 1-5. P. 7-10. C. 11.

In *color* this fish is finely mottled with dusky yellow and dark brown; on the fins the latter hue predominates, and the lighter mottlings have rather a bluish aspect.

Sebastes paucispinis.—Ayres. *Length* five and a half inches; *depth* one inch and one-tenth; length of *head* one inch and seven-tenths. being a trfle less than one-third the total length. *Form* elongated, much compressed.

Scales very small, covering all parts of the fish except the fins, the throat, and the space anterior to the eyes.

Spines of the head, not largely developed. The preoperculum has about five, distinct, flat, sharp spines; the largest about a line in length The operculum has two, distinct but small; the membranous part projects slightly beyond them. The suborbital, on the anterior inferior border has three or four, quite small. The other parts of the head have none, except that a slender, inconspicuous ridge along the border of each parietal bone is free at its tip. A very small spine at the summit of the humeral cincture.

The *lower jaw* is longer than the upper and projects beyond it in such a manner that when the mouth is closed it prolongs the line of the dorsal aspect of the head. The line of closure of the mouth is very oblique upwards, the gape large, so that the point of the maxillary lies beyond the middle of the eye.

Teeth fine, crowded, and even, in the lower jaw on the intermaxillaries, the vomer, the palatine bones, and the pharyngeals; those of each superior pharyngeal are in three patches.

Lateral line following nearly the curve of the back.

The *first dorsal* fin arising above the opercular angle is an inch and a half in length; the rays increase in height to the fourth, which measures eleven-twentieths of an inch, as do the two succeeding, and thence the height decreases, the last ray seems to constitute rather a part of the second dorsal, it is higher than the one preceding.

Second dorsal fin an inch in length, half an inch in height; height diminishing posteriorly.

Anal about coterminal with the second dorsal, rounded, sixth-tenths of an inch in length; height equal to the length.

Pectorals rounded one-fourth of an inch in length, nine-tenths of an inch in height, destitute of any thickened membrane, the four lower rays simple.

Ventrals even with the pectorals, three-fourths of an inch in height.

Caudal somewhat concave, three-fourth of an inch in height of the external rays.

D. 13-13; A. 3-7; V. 1-6; P. 5; C. 12.

Color plain reddish brown above, lighter beneath.

On motion of Dr. Ayres, it was

Resolved, That the Recording Secretary be directed to publish the proceedings of each meeting of the Academy in the *Pacific*, as soon after the meeting as practicable.

Omitted in Proceedings of Sept. 4. — Col. Nevins presented to the Academy a receipt in full for the rent of his office and furniture, which have been used by the Academy from the 18th of April, 1853, to the last day of July, 1854, for its weekly meetings and for storing its Library and Specimens and for the stationery used for its minutes and other purposes, being a donation to the Academy worth at least three hundred dollars. Whereupon it was, on motion,

Resolved, That the thanks of the Academy be tendered to Mr. Nevins, for his liberal donation, above specified.

California Academy of Natural Sciences,
San Francisco, September 18th, 1854.

Col. L. Ransom in the Chair.

Selim Woodworth. Esq., presented as donations to the Cabinet, specimens of ferruginous earth, resembling what is commercially termed "Hartford Clay," and used by the frame gilders here for the same purpose.—Also a bottle of the earth ground in oil for painting purposes, for which it seems extremely well adapted. It dries quickly with a good gloss, and in a short time becomes hard like enamel. It is found in *Mulate Island* or *Red Rock*, in San Francisco Bay, in large quantities, and can be delivered in the city at a very low price.

The crude earth was referred to Dr. W. P. Gibbons for examination and analysis, and the preparation in oil to Mr. H. G. Bloomer.

Mr. Walter Van Erven Dorens presented the skull of an Indian from the interior of the State, exhibiting the common form of such skulls as altered by compression.

Major J. R. Snyder gave specimens of Lignite from Red Bluff, on the Sacramento river.

Col. Ransom furnished specimens of asbestos in serpentine from Fort Point.

Mr. Loomis presented specimens of crystalline lime-stone from Point Quentin on San Francisco Bay.

Mr. De Groodt gave a scorpion from the region of the southern mines.

Dr. Wm. O. Ayres presented the following communication :

At the last meeting of the Academy it was stated thet we have in our market five species of the genus *Sebastes*; two of them were described, *nebulosus* and *paucispinis*; two others were mentioned, *ruber* and *parvus*, as very closely resembling *nebulosus*. Subsequent examination has induced me to doubt the necessity of separating *parvus*, from *ruber* and rather than introduce a name which would presently become only a synonym, I will indicate the type as a mere variety of *ruber*.

Sebastes ruber.—Ayres. This species is very closely allied to *S. nebulosus* (Proc. Cal. Acad. Nat. Sci page 5.) It may be thus distinguished,—*ruber* has the crests of the orbits scarcely elevated above the surface of the head; in *nebulosus* they are very prominent, forming quite a deep furrow between them—*ruber* has a pair of small, flat spines on the top of the head not found in *nebulosus*; they are before and a little within the last pair mentioned (loc. cit.)—*ruber* has all the spines less strongly developed than *nebulosus*—in *ruber* the thickness and bulk of the head, as compared with the entire fish, are decidedly less than in *nebulosus*—*ruber* has the anterior inferior border of the operculum serrated; in *nebulosus* it is plain—*ruber* is of a bright red color, nearly uniform, except that it grows lighter beneath; *nebulosus* is clouded as described—*ruber* grows to a greater size, often weighing ten to twelve pounds; *nebulosus* seldom exceeds four pounds.

Sebastes ruber, var. *parvus*.—Ayres. This is distinguished from the typical form, by having the head more depressed, with the top more flattened, the spines of the head more slender, the lower jaw longer, the body more compressed, the color dark brown, and by its small size—being seldom found to exceed half a pound in weight. I had examined multitudes of specimens, and found no evidence of any blending of the two forms, but one or two at length presented a partial union of the characters to such a degree that we will not separate them as yet.

Sebastes variabilis, Cur. Under this name I place a species of *Rock Fish*, which is not uncommon in the markets, of a plain blackish brown color, lighter beneath, with no spines on the top of the head, except occasionally a slight indication of a nasal spine, with the edge of the suborbitals nearly smooth, and having a weight of one to two pounds. Cuvier's specimens were derived from the Aleutian Islands, and the only transcript of his description in my possession is so brief, as to render it a little uncertain whether our fish is identical with his; it may yet prove distinct. The fin-ray formula agrees closely.

Of the *Rock Fish* which have been described in this communication and the one preceding, *S. ruber* is the most important commercially; it is consumed in large quantities daily, and is like the others, an excellent fish. *S. nebulosus* is less numerous, though still quite common. *S. variabilis* cannot be considered common, and of *S. paucispinis* I have seen but a few specimens.

Centrarchus maculosus.—Ayres. This species is very common in our markets, where it is sold under the name of *Perch*, as are also several of the viviparous fishes. It is brought from the waters of the Sacramento and San Joaquin, and is one of our most esteemed fishes. The specimen from which my description is taken is of about the average size; it is eight and three-quarters inches in length.

Form oval, compressed; greatest height two inches and nine-tenths, just behind the pectorals. Back arched; forehead slightly concave; length of the head, equal to the height of the body.

Scales large and firm, covering all parts except the fins, the top of the head, the throat, and the space anterior to the eyes.

The posterior angle of the operculum is rounded and furrowed, presenting the appearance somewhat of a large scale; the edges of the peroperculum, interoperculum, suboperculum, scapular bone, and anterior suborbital are also finely denticulated.

Lateral line nearly concurrent with the back; number of scales in its course about forty-two.

Teeth fine, even, and crowded, in the lower jaw, on the intermaxillaries, the vomer, palatine bones and pharyngeals.

The *dorsal* fin arises a very little posterior to the opercular angle. The spinous portion is two inches and one-fourth in length, arched, highest at about the eighth ray (three-fourths of an inch,) the first rays very short; the last spinous ray seems to constitute rather a part of the succeeding soft portion of the fin, and is higher than the rays preceding it. The soft part of the dorsal is rounded, one inch and one-eighth in both length and height.

The *anal* is coterminal with the dorsal. The spinous portion is eight-tenths of an inch in length, the spines increasing in length to the last, which is nine-tenths of an inch high. The soft part of the fin is an inch in length, the height being a little greater. The spines of both anal and dorsal are stout and strong, those of the anal especially.

Pectorals rounded, an inch and a half in height.

Ventrals fan-shaped, an inch and one-tenth in height.

Caudal slightly concave, an inch and three-fourths high.

D. 13-11; A. 6-10; V. 1-5; P. 15; C. 16.

Color, when dead, dark grayish brown on the upper parts, becoming lighter beneath; with large, irregular, dark blotches on the sides, extending both above and below the lateral line. The fins resemble in color the part of the body on which they are situated; the living fish I have not had an opportunity of seeing.

The only *Centrarchus* with which this need be compared is the *aeneus*, L. S. The resemblance here is indeed close, and *maculosus* may, without doubt, be considered the representative in our Pacific region of *aeneus* in the eastern. The Californian fish may be distinguished by the more arched dorsal outline (that of the forehead being on the contrary concave,) by the greater height of the spinous portion of the dorsal fin as compared with the soft rays of the same fin, by the difference in position of the origin of the anal fin, by the form of the opercular angle and by the colors.

In one or two points this species fails to comply with the definitions of the genus *Centrarchus* as hitherto given. And we may here remark that our researches have proceeded far enough to show that a complete investigation of Californian Ichthyology will probably result in numerous modifications of established genera, extending, perhaps, the limits of some, while those of others will be narrowed.

Committee on Botanical Garden, reported unfavorably to the acceptance of the offer of Messrs. Chipman & Augenbaugh of four acres of land in Alameda for Botanical Garden.

After some remarks adverse to the project by Dr. W. P. Gibbons, Dr. Ayres, Mr. Sloat and others, it was unanimously

Resolved, That on account of the onerous conditions exacted by Messrs. C. & A., their offer be respectfully declined.

California Academy of Natural Sciences,
San Francisco, September 25th, 1854.

Dr. H. Gibbons in the Chair.

Mr. H. G. Bloomer reported progress on the examination of the earth and paint presented by Mr. S. Woodworth at the last meeting. He exhibited specimens of paints made by himself, laid on wood and glass. Also

specimens of Bridgewater earth, giving preference to the former.

Dr. H. P. Sartwell, corresponding member, transmitted a series of meteorological observations, made by him at Penn Yan, N. Y., during the months of March and June, 1854.

Dr. H. Gibbons presented a series of observations on the temperature of the ocean between San Francisco and San Juan Central America. made by Dr. Fitch, Surgeon of the steamer *Pacific*, on her trip to and from San Juan in the month of July, 1854.

Dr. G. accompanied them with some remarks on the climate &c.,of the coast between the two places.

Dr. W. P. Gibbons exhibited the skull of a rat caught in this city, showing a curious abnormal formation of the upper and lower incisors.

David Chambers, Esq., presented as donations to the cabinet specimens of silver and copper ore from the Andicollo mines,40 miles interior from Coquimbo, Chili.

California Academy of Natural Sciences,
San Francisco, October 2d, 1854.

Dr. H. Gibbons in the chair.

Adelestan Jardin was elected Corresponding member.

Dr. W. P. Gibbons exhibited a young rat, of very singular abnormal formation, having two pair of hind legs. The surplus pair are perfectly formed, and placed on a fleshy substance projecting from the posterior extremity of the body ; the feet are turned in a direction opposite to that of the normal feet.

Mr. Joel Clayton presented as donations to the Cabinet, specimens of coal from Puget's Sound,—also specimens of sand stone composing the roof of the coal formation.

Dr. Kellogg presented a drawing of a *Commelyna*, "pretty widow," or "widow's tear," supposed to be a new species, from Salada Creek, Texas.

Dr. W. O. Ayres exhibited two new fishes, *Morrhua Californica* and *Grystes lineatus*, with the following descriptions.

Morrhua Californica—Ayres. The *Tomcod*, as this species is called by our fishermen, is, without doubt, closely allied to *Morrhua pruinosa*, Mitch. the Tomcod and Frostfish of our Atlantic coast, and may be deemed its representative here. It differs from it, however, in form, in the relative proportions of the head, in the position and size of the fins, &c. A description touching the points in which it is distinguished from *pruinosa* is therefore, all that is needed.

The specimen employed is seven inches in length ; about their average size.

The length of the *head* is one-fourth of the total length ; in *pruinosa* it is only about one-sixth.

The protrusion of the abdomen is much less, as compared with the bulk of the body posterior to it, the vertical diameter at the origin of the third dorsal being two-thirds of the greatest depth, while in *pruinosa* it is only one-half.

The *first dorsal* is one inch in height,three-fourths of an inch in length, acutely triangular, the first ray longest.

The *second dorsal*, separated from the first by an interval of one-fourth of an inch, is one inch in length, seven-tenths of an inch in height.

The *third dorsal*, distant half an inch from the second, is nine-tenths of an inch in length, three-fourths of an inch in height.

The *first anal*, originating opposite the termination of the first dorsal, is one inch and a half in length, which is just double the height.

The *second anal*, one-fourth of an inch from the first, equals the last dorsal in length, and is coterminal with it ; it is half an inch high.

The *pectorals* are more pointed than in *pruinosa*.

The *ventrals*, corresponding in situation,are nine-tenths of an inch in height, first and second rays free at tip, second longest.

Caudal nearly even.

The *lateral line*, arching somewhat above the pectoral, does not assume a straight course till nearly opposite the end of the second dorsal.

Color commonly plain greenish brown above, lighter on the sides, silvery beneath ; irides silvery.

D. 12-16-18 ; A. 23-20 ; P. 20 ; V. 6 ; C. 26, with about eleven short ones.

M. Californica is taken abundantly in the Bay of San Francisco.

Grystes lineatus — Ayres. *Form* elongated, compressed. *Length* twelve inches and one-fourth ; greatest *depth* a little more than one-fifth the total length ; length of the *head* equal to the greatest depth. Head somewhat

pointed, with the dorsal surface ascending, so that the greatest depth of the body is about opposite the origin of the pectoral fins; dorsal outline descending thence to the tail.

Scales not large, but firm and distinct, covering the body, head as far as the eyes, operculum and preoperculum. The scales also ascend some distance on the caudal fin and soft dorsal, less on the pectorals, and very little on the anal, spinous dorsal or ventrals. Each scale is toothed on its free portion, elongated, with the sides nearly parallel and its attached extremity truncate, and in its entire form and structure resembles much more nearly the scale of a Platessa than is common among fishes of this family. The scales are so imbricated that a very small part of each is exposed.

A remarkable character among the scales suggests the specific name employed. There are on each side five lines, each having the features of an ordinary *lateral line*; i. e., each scale along the line is grooved or perforated for the passage of a duct. The *first*, originating with its fellow of the opposite side about half an inch anterior to the first dorsal, runs close by the base of the dorsal fins, terminating abruptly at about the posterior third of the second dorsal. The *second*, about a third of an inch below the first, runs nearly parallel with it, the whole length of the body.—The third is in the common position of a lateral line, arising near the upper angle of the branchial aperture; it follows the curve of the back. The *fourth* arises below the base of the pectoral, passes above the base of the ventral, and terminates abruptly a little in advance of the base of the anal. The *fifth* arises, by a single line with its opposite fellow, near the thoat, passes back, undivided between the ventrals to a point about an inch posterior to those fins, divides and passes along the anal fin to the caudal.

No *spines* or serrations on the gill-covers, or any part of the head. A flat, fimbriated, fleshy process, one-fourth of an inch in height, on the posterior superior border of the orbit.

Nostrils a little anterior to the eye, tubular.

Jaws quite protractile, the pedicel of the intermaxillary being nearly three-fourths of an inch in length; the maxillary, when the jaws are closed, is received almost wholly under the arch of the anterior suborbitals.—*Lips* thick and fleshy.

Teeth small, but strong, even, rather blunt, crowded, in the lower jaw, and on the intermaxillaries, the band of them decreasing to a single row posteriorly. Similar teeth on the pharyngeals, the vomer, and a few on the anterior part of each palatine bone.

Eye half an inch in longitudinal diameter; distant twice its own diameter from the snout.

The *first dorsal*, arising a little anterior to the opercular angle, is two and one-fourth inches in length, one inch and a half in height, rising somewhat abruptly so that the fin is highest at about the third and fourth rays. A membrane is continued from its last ray to the first of the succeeding fin, so that the two fins might almost be counted as one. The rays are spinous but not rigid.

The *second dorsal*, continued from the first, is three and three-fourths inches in length, one inch and one-fourth in height, rounded; the rays are very little branched.

The *pectorals* are an inch in length, two inches and a half in height, rounded, all the rays free at their tips, the lower ones especially.

The *ventrals* are posterior to the pectorals, rounded, two inches in height.

The *anal* arises and terminates on the same plane with the second dorsal; it resembles that fin also in form, height, and division of the rays, but has the rays free at their tips.

The *caudal* is nearly even, an inch and a half in height; rays much branched.

D. 21. 1.25; A. 25; P. 19; V. 1.5; C. 16.

In *color* this species has commonly a dark grayish brown ground, more or less mottled; over this are scattered light blue specks and cloudings, which are most abundant on the cheeks. Numerous small circular spots, of a rich reddish brown, are found on the sides.—Abdomen lighter than the back and sides.—The pectorals are very beautifully marked with narrow light and dark stripes; the other fins correspond nearly in color with the parts on which they are situated, though all are in some degree clouded.

This is certainly one of the most beautiful fish brought to our markets. By some of the fishermen it is called *Sea Trout*, probably because of its elegant form and the spots on its sides; others do not distinguish it from the species of Sebastes, in company with which it is caught, and call it *Rock Fish*. It has, however, little resemblance to either. While its true position may be deemed somewhat doubtful, it is judged better for the present to arrange it with the genus *Grystes*, rather than to attempt a new generic division, as would otherwise be required.

G. lineatus is taken in the Bay of San Francisco, but is apparently not abundant. I have seen no specimens much larger than the one described.

October, 9th, 1854.

Col. L. Ransom in the chair.

Donations to the Cabinet. Mr. Ross gave a bottle of Mineral water from a spring three miles east of Oakland.

Mr. Loomis presented specimens of crystallized quartz from Mendocino.

Dr. Trask furnished specimens of Salt, crystallized from sea-water, from the Island of Carmen, Gulf of California.

Dr. Kellogg presented a drawing of a Malvaceous shrub, furnished him by Dr. Trask. It was originally discovered on the Island of Anacapa, and is now found growing luxuriantly in gardens near Santa Barbara. It is from 12 to 15 feet high, branching, and nearly 8 inches in diameter at the base. The flowers, which it bears in great profusion, are of a beautiful bright pink color, with the petals reflexed when the flower is fully developed. Dr. K. presented also a drawing of a very large species of *Viola* in fruit, from a specimen furnished by Dr Andrews, the flower of which has not yet been seen.

Lieut. Stone, U. S. N. gave a fresh specimen of a fish, *Chimæra Collıæi*, specimens of *Balanus*, of *Granite*, *Lignite*, *Silicified wood*, and 2 undetermined species of Insects from Puget's Sound.

Dr. W. O. Ayres exhibited a new species of fish, the *Clypeocottus robustus*, and gave the following description of it.

Clypeocottus robustus.—Ayres.—This species often attains a weight of five or six pounds, though my description is drawn from one only seven and one fourth inches long.

Head large, broad, depressed, body tapering posteriorly, becoming compressed near the caudal fin. Length of the head, to the opercular angle, a little more than one-third of the entire length; breadth two inches and one fourth. Eyes far forward, rendering the forehead very abrupt, almost vertical. Gape of the mouth small, not extending beyond the anterior line of the orbits.

Head strongly spinous, mailed (as in *Trigla* and *Prionotus*,) only a few small spaces being left naked by the bony plates which encase it. The plates are rough with granulations, which on some are arranged in rows. The preoperculum has commonly four spines; the first is at the posterior, superior angle, straight, stout, three fourths of an inch in length, pointing directly backward; the second is a little below this, about a fourth of an inch in length; the third is shorter; the anterior inferior angle forms the fourth, strong and well marked, about equal to the second in length. The operculum, along its superior border, has a stout, angular, straight, sharp pointed ridge, seven tenths of an inch long, perfectly analagous to the first preopercular *spine* (though no part of it is free,) the two lying parallel, side by side, similar in appearance, both granulated, nearly coterminal; the membranous operculum extends a little beyond the ridge; the inferior angle presents also a spine, comparatively feeble, partly concealed. The gill-covers, when extended, give the head an aspect as formidable as that of any of the Acanthocotti. Each nasal bone forms a small spine. The crests of the orbits are somewhat ridged, though not spinous, and from each a ridge passes backward the length of the head.

The *lateral line* is marked by an imbricated row of strong, granulated plates, similar to those covering the head. The largest, those nearest the head, are half an inch across vertically, which is about twice their longitudinal diameter. They are obscurely ridged not spinous. The other parts of the surface are destitute of plates or scales.

Teeth even, fine, and crowded on the lower jaw, intermaxillaries and vomer; none on the palatines.

The *first dorsal* arises a little in advance of the opercular angle, and is an inch and one fourth in length, rounded. the greatest height (equal to half the length) being at the third and fourth rays. The rays are spinous, but not rigid.

The *second dorsal*, separated from the first by an interval of one fourth of an inch, is an inch and a half long, an inch high, rounded; rays very slightly divided—this is true of the articulated rays of all the fins except the caudal.

The *anal*, opposite the second dorsal, is entirely similar to that fin in height and in form but is a little shorter; the rays are free at their tips.

The *pectorals*, on a base of an inch and one fourth extending forward almost to the anterior preopercular spine, are an inch and six tenths in height, rounded, of the *cottoid* form; there are no separate or detached rays.

The *ventrals*, opposite about the middle of the insertion of the pectorals, are an inch in height; the last ray is so connected to the body by membrane as to restrain the motions of the fin to a certain degree.

The *caudal*, nearly square, is an inch and a fourth in height, on a base of half an inch; rays branched.

D-8-11; A-9; P-17; V-1-3; C-11.

Color greenish olive, lighter beneath, with dark blotches amounting sometimes to imperfect bands. Fins corresponding in color with the part on which they are situated; pectorals transversely banded.

This species presents a combination of characters so far distinct from any previously known in this family that a new generic division, with the following definition becomes necessary. We will call it.

Clypeocottus.—Ayres.—Head large, depressed; small, even teeth in both jaws, and on the vomer, none on the palatine bones; opercular apparatus with large spines; head mailed, as well as the lateral line; no scales; gill openings large; branchiostegous rays six; two dorsal fins.

(Since this description was printed Mr. Charles Girard has kindly sent me a copy of a paper read by him before the Phil. Acad. Nat. Sciences in August, characterizing new fishes from California. This genus is these defined with the name *Aspicottus;* the species he calls *A. bison.* These names have the priority of date and of course *C. robustns* is suppressed. W. O. A.)

A. bison is taken in the Bay of San Francisco, and along the coast. Like the other *Sculpins* it is highly prized by the Chinamen, though scarcely eaten by others. It does not appear to be abundant.

I may take occasion here to correct a mistake made by Mr. Charles Girard in his paper "On the genus Cottus" read before the Boston Society of Natural History, Oct. 17, 1849. He claims that "*C. variabilis* Ayres, is the young of the *A. Grænlandicus,*" and argues from this "the importance of studying these fishes throughout their different stages of growth" (Proc. B. S. N. H. Vol. 3, page 187.) At a subsequent meeting of the same society, I presented a comparison of the two species, showing in what respects they differ. Mr. Girard, who was present, "remarked that he thought two species had been confounded under *C. Grænlandicus,*" and he should be pleased to find that one of them was that described by me as *C. variabilis.*—But this does not meet the point. Without at all raising the question whether *C. Scorpius,* Fabr. is identical with the Massachusetts fish which was so long referred to it, the *C. Grænlandicus* of Dr. Storer's Report, I wish to state my full conviction that my *variabilis* is not the young of any species, certainly not that of the *Greenland Sculpin* which is common near Boston; I have critically examined too many specimens of both species to leave me any doubt on the subject. The reasons for this conviction it is not necessary to give here as a synopsis of them may be found in the Proc. B. S. N. H. Vol. 3. page 312.

We have therefore three Acanthocotti on the coast of New England, and if as seems probable the one hitherto called *Grænlandicus* is distinct from the true Greenland fish, it remains as yet without a specific name, *variabilis* having been incorrectly referred to it. Their synonymy will be as follows:

1. Acanthocottus mucosus.—Ayres.—*Cottus Grænlandicus,*—Rich, as well as of Storer and Dekay in their Reports and Storer's Synopsis, and Girard, Proc. B. S. Nat. Hist. Vol. 3, page 185,—*Acanthocottus variabilis,* Girard, Bost. Jour. N. H. Vol. 6, page 348, and Storer's Hist. of the Fishes of Mass. page 26.

2. Acanthocottus variabilis, Ayres, (not Girard)—*Cottus variabilis,* Ayres, Proc. B. S. N. H. Vol. 1, page 68, and Bost. Jour. N. H. Vol. 4,1843, page 259.

3. Acanthocottus Virginianus, Girard, *Cottus octodecmspinosus,* Mitch. *Cottus Virginianus,* Storer and Dekay.

I have purposely avoided extending the comparison beyond the limits of New England, because at New York two additional species are reported, at least one of which seems of doubtful value.

San Francisco, Oct. 16, 1848.

Dr. H. Gibbons in the chair—

Dr. C. F. Winslow was elected a resident member and Lieut. Stone, U. S. N. a corresponding member. L. W. Sloat Esq. presented a Centipede from the vicinity of Calaveras County.

Dr. H. Gibbons presented the fins of a Flying fish and bones of the wing of an Albatross.

Dr. Kellogg presented for Mr. J. G. Swan of Shoal Water Bay, Washington Territory, three drawings made by Mr. Swan, of a species of Napea, an Epilobium, and of the shrub known as "Salal,"—with dried specimens. Also the skull of a Chinook female, and geological specimens from Copales and Quenicult Rivers.

Mr. H. G. Bloomer presented a white incrustation from the mineral spring, some four miles from Oakland, and a bottle of the sulphurretted water from the same locality.—Col. Nevins presented for Dr. Charles H. Raymond, the fifth annual Report of the Board of Regents of the Smithsonian Institution, History and description of the skeleton of a new sperm whale, with plates, and a Guide to Zoological Gardens, London.

Mr. L. W. Sloat for W. B. Olds, Esq. presented Cuvier's "Animal Kingdom," in 4 vols. The thanks of the Academy were tendered to Mr. Olds for his valuable donation.

On motion of Mr. Nevins—

Resolved, That the Curators examine and report at their earliest convenience whether there are in the Cabinet any surplus specimens which can be spared as donations to a Cabinet for the Public School at "North Beach" in this city.

San Francisco, Oct. 23, 1854.

Dr. H. Gibbons in the chair.

Dr. William Jelly was elected a resident member.

Rev. J. S. Diehl presented specimens of volcanic glass from Grass Valley, crystallized quartz from Murphy's, a stalactite from Sierra County, and pyrites from El Dorado county.

Dr. H. Gibbons exhibited a series of specimens obtained in sinking a shaft in search of coal near Saucelito. Coal is found in small quantities on the surface near the Bay, and the exploration was made to the depth of 150 feet, without success, also several insects from Texas and a Gryllotalpa, or mole cricket from California.

Dr. A Kellogg, for Julius Froebel, Col. W. W. Warren and Dr. J. B. Trask, presented numerous varieties of California flower seeds.

Dr. H. Behr presented a specimen of a parasitic shrub, *Cuscuta* to which he applies the provisional name of *Ceanothi.*

Dr. Wm. O. Ayres, presented the following communication, illustrating it with specimens of the fishes described:

Brosmius marginatus, Ayres.—Length fourteen inches and three fourths; greatest depth three inches and one fouth. *Form* elongated, nearly cylindrical at the head, body compressed, compression increasing toward the tail; length of the head equal to the depth of the body. *Head* rounded in front; muzzle blunt; upper jaw received under a loose fleshy fold of the skin; lower jaw the shorter, overlapped by the nearly semicircular curve of the intermaxillaries which form the entire border of the upper jaw.

The entire fish is covered with a very thick viscid mucous secretion, which is much tinged with red pigment, and stains the hands when the fish is handled.

Scales very small, scarcely discernible until the skin is dry, covering the body, but not the head, or cheeks. *Lateral line* by no means conspicuous, nearly straight.

The skin, abont the head particularly, is thick and loose, causing the lips to appear fleshy, and almost concealing the opercular pieces. The border of the *preoperculum* is smooth; the *operculum* ends in a sharp, decided spine, which however is concealed by the integuments.

Teeth fine, somewhat uneven, crowded, forming a narrow band in the lower jaw, on the intermaxillaries, the vomer, and the anterior part of the palatines. Gape of the mouth easily extending an inch and a half.

Eyes three fourths of an inch from the snout, four tenths of an inch in diameter, distance between them seven tenths of an inch; the thick investing membrane causes them to have the peculiar aspect of the eyes of Eels.

Nostrils with the anterior orifice slightly tubular, terminal; the posterior orifice one fourth of an inch distant.

A singular, conical, anal papilla, about three fourths of an inch in height, half an inch in diameter at base; with the apex obliquely truncated, semicartilaginous, and longitudinally divided, corresponding to a septum, on each side of which a seminal duct passes, the specimen being a male. The anal orifice is on the anterior base of this tubercle.

Some of the openings of the mucus or water ducts, on the head, are uncommonly large, one in particular on the border of the preoperculum being a tenth of an inch in diameter.

A single elongated *dorsal fin* occupies nearly the entire length of the back. It arises over about the middle of the pectorals, and extends to the base of the caudal, from which latter it is distinctly separated, though the interval is small. It is enveloped in a membrane so thick that an enumeration of the rays is almost impossible; this is true of all the fins. In consequence of the very gradual manner in which the fin arises from the body, its height cannot be accurately given; it is about three fourths of an inch. All the rays are soft, articulated, branched.

The *anal* arising three inches posterior to the dorsal, and coterminal with it, is similar to that fin in structure, form, and height.

The *pectorals* are rounded, an inch in length, two inches and one fourth in height; the carpal bones, however, are flattened, forming a sort of a pedicel on which the fin is supported so that the height of the rays is only an inch and three fourths.

The *ventrals* are anterior to the pectorals. Each consists of a single filamentous ray, an inch and nine tenths in length; the pelvic bones are suspended to those of the shoulder.

The caudal is small, rounded, an inch in height.

In *color* this fish is of a plain dark brown on the head, back, and sides, nearly white on the abdomen, with the throat reddish All the fins are tipped with a very vivid red, and the entire mucous secretion, as already mentioned is tinged with red.

I have seen but a single specimen, which was procured in the market; it was taken near the entrance of the Bay of San Francisco.

The species is classed here under the genus *Brosmius*, though the absence of any barbule at the chin, and the structure of the ventral fins suggest a doubt as to the propriety of such a course. As has been the case, however, in other instances, it has been deemed advisable to avoid an attempt at a new generic division, unless such division appears absolutely demanded, since there are in California, as yet, no means of making accurate comparisons with any fishes of allied form.

B. marginatus does not seem to be known to our fisherman, by any distinctive appellation. From its resemblance to *B. vulgaris* it may be very properly named *Californian Cusk.*

Syngnathus griseo-lineatus, Ayres.—This curious little fish of which I have seen as yet but the single specimen here exhibited, is somewhat closely allied to two or three species already well known; a comparative description is therefore all that is needed.

The *length* of the specimen is ten inches and one fourth; its greatest *depth*, one third of an inch, length of the head, one inch and seven tenths.

The *dorsal* fin arises four inches and four tenths from the tip of the jaws, is one inch and one tenth in length, one fourth of an inch in height. The *anal* is only about one tenth of an inch posterior to the origin of the dorsal.

There is a slight depression between the eyes, with a slender median ridge which is prolonged upon the beak; there is no ridge on the occiput. There are nineteen plates anterior to the anal fin, thirty nine posterior. There is no sudden depression before the eyes, the greatest depth of the beak being two thirds of that of the head.

The forms and arrangement of the plates, the angulation of the body, the form and granulation of the opercula, the form of the mouth &c., present nothing demanding notice. The color is plain, dark grayish brown becoming a little lighter beneath, with very numerous narrow, irregular, longitudinal lines, of small extent, which are light gray. The fins are plain.

D-36; P-12; A-3; C-10.

From *S. Peckianus*, Storer, our only Atlantic species well determined (though several others have been attempted) *S. griseo-lineatus* is distinguished by the length of the head, the occipital surface, the depth of the beak, the position and form and number of rays of the dorsal fin, and the position of the anal. With *S. Californiensis*, Storer, it agrees in the length of the head; it differs from it in the depth of the beak, the position and form of the dorsal fin, and the number of plates posterior to the anal.

From *S. brevirostris*, Girard, it is at once separated by the length of the head, the anal fin, and the position of the dorsal; from *S. leptorhynchus*, Girard, by the form of the beak, the developement of the anal fin, and the color. To *S. typhle*, L. it is closely allied; it is distinguished by the length of the head, the depth of the beak, the position of the dorsal and the size of the anal.

Other species of Syngnathus will very probably yet be found in our waters. They may be sought in any of the shallow, sheltered bays. Commercially they are, of course, from their size, of no value.

Dr. Kellogg exhibited a drawing of the *Hydrocotyle ranunculoides* or Pennywort, from the vicinity of San Francisco. A specimen of a new and undescribed species was also exhibited from the same locality.

Dr. Kellogg also presented a drawing and specimen of the

Lavatera assurgentiflora. K. Royal Mallows. Stem arborescent; leaves cordate seven-lobe-angled; lobes acute, irregularly toothed, surface soft, close minute stellate pubesence beneath; petioles 4 to 5 inches long, slender; stipules minute, lance-linear, sessile, caducous; peduncles axillary, solitary assurgent, (about one-third the length of the petiole) short, articulated (one-half inch) below the flower; the involucel 3-parted, persistent, segments broad lanceolate, sub-acute; calyx 5-parted nearly to the middle, divisions ovate-lanceo'ate, acute and acuminate, obscurely 3-nerved, stellate pubescent; petals obcordate on long claws, lateral tufts of silky pubesence at the junction with the staminal tube, petals at length reflexed, styles 5, pubescent, stigmas filiform or simple (not capitate nor stigmatose,) carpels 8 or 9.

This deciduous shrub, from the island of Anacapa, off the coast of Santa Barbara, and now to some extent cultivated, is one of rare beauty and grace; the rising, falling and finally ascending curves of the flower-stem, are quite characteristic; the reflexed petals as the flowers fade, is also a rare feature with the mallows tribe, which are usu-

ally involved and twisted up before falling off.

As an ornamental shrub or tree, for it attains to the height of fifteen feet, it will be highly esteemed when more generally known. The flowers are purple, about two and a-half inches broad, and in this climate continne long in bloom.

It is remarkable that a Mediterranean genus should make its appearance here; but there are several other similar vegetable productions, besides the evident analogies and types of Western Europe, which mark California truly the "Italy of America."

San Francisco, Oct. 30, 1854.

Dr. Kellogg in the chair.

Donations to the Library.—H. G Bloomer presented the 3d Vol. of Loudon's *Arboretum et Fruticetum.*

Dr. Kellogg exhibited a drawing and specimen of a new species of Hydrocotyle—the provisional name given was H. prolifera.

Description,—Glabrous; leaves peltate, orbicular, slightly emarginate at the base, coarsely crenate, 1 to 2 inches in diameter; scape slender, as long or longer than the petioles; umbels proliferous in 3 whorls below the fourth or proper terminal umbel; fruit slightly emarginate at base and summit, and ribbed on each side; petioles six inches to one foot in length; twelve to twenty flowered in each umbel, pedicels 1-4 to 1-2 an inch in length.

This species of Pennywort is less robust than the H. ranunculoides, growing also with it in marshes.

The Editor of the Pacific presented a specimen of fruit of the California Chestnut, *Castanea chrysophylla,* from Sierra Co. *Also* specimen of *Ceanothus prostratus.*

Dr. Winslow exhibited a Fossil bone, found forty-eight feet below the surface, at the foot of Telegraph Hill, corner of Kearny and Pacific Streets.

San Francisco, Nov. 27, 1854.

Dr. H. Gibbons in the chair.

Dr. R. B. Cole was elected a resident member; Dr. A. Chase of Downieville a corresponding member.

Dr. H. Gibbons exhibited some Pea nuts (*Arachis hypogaea,*) being part of a crop of several hundred pounds, raised the present season at Alameda. The plants were cut off by the frost, in the beginning of November, which reduced the crop very materially.

Dr. A. Kellogg exhibited a drawing and specimen of a plant from the vicinity of Los Angeles, having some resemblance to *Lonicera.*

Dr. Wm. O. Ayres presented descriptions, illustrated by the specimens described, of the *Sturgeons* found in our waters.

Acipenser acutirostris, Ayres.—*Length* eleven inches; greatest *depth,* at about the fifth dorsal plate, one seventh of the length. *Head* one fourth of the total length. *Eyes* midway in the length of the head. Distance from the *nostrils* to the snout, one inch; breadth of the head at the nostrils, six tenths of an inch. Anterior border of the *mouth* beneath the eyes.

Top of the *head* sloping forward in its whole length, until the snout becomes thin and horizontal, but it does not "shelve off suddenly before the nostrils" as in *A. transmontanus.*

Plates of the body all carinate, each carina ending in a spine directed backward. The dorsal plates are the most strongly developed; the lateral series the least so. Skin between the rows of plates studded with minute stellated tubercles.

Two pairs of barbels, half an inch in length, midway between the snout and the mouth.

Upper lobe of the *caudal* fin slender, very acute, equalling the head in length. Pectorals, ventrals, and anal rounded; pectorals one inch and one fourth in height; length of the anal half that of the dorsal with which fin it is coterminal.

Plates of the *dorsal* series, in this specimen, eleven; of the *abdominal,* eleven on one side, ten on the other; of the *lateral,* forty-nine.

D. 45; P. 49; A. 29; V. 28; C. 22-88.

A. acutirostris is allied to both *A. oxyrinchus,* M. the sharp nosed Sturgeon of New York, and *A. transmontanus,* R. the huge species found in Columbia River. It is however sufficiently distinguished from each of them by its proportions, its bony shields &c.

It is apparently quite rare in this vicinity, only two specimens having as yet been observed, the largest being about thirteen inches long.

Acipenser medirostris, Ayres—*Length* twenty three inches; greatest *depth,* at the third dorsal plate, one ninth of the total length, be-

ing equal to the breadth of the head; *head* forming one fifth of the total length.

Eyes midway in the length of the head, half an inch in diameter. *Mouth* with its anterior border just behind the plane of the middle of the pupils. Distance between the eyes one inch and three fourths.

Dorsal outline sloping gradually from about the third plate to the tip of the snout. Top of the head with a longitudinal depression between the eyes. Head covered in all parts with very sharply granular plates.

Plates of the body all carinate, spinous, like those of *acutirostris*. Skin between the rows of plates studded with numerous stellated tubercles.

Two pairs of barbels, each about an inch long, nearer to the mouth than to the snout.

Upper lobe of the caudal fin not so slender as in "acutirostris," scarcely equalling the head in length. Pectorals somewhat pointed, three inches in height. Anal situated almost wholly behind the dorsal, its origin only being beneath the posterior portion of that fin.

Plates of the dorsal series eleven or twelve; of the abdominal ten or eleven; of the lateral twenty five to twenty seven. These plates are larger and more prominent than in "brachyrynchus," scarcely so large as in "acutirostris.

D. 35; A. 24; V. 27; P. 42: C. 20-75.

Color grayish brown, lighter beneath.

A. medirostris appears to be by no means common in our waters. It is taken in company with "A. brachyrynchus, though in small numbers.

Acipenser brachyrynchus, Ayres—This species attains a greater size than any other fish sold in the markets of San Francisco. They commonly weigh from twenty five to fifty pounds, though those of one hundred pounds to one hundred and sixty are by no means uncommon. But even this is not their limit; Sturgeon have been offered here for sale weighing more than three hundred pounds.

The species is allied, very closely indeed, to Le Sueur's "A. rubicundus" which inhabits Lake Erie and the connected waters.—The relative dimensions therefore, and other points by which it may be distinguished from *rubicundus* are all that need here be given. My description is taken from a specimen only thirty six inches in length.

Head sloping gradually from the first dorsal plate, flat transversely between the eyes; with the snout very short, blunt, rounded, extending but two inches in advance of the eyes: distance between the round vertical eyes, three inches; head a trifle less than one fifth of the total length.

Greatest depth of the body one eighth of the length.

The anterior border of the mouth lies further back than the posterior margin of the orbits. Four barbels are placed about one third of the distance from the snout to the mouth.

The length of the rounded anal fin is half that of the dorsal, with which it is coterminal. The pectorals are rounded, their height not quite equalling the depth of the body.—The lower lobe of the caudal fin is relatively larger than in "acutirostris" or "medirostris;" the upper lobe is a little longer than the head.

The plates of the body are small, and by no means prominent. Those of the dorsal series are scarcely carinate, the others somewhat more rigid, the posterior ones of the lateral series becoming even spinous. Dorsal plates 12 or 13; abdominal 9 or, 10 lateral 42 to 47.

D. 49 (highest at the tenth ray;) A. 31; V. 36; P. 45; C. 20-86.

Color greenish brown, lighter beneath; plates grayish white.

A. brachyrynchus is very abundant in our waters, and is the one sold by all the fishermen as the Sturgeon, the other species being seldom seen. Those offered in the markets of San Francisco are taken chiefly in the Bay of San Pablo, though they are common also in the Bays of San Francisco and Suisun, and in the lower waters of the Sacramento and San Joaquin. They are taken at all seasons of the year with hooks, small fish being used as bait. The amount sold annually, in this city alone is very great, and the fishery consequently one of much importance, though there are no means of arriving at any very precise data in regard to it. The manufacture of caviare from the roe, and of isinglass from the swimming bladders of these fish, may hereafter become in California, from the abundance of the material, a source of very profitable employment and much wealth.

That other species of Sturgeon remain to be yet discovered within the State is very probable.

Dr. C. F. Winslow read a note from E. G. Smith of Auburn, Placer Co., accompanying a fragment of a tusk recently exhumed on Cape Horn Bar. The portion was not of sufficient size to be accurately identified.

Col. L. Ransom presented a variety of plants from the Tejon Pass, which were referred to Dr. Kellogg; with them were fine specimens of Olives from the Mission of San Fernando.

San Francisco, Dec. 4, 1854.

Dr. H. Gibbons in the chair.

Mr. P. Edwards Connor was elected a corresponding member.

A fragment, about eight inches in length, of a tusk found at the depth of twenty feet on Cape Horn Bar, was presented by Dr. Gibbons on behalf of Mr. T. Mitchell. The length of the tusk before being broken was five feet, ten inches; its circumference at the base twenty four and a half inches; it was hollow for three feet. The specimen was from the same source as that reported at the last meeting.

Dr. Gibbons exhibited a number of Oak-galls of remarkably regular sphericity and uniform size, about one third of an inch in diameter. They occurred under a few of the trees in Oakland, nearly covering the ground.

Dr. H. Behr presented the following description of a parasitic shrub, found in the vicinity of San Francisco.

Cuscuta Ceanothi, mihi, Capitula quinqueflora, sesilia. Bracteae involucrum pentaphyllum constituentes. Calycis partitiones quinque late ovatae, obtusae, corolla dimidia breviores. Corollae urceolatae limbus quinquefidus, patens, fundus squamis quinque ciliatis instructus. Stamina usque ad antheras coronae adnata. Stylus bipartitus, stigmata capitata.

Planta tota, excepta, corolla, candida, colore violaceo suffusa, semel adhuc in *Ceanotho* a me reperta.

Dr. Wm. O. Ayres presented the following descriptions of fishes.

Osmerus elongatus, Ayres—The species which is sold so abundantly in our markets under the name of "Smelt" is Girard's *Atherinopsis californiensis*. It furnishes, however, another instance of the misapplication of common and well known names to animals on this coast, since it belongs to a family of fishes widely distinct from that in which the smelts are classed. But in company with it, and sold under the same name, we find now and then a specimen of the present species. It is, of course, the one to which the name "Smelt" should be applied, as it is a near relative of the Smelt of our North Eastern States (Osmerus viridescens, Le S.) and of the smelt of Europe (*O. eperlanus*, Art.) while the Atherinopsis has no claim whatever to the name. The latter, however, being much the most abundant, has appropriated the title, and the *Osmerus* is scarcely distinguished by the fishermen or their patrons; nor is it perhaps important that it should be, as the one species is equally delicate and savory with the other.

My description is taken from a specimen seven inches in length; a few are found a little larger. It is so closely allied to *O. viridescens* that the points of distinction from that species only need be indicated.

The *form* is more elongated and compressed. The depth of the specimen described is only nine tenths of an inch; this depth remains almost precisely the same, from the pectoral fins to some distance beyond the dorsal fin. The head is less than one fifth the total length.

The *lateral line* is not above the silvery longitudinal stripe, but runs very nearly through the middle of it.

The *teeth* generally are not so long and stout, while the outer palatine row is almost entirely deficient.

The *dorsal fin* commences further back, and is not relatively so high. The adipose fin is nearer the caudal.

In *colors* the two species agree, even to the dark band at the base of the caudal; the numbers of the *fin rays* also correspond.

Mustelus felis, Ayres—This pretty little Shark appears to be not at all uncommon along the coast, and within the entrance of the Bay of San Francisco. It belongs to the division which includes those known as *Dog-fish*, none of which ever attain any great size. My description is taken from a specimen forty nine inches in length.

Form elongated, quite slender, the greatest depth, anterior to the first dorsal fin, being only six and a fourth inches. Head somewhat depressed; muzzle rather blunt.

Eyes an inch and a half in their longitudinal diameter, distant a little more than their own diameter from the snout. Behind each eye is a small spiracle. The anterior border

of the mouth is about on the plane of the front of the pupil.

Teeth small, in many rows, flat, somewhat acute, each with a central point and one or more pairs of tubercles at its base.

Branchial apertures five, the largest an inch in extent, the posterior one being above the base of the pectoral fin.

The *first dorsal* fin is fifteen inches from the snout. It forms nearly an equilateral triangle, three and a half inches in height; the posterior portion of its base for two inches and a half is free.

The origin of the *second dorsal* is fifteen inches from that of the first. The height of the two fins is about equal; the base of the second is a little less than that of the first.

The origin of the *anal* is nearly on the same plane with that of the second dorsal, but as its base is longer it reaches nearer the caudal than that fin; it is two inches in height.

The *ventrals* are about midway between the two dorsals.

The *pectorals* are narrow, pointed, their height equalling the depth of the body.

The *caudal* exhibits beneath two triangular lobes, the anterior one being both higher and longer than the posterior.

In *color* this fish is of a light bluish gray, with numerous irregular dark slate colored spots upon the back and sides; beneath nearly white. The spots, which are of all sizes from those five inches across to mere points, give it at a little distance so much the appearance of one of the spotted Cats, as to suggest the specific name which has been adopted.

M. felis is allied in many respects to *M. canis*, Mitch., so common on our Atlantic coast; it may be deemed its Pacific representative.

The November No. of The American Journal of Arts and Sciences was received from the publishers.

Dec. 11, 1854.

Dr. A. Kellogg in the chair.

Dr. C. W. Brink was elected a resident member.

Dr. Kellogg exhibited specimens of a *Polypodium* from Mr. Swan of Shoalwater Bay, also *Gaultheria shallon*, Ph. called by the Indians "Sallal," from the same source; the Indians use the Polypodium in the preparation of their tobacco, calling it "Wild Liquorice."

Dr. W. P. Gibbons presented a drawing of a Mollusk, from Saucelito, promising a description at a future meeting; also, on behalf of Mr. Burr, a specimen of Sylvicola Townsendi, Nutt.

Dr. Wm. O. Ayres read the following descriptions of fishes.

Catostomus occidentalis, Ayres.—This fish is very closely allied to C. *Bostoniensis*, Le S. so closely indeed that a full description is not here needed; the points only in which the two fail to agree reqnire to be noted.

In *C. occidentalis* the head is relatively broader, the distance between the eyes being equal to the distance of the eyes from the snout.

The posterior aperture of the nostrils is nearly circular, much larger than the anterior.

The dorsal fin arises, in advance of the middle of the body, not including the caudal fin; its length and height are equal being one sixth of the distance from the snout to the tip of the central caudal rays. The first four rays are simple, not articulated, the first three being very short; the fifth is simple, articulated, not quite equalling the sixth which is the highest.

The pectorals arise from a base so narrow that their length is contained in their height about four times and a half; their height is not quite equal to that of the dorsal.

The origin of the ventrals is a little posterior to the middle of the dorsal.

The anal is somewhat pointed, its length contained twice and a half in its height; its tip does not quite reach the base of the caudal.

The caudal fin is concave, the height of the central rays being contained once and a half in that of the external.

D. 4-12; A. 2-7; V. 1-9; P. 18; C. 17 with accessories.

In general form and proportions, structure of the mouth, lateral line, scales, gill covers, color &c., the two species can scarcely be distinguished.

C. occidentalis appears to be quite common in the Sacramento and San Joaquin. Those which we see in the markets here average about a pound in weight; they probably grow but little larger than that. They are not held in great esteem.

Gila grandis, Ayres.—My description is taken from a specimen sixteen and three fourth inches in length.

Form elongated, subcompressed. Nape rising a little abruptly from the head; back thence but little arched in its entire length. Head small, nearly straight (in large speci-

mens slightly concave) in its dorsal outline, its depth at the origin of the nape a little more than half its own length; length of the head not quite one-fourth of the total length. Greatest depth of the body equal to the distance from the snout to the border of the preoperculum, being one-sixth of the total length; thickness of the body anterior to the dorsal fin, equal to the depth of the head.

Mouth oblique, lower jaw the shorter, the tip of the intermaxillary reaching the plane of the middle of the pupil. Eye nearly circular, distant two-and-a-half times its own diameter from the snout, which diameter is contained seven times in the length of the head.

Lateral line curving gently downward, for about two inches, thence running nearly straight to the caudal.

The *dorsal* fin, arising at a point midway between the snout and the tip of the central caudal rays, has its length equal to the depth of the head at the line of the pupils, and its anterior height equal to the greatest depth of the head, which is just double the height of the last ray. The first two rays, which are not articulated, are short, (the first being scarcely perceptible;) the third is the longest of all.

The *ventrals* are rounded, situated a little in advance of the dorsal; their tips do not reach to the vent.

The *anal* arising just posterior to the point to which the rays of the dorsal fin reach, is similar to that fin in form, but a little less in both length and height.

The *pectorals* are somewhat pointed, their height a little greater than that of the dorsal,

The *caudal* is concave, the height of the central rays being two thirds of that of the outer ones.

D. 2-8; A. 2-8; V. 1-10; P. 17; C. 19 with accessories.

Scales moderate in size; about seventy eight along the lateral line, and fourteen in an oblique line above it, counting from the origin of the dorsal fin.

Color greenish brown above, becoming lighter on the sides; silvery beneath.

G. grandis is by far the finest fish, of its family, known to inhabit the waters of this continent. The size to which they attain, their beauty of form, their vigor, and activity give them a place among our Cyprinidae such as the Salmon has among the Trouts.—They bite with great sharpness, and might afford much sport to those piscatorially inclined. But in this land of intense activity few can as yet afford the leisure for such recreation, and rod-fishing is here almost entirely unknown. This species, which is very abundant in the Sacramento and San Joaquin and their branches, is taken in nets, and brought in large quantities to this city. They are sold under the name of *Salmon Trout*, though a greater misnomer could scarcely have been devised. Those of twelve to sixteen pounds are very common, and I have been assured by intelligent fishermen that specimens have been offered here for sale weighing thirty pounds. The largest I have seen was thirty-six inches in length.

As an article of food they are not held in high estimation.

The interesting anatomical peculiarity which I demonstrated six years since in the structure of the genus *Leuciscus* (Proc. B. S. N. H. vol. 3, page 46,) viz: the existence of two supplementary needle-like bones, suspended beneath the interbranchial series, to afford a point of origin for the delicate muscles which separate the inferior pharyngeal bones, is fully manifested in this species, as well as in the other California types, allied to this, to be presently described.

Dec. 18th, 1854.

Dr. A. Kellogg in the chair.

A communicatlon was read from Mr. J. G. Swan of Shoalwater Bay, giving the results of a series of experiments concerning the application of Tar to cordage, made by him in 1845, at the Navy Yard in Charlestown, Massachusetts, by order of the Navy Department.

The object aimed at was, to prevent the rigidity in cold weather, and the loss of strength, consequent upon the common mode of tarring. To accomplish this, Mr. Swan made use of a mixture containing twenty five parts of oil of tar, three parts of sperm

oil and two parts of olive oil; one part of this to be added to twenty-five parts of common tar. Rope prepared in this manner was subjected to abundant tests. It was found to be equally pliable in cold and warm weather; a twenty-six inch cable, made for the Ship of the Line *Columbus*, was handled as readily in January as in August. The strength of Russia hemp was found to be actually increased by this mode of tarring, about five per cent, whereas by the common mode it was diminished about twelve per cent.—With American hemp a like increase of strength was not gained.

Mr. Swan deems that a portion of the advantage is derived from the lower temperature at which the tar can thus be applied.

Mr. T. J. Nevins exhibited a number of specimens of Ostraea and Mytilus from Contra Costa.

Dr. A. Kellogg exhibited a drawing and specimen of a Willow brought from the Tejon Pass by Col. Ransom, allied to *S. incana*, Mx.

Dr. W. P. Gibbons exhibited a drawing of a naked Mollusk from Saucelito, promising a description at a future meeting.

Dr. A. Kellogg presented the following description of a Fern from Shoalwater Bay.

Polypodium falcatum, Kellogg.—Sickle-leaf Polypod or Liquorice Fern. Frond deeply pinnatifid, segments alternate, long lance falcate, attenuate, acuminate, doubly serrate, upper and lower divisions smaller by degrees, terminating above in a long slender acumination. Sori numerous, 20 to 24 in two rows, one on each side of the mid-rib, rachis glabrous from 1 to 1 1-2 feet in height. Root compressed tuberculate 1-4 to 1-8 inch broad, greenish russet color, branching laterally, radicles numerous, rhizoma often covered with scales. Epiphytic on old decayed trees, stumps, roots and clefts of rocks.

This species was sent from Washington Territory by Mr. J. G. Swan. It is highly esteemed as a medicine, both among the natives and others, thought to be antisyphilitic, also used in the preparation of tobacco, imparting to it a sweetish liquorice flavor.—The Polypody upon oak trees was famous among the ancients for the cure of melancholy and madness, &c.

Dr. Wm. O. Ayres presented descriptions, with the specimens, of two new Cyprinoid fish.

Lavinia gibbosa, Ayres—The length of the specimen employed in description is eleven and a half inches; the species appearing seldom to exceed this size to any great degree.

Form robust, the depth being contained only three times in the length not including the caudal fin; the depth at the caudal fin equals half the greatest depth; the thickness anterior to the dorsal fin is about two thirds of the depth at the same point. Head rather small, though not distinguished from the body by any depression, and not at all concave in its dorsal outline; length of the head, contained five times in the total length.—Eyes nearly circular, with their diameter not quite equalling one fifth of the length of the head. Mouth small, with its line of closing oblique; the tip of the maxillary not reaching to the edge of the orbit; the lower jaw shorter than the upper.

The posterior border of the opercular apparatus forms a regular curve.

Anterior aperture of the nostrils smaller than the posterior.

The *lateral line* curves gently downward, nearly as far as the insertion of the ventral fins, and thence runs straight to the caudal fin.

The origin of the *dorsal* fin is nearer to the caudal rays than to the tip of the snout. The first three rays are merely rudimentary; the fifth is the highest, equalling one sixth of the length of the body; the length of the fin is two thirds of its height.

The *anal* arises posterior to the termination of the dorsal, but not so far back as the rays of that fin reach when depressed. Its height and length are both a little less than those of the dorsal.

The *ventrals* arise a very little in advance of the dorsal; their height equals the depth of the body at the caudal fin.

The *pectorals* are rounded, equalling the ventrals in height.

Caudal fin concave, the height of the outer rays very nearly equalling the length of the head.

D. 4-8; A. 2-8; V. 1-9; P. 16; C. 19, with eight accessories.

Scales rather large, about fifty seven along the lateral line, and ten in an oblique row above it at the origin of the dorsal fin. The scales are largest at about the middle of the side.

Color greenish brown above, lighter on the sides, silvery beneath; opercular pieces tinged with purple; all parts of the fish clouded

with numerous black points in the male, especially during the spawning season.

L. gibbosa, like the other fishes of this family, is not held in great estimation as an article of food. It is taken in some numbers in the lower waters of the Sacramento and San Joaquin in nets. It is sold by the fishermen here, under the name of Chub, and is also very absurdly called by some of them Pike. Indeed this family of Cyprinidae seems to be a favorite one with them for exercising their ingenuity in the misapplication of names. *Gila grandis*, as stated (Pr. Cal. Ac. Nat. Sc. vol. 1. page 19,) they call Salmon Trout, and *Lavinia compressa*, following the same principles of nomenclature they name Herring.

Lavinia compressa, Ayres.—This species is brought to our markets in company with the preceding, which it about equals in size.—My description is taken from a specimen eleven and a half inches in length.

Form elongated, compressed; the greatest depth contained in the length not including the caudal fin, three and a half times; depth at the caudal fin, a little more than one-third of the greatest depth; thickness in front of the dorsal fin a little more than one-half of the depth at the same point.

Head rather small, with the upper and lower outlines tapering to a somewhat acute snout, but without any depression separating the head from the body, and with the dorsal surface of the head not concave. Length of the head contained in the total length not including the caudal fin, four and a half times. Mouth small, the tip of the maxillary not by any means reaching the plane of the orbit. Lower jaw shorter than the upper. No barbels. Eye nearly circular, its diameter not contained quite five times in the length of the head.

Posterior aperture of the nostrils the larger, with a slight valvular projection on its anterior border.

The *lateral line* curves gently downward, nearly as far as the ventrals, then ascends, and does not assume a straight course till it has nearly passed the anal fin.

The *dorsal* fin arises further back than in *L. gibbosa*, being nearly equidistant between the snout and the tip of the central caudal rays. The height of the fin, which exceeds its length by not quite one fifth, is a little less than one sixth of the total length.

The *anal* fin arises about on a plane with the termination of the dorsal; its height and length are both a little less than those of tha fin.

The *ventrals* arise a very little in advance of the dorsal; their height equals the length of that fin.

The *pectorals* are rounded, equalling the ventrals.

Caudal fin concave; the height of the outer rays equalling the length of the head.

D. 4-10; A. 3-11; V. 1-9; P. 16; C. 19 with nine accessories.

Scales not quite so large as in *L, gibbosa*, being about sixty two along the lateral line, and twelve in an oblique line above it at the origin of the dorsal.

Color very light greenish brown on the back, silvery on the sides and beneath; sides of the head tinged with flesh color.

L. compressa appears to be less common than *L. gibbosa*. Both species are somewha closely allied to *L. crassicauda* B. and G. and to *L. conformis* B. and G. They differ however from them both, in the size and form of the head, the proportions of the body, the size of the eyes, the fins and the scales.

Dr. W. P. Gibbons presented a communication from Dr. B. Dowler of New Orleans on viviparous fishes discovered in Louisiana.

The following works were received from Dr. Gwin—Report on the Exploration of the Valley of the Amazon by Lieut. Gibbon, Eighth Report of the Smithsonian Institution, Cruise of the Dolphin, and Report of the U. S. Coast Survey for 1852. The thanks of the Academy were voted for the donation.

Dec. 25, 1854.

Dr. J. B. Trask in the chair.

Dr. Wm. O. Ayres presented the following description of a new Cyprinoid fish.

Gila microlepidota, Ayres.—This species which is brought, not unfrequently, to our markets, appears seldom to exceed twelve inches in length. It is sold by many of the fishermen under the name of Fan-tail, from the peculiar form of the caudal fin; like the others of the Cyprinidae, it is not much esteemed.

Form elongated, subcompressed, rather slender, tapering most posteriorly. Greatest depth contained about five and a half times in the total length; length of the head, about four and a half times in the same; depth anterior to the caudal not quite one third of the greatest depth. Head tapering regularly from

the back, with a straight dorsal outline, nape not elevated.

Mouth small, the tip of the maxillary by no means reaching the border of the orbit; lower jaw received beneath the upper.

Border of the opercular apparatus forming a smooth and regular curve.

Lateral line curving gently downward, passing nearer the ventrals than the dorsal fin, thence rising, and at length running straight to the caudal fin.

Scales small, numbering about a hundred and ten along the lateral line, and twenty-four in an oblique line above it at the origin of the dorsal fin; they are strongly impressed with radiating striae.

The *dorsal* fin arises a little nearer to the caudal rays than to the snout. Its length equals the distance from the snout to the border of the preoperculum, being contained seven times in the length to the tip of the central caudal rays; the height of the fifth ray, which is the longest, is greater than the length of the fin.

The *anal* arises posterior to the termination of the dorsal; it resembles that fin in form but is smaller, its length equalling only the distance from the snout to the middle of the eye.

The origin of the *ventrals* is posterior to that of the dorsal, which fin they very nearly equal in height.

The *pectorals* are rounded, and slightly exceed the ventrals in height

The caudal is large, deeply concave, the height of the external rays exceeding the greatest depth of the body, the height of the central rays half that of the external. The great number and prominence of the accessory rays causes the fin to spring out suddenly from the caudal portion of the body, thus giving occasion for the name by which the fish is designated, as already mentioned.

C. 4-10; A. 3-8; V. 1-10; P. 17; C. 19, with twelve accessories.

Color dark grayish brown above, lighter on the sides and beneath, a darker band passing from the base of one pectoral across the nape to the base of the other.

G. microlepidota is taken in the lower waters of the Sacramento and San Joaquin, in company with the other species of this family described in the Proceedings of the Academy. The form of its head indicates the propriety of a different generic position, and it is also separated from *Gila* by the structure of its inferior pharyngeal bones. But from the same reason that has been given in previous instances (the absence of any means in California of comparison with established forms, and the lack even of works of reference containing the divisions of the Cyprinidae, as at present recognized) it has been deemed advisable not to propose at present a new generic name.

Seven types of this family are brought to our markets, representing four genera, and liable probably to still further generic division, viz:—*Gila grandis*, Ayres; *Gila microlepdota*, Ayres; *Pogonichthys inæquilobus*, B. and G.; *Lavina gibbosa*, Ayres; *L. compressa*, Ayres; *L. exilicauda*, B. and G; and *Catostomus occidentalis*, Ayres. It is extremely probable that others also occur, but apparently not in any great numbers. In particular we may look for *Lavinia crassicauda*, B. and G., which we have as yet not seen. Of other smaller Cyprinoids, five or six California species have been already detected, but scarcely of sufficient size to be marketable, and beyond question many yet remain concealed in our lagoons, lakes, and mountain streams.

Dr. Trask presented, on behalf of Mr. Humphrey of Marysville, a cluster of Quartz Crystals of remarkable size and beauty, from Rich Gulch on Feather river.

Also, a tooth of a Mastodon from Sonora, in the name or Mr. Gunn.

Also, specimons of Sulphuret of Copper and Blende from Hope Valley, Utah Territory, in the name of Maj. G. C. Shipman, Jackson.

Also, a copy of Stansbury's Expedition, from Mr. B. F. Washington. The thanks of the Academy were voted to the donors.

Dr. Trask also presented eighty specimens of land and marine shells, from China.

ANNUAL MEETING.

January 1, 1855.

Dr. A. Kellogg in the chair.

On motion of Dr. J. B. Trask, —

Resolved, That the Academy adjourn until Saturday evening, January 6th, at seven o'clock, for the reception of the Annual Reports of the Trustees, and other Officers—the election of officers for this year—and the transaction of such other business as may come before the Annual Meeting—and that every member be earnestly requested to be present.

Adjourned.

Jan. 6th, 1855.

Annual meeting by adjournment. Col. L. Ransom in the chair.

Reports were received and placed on file from the Trustees, the Treasurer, the Librarian, the Curators, and the Corresponding Secretary.

The following officers for the year ensuing were elected:

President—Dr. A. Randall.
First Vice President—Col. L. Ransom.
Second Vice President—Dr. H. Gibbons.
Recording Secretary—Dr. C. F. Winslow.
Corresponding Secretary—Dr. W. P. Gibbons.
Treasurer—Mr. T. J. Nevins.
Librarian—Mr. T. J. Nevins.
Curator of Zoology—Dr. W. O. Ayres.
Curator of Botany—Dr. T. L. Andrews.
Curator of Geology and Mineralogy—Dr. W. P. Gibbons.
Committee of Publication—Mr. Wm. Heffley, Dr. W. O. Ayres, Dr. H. Gibbons.

Jan. 8th, 1855.

Col. L. Ransom, Vice President in the chair.

The minutes of the last meeting were read and approved.

Mr. Davis of Mercantile Library Association presented two specimens of stalactite and stalagmite, taken from a limestone cave in Santa Cruz, Cal.

Dr. Kellogg exhibited a specimen of *Cupressus Thyoides* or White Cedar from the headwaters of the Sacramento;—also the drawing of a a new variety of *Quercus* provisionally named *Quercus Ransomi*, from the vicinity of the summit of Tejon Pass.

Mr. Sloat presented a specimen of *Gryllotalpa* from Mr. Mathews.

Dr. Ayres read the following paper on two species of *Liparis*.

Liparis pulchellus, Ayres—Of this singular little fish, but a single specimen has yet been observed. It was among a number of small fishes, at a fish-stall in one of the markets, and was probably taken in company with them, in some of the shallow waters of the Bay. It is six inches in length.

Form elongated, much compressed posteriorly, breadth and depth nearly equal anteriorly. Head subquadrangular, the sides being nearly vertical, with the upper and lower surfaces horizontal. Dorsal outline of the head sloping to the snout, which is very abrupt, appearing as though truncate transversely.—Breadth of the head contained six times in the total length; length of the head a very little greater than its breadth or depth.

Eyes placed midway in the length of the head; distance between the eyes equal to half the length of the head; diameter of the eye equal to half the distance between the eyes.

Gill-opening above the base of the pectoral fin, small, only about equalling the diameter of the eye; the minute, slender opercular bone forming a small projection backward covered with the skin.

Mouth equalling in transverse diameter the distance between the eyes, but extending very little posteriorly, by no means reaching the line of the orbits. Lips smooth and fleshy. Teeth numerous, even, fine in each jaw, arranged in tesselated regularity, like those of some of the Rays; each tooth has a central prominence, causing its apex to appear partially tridentate. Similar teeth are found on the pharyngeals; none on the palatines or vomer. Lower jaw shorter than the upper. Mouth nearly terminal.

Anterior aperture of the nostrils tubular, about half way from the eye to the snout; posterior aperture smaller, seeming like a mucous orifice near the orbit.

Mucous pores numerous and large, especially about the head.

Skin smooth, scaleless, so loosely attached by cellular tissue to the muscles beneath as to be largely movable.

Dorsal, anal, and caudal fins united, so as not to be distinguished.

Dorsal fin single, elongated, arising far forward (less than half an inch from the head,) its greatest height, which is in its posterior half, equalling half the length of the head.

The *anal* arises about half an inch posterior to the origin of the dorsal, which fin it equals in height.

The rays which occupy the place of the *caudal* fin are, like those of the true dorsal and anal all simple; a few of the central ones project beyond the general outline of the fins, and indicate a true caudal, giving a rounded lanceolate termination.

The *pectorals* arise each from a base equalling in length the breadth of the head, and extending forward beneath the throat so as almost to meet its fellow of the opposite side, the two when closed covering and concealing the ventral disc. The upper portion of the fin equals in height the length of the base; it then diminishes to less than half that height, while further forward still the height increases and the rays are free at their tips, the extreme anterior rays being again very short.

The *ventrals* are imbedded in the disc common to this family; it is oval, about equal in length to the greatest height of the dorsal fin.

The rays in the dorsal, caudal, and anal fins are about ninety eight, though it is not easy to enumerate them; of these about forty seven belong to the dorsal, eleven to the caudal, and forty to the anal.

Color light olive brown, with numerous narrow, waving lines of darker brown running longitudinally, and forming in some instances rings and irregular figures; abdomen and throat white; some small brown and white spots on the sides, one series faintly indicating a *lateral line* with a slight downward curve.

Liparis mucosus, Ayres—This species is closely allied to the last, *L. pulchellus*; it differs chiefly in the form of the head, the form and connection of the dorsal, anal, and caudal fins, and the colors.

The *head* is longer, its length being contained in the total length (excluding the caudal) four times; in *pulchellus* the proportion is one to five. The snout is rounded anteriorly, not truncate. The eye is smaller; its longitudinal diameter contained nearly six times in the length of the head.

The *dorsal* and *anal* fins both arise at about the same points as in *pulchellus*, and in their height and structure correspond well with those of that species; they are not, however, continuous with the caudal, but terminate at its base, leaving that fin separate and distinct, with a rounded extremity.

The dorsal is emarginated, a short distance from its origin, giving in a degree the appearance of an anterior dorsal. In *color*, this species is of a plain greenish olive, lighter beneath.

In the branchial aperture, the form of the operculum, the teeth, the nostrils, the pectoral fins, the ventral disc, the loose attachment of the skin, &c., this species agrees well with *pulchellus*.

Only two specimens have yet been observed, each a little over five inches in length.

Commercially, these small Sucking Fish are, of course, of no value. Their peculiar structure and habits, however, may well attract attention to them. By means of their ventral disc they attach themselves to stones and other objects, so strongly as to require much force for their removal. They belong to the same group of fishes with the Lump Fish of our Atlantic coast, the Cock Paddle of the Scotch.

Dr. Winslow exhibited a fragment of the lower jaw of an extinct elephant found in the drift of Texas Flat, in the neighborhood of Columbia, fifteen feet below the surface. It was 7 1-2 inches in length and the same in depth and contained the impression of a tooth, and the maxillary canal in a fine state of preservation. The fragment appeared somewhat rounded by attrition among the drift of the mining region, but on the whole is beaufully preserved. Though teeth of the *Elephas primogenius* correspond in shape to the impression on this fragment, probabilities favor the conclusion that the extinct elephants of this slope of the Continent differ wholly from those which ranged over the eastern regions of North America and other parts of the globe. This fragment belongs to Doctor Graves of Columbia.

The following resolution was adopted.

That it be the duty of the Recording Secretary to notify in writing, all persons who may be elected as resident members of the Academy; and that the Corresponding Secrery do the same to Corresponding and Honorary members as soon after their election as possible. Adjourned.

San Francisco, Jan. 15, 1855.

Col. L. Ransom in the chair. Mr. Charles Girard was elected honorary member of the Academy.

Mr. Damran, of the Custom House, presented the following works: Capt. Marcy's Exploration of Red River; Cruise of the Dolphin; Lieut. Gibbons' Report; Report of Smithsonian Institution for 1853; Report of the Superintendent of the U. S. Coast Survey, for 1852, and Sitgreave's Expedition.

The thanks of the Academy were tendered for the donation.

Mr. Columbus Cooper of Oak Ranch, Sierra County, Cal., through Editor of *Pacific*, presented a Meteorological Table, taken by him at his residence, at the supposed height of eight hundred feet above the bed of the Yuba River, at Downieville. The thanks of the Academy were tendered to Mr. Cooper, and his communication was referred to Dr. H. Gibbons.

Mr. H. G. Bloomer presented five volumes of the Edinburgh Encyclopedia.

The Lyceum of Natural History of New York presented Nos. 1, 2, 3 and 4 of vol. VI of its Annals.

Mr. Nevins presented thirty specimens of coral, and fifty-six specimens of marine shells, from the Society Islands and vicinity.

Mr. Charles D. Gibbes, corresponding member, presented 59 specimens of minerals, fossil woods, bones and shells, also a specimen of *Geococcyx affinis, Wag.* found in the vicinity of Tulare Lake. The thanks of the Academy were voted for the donation.

Dr. A. Kellogg presented 250 specimens of California plants, and drawings, with the specimens of the *Quercus Ransomi*, Kellogg, and of the *Trichostema lanatum*, and read the following descriptions:

Quercus Ransomi—Kellogg.—Leaves oblong-obovate, sinuate, wedge form at the base, lobes sub-acute, mucronate, pubescent beneath, on very short petioles; calyx bowl-form, margin thin, well defined, scales ovate, long, acute pointed, closely appressed, uppermost minute; whitish glaucous pubescent; acorn elliptic-acute, base small; sessile, in pairs, and solitary.

This oak was found by Col. L. Ransom, of the U. S. Survey, on the highest mountains near Tejon Pass. The bark and leaves resemble the white, and post oaks (*Q. alba*, and *Q. obtusiloba.*) It is also closely allied to *Q. Gambelii*; but differs in the more acute and mucronate lobes of the leaf, sessile cup, longer and more pointed acorn, &c.

He also exhibited specimens, and a drawing of another species, supposed to be new. The name *Quercus arcoglandis*, Kellogg, was given, or Spur Acorn Oak. Leaves evergreen, coriaceous, ovate-oblong, sub-cordate, slightly repand-toothed mucronate, margins recurved, sub-glabrous beneath; fruits sessile or sub-sessile, in pairs, and solitary; gland ovoid at base, point long, conic sub-acuminate, mucronate; cup sub-hemispherical, scales glabrous, ovate, obtuse, thin, closely appressed, light chestnut color. Found by Col. Ransom, near Tejon Pass. This species resembles the *Q. oxyadenia, Q. Emoryi, Q. agrifolia*, &c., but the leaves are less spinose than most of our evergreen holly leaf oaks; the veins beneath are *not* prominent, the leaves are small, one inch to an inch and a half long, petioles about one-third the length, foliage dull green; cup flatter, and its general characteristics less robust.

Dr. K. exhibited a drawing and specimen of *Trichostema lanatum*, or the *Buff Blue Curls.* This species, peculiar to California, is remarkable for its beauty, and worthy of the attention of our florists. It is clothed with a velvet or buff coat, of bright, purplish lilac pubescence, and is withal very fragrant. The very long arching and curling filaments like a lady's curls, have given this order the appropriate common name of Blue Curls. In this species the curls extend out beyond the flower two inches or more. The public are indebted to Dr. Andrews for its introduction here.

Dr. Willard, of this city, presented specimens of asphaltum found near Los Angeles. The thanks of the Academy were tendered for the donation.

January 22, 1855.

Col. L. Ransom in the chair.

Prof. S. F. Baird was elected an Honorary Member of the Academy.

Mr. Geo. M. Green presented a very beautiful specimen of the Great Egret Heron, *Ardea egretta*, Gmel. shot by him near the Lake House. The bird appears to be quite rare along this coast. The thanks of the Academy were tendered to Mr. Green for the donation.

Mr. Dosh of Shasta City presented specimens of a Grass from the head waters of the Sacramento, known there as Native millet; it was referred to Dr. Kellogg.

Dr. Wm. O. Ayres presented the following descriptions of fishes, with the specimens from which they were drawn.

Leiostomus lineatus, Ayres—*Form* elongated, compressed. Back gently arched, dorsal surface of the head sloping, snout rounded. Greatest depth contained a little less than four times in the total length. Length of the head a trifle less than the depth of the body.

Mouth received beneath the rounded snout, the tip of the maxillary not quite reaching the plane of the posterior border of the pupil, lower jaw the shorter. *Teeth* fine, even and crowded in both jaws, with similar stronger ones on the posterior portion of the pharyngeals; none on the palatines or vomer. Upper jaw almost entirely covered by the infra orbitals.

Scales thin, pectinate, rounded on the exposed portion, truncate anteriorly, covering all parts of the body and head except the throat, branchial membrane and parts of the jaws.

Eyes nearly circular; their diameter contained a little more than five times in the length of the head.

Operculum ending in two concealed, flattened points scarcely spinous. Posterior border of preoperculum minutely denticulate.

Lateral line arching very gently for nearly half its length, running thence straight to the caudal fin.

The *first dorsal fin* arising at a distance from

the snout, equal to one-third of the length of the fish not including the caudal fin, has a height half as great as the distance of its origin from the snout. It is elevated in front, the rays becoming shorter posteriorly.

The *second dorsal*, continuous from the first, has its greatest height about two-thirds of that of the first, the height diminishing posteriorly. The united length of the dorsals is a little less than half the entire length, of which the second occupies somewhat the greater portion. The rays of the first are feebly spinous, those of the second little branched.

The *anal* arising a very little posterior to the plane of the middle of the second dorsal, has its length and height about equal, both being nearly the same as the greatest height of the second dorsal.

The *Pectorals* are slender, pointed, their length contained more than four times in their height, which latter nearly equals the length of the first dorsal.

The *ventrals* are pointed, the third ray projecting beyond the others in a filamentous tip, making the height equal to that of the pectorals; their insertion is posterior to that of the pectorals.

The *caudal* is concave, its greatest height a little more than that of the first dorsal.

D. 14. 1-20; A. 1-11; P. 1-17; V. 2-5; C. 16, with accessories.

The ground *color* is a light grayish brown, becoming silvery beneath; this is crossed by numerous, narrow, obliquely longitudinal, somewhat waving lines of rich umber brown, giving a very pleasing appearance to the fish; these lines are but feebly traced on the head. The dorsal and caudal fins are somewhat clouded, the others lighter.

L. lineatus is apparently not very common.—It is taken in the Bay of San Francisco, at nearly all seasons of the year, but never in great numbers. It seldom exceeds eleven inches in length. It is called by the fisherman, *Corvina*, *Cognard*, and *Little Basse*.

It is not very closely allied to any of the previously described species of the genus.

Leptogunnellus gracilis, Ayres.—*Form* compressed, very much elongated; the greatest depth (at one fourth of the distance from the snout to the tail) contained in the total length, twelve times, diminishing thence very gradually each way; greatest thickness equal to half the depth; length of the specimen described, eleven inches.

Head destitute of spines or fleshy projections, forming a little less than one seventh of the total length, flattened on the top, muzzle somewhat pointed, lower jaw the shorter. Eyes near the top of the head, approximated, elliptical, their longitudinal diameter contained not quite six times in the length of the head, distant rather more than their own length from the snout.

Branchial aperture free, isthmus narrow, branchial rays six.

Lateral line curving a little downward for three fourths of an inch, thence running straight to the caudal fin, not conspicuous.

Scales minute, soft, not ciliate, covering the whole body, and the cheeks anterior to the preoperculum, not extending on the fins.

Teeth fine, even, and forming a single row in the lower jaw, and on the anterior part of the palatines; crowded on the intermaxillaries, those of the outer row being a little larger than the others; none on the vomer. Mouth of moderate size, almost horizontal, the tip of the maxillary nearly reaching the plane of the anterior border of the pupil.

Opercular apparatus destitute of spines; operculum ending in a flat, feeble, somewhat acute point.

The *dorsal* fin, arising a little anterior to the opercular angle, extends the entire length of the back. Its greatest height, at about one third of the length of the fish, is not quite one half the depth of the body; this height is maintained posteriorily with very slight decrease, anteriorly it diminishes until the first rays become very short. Rays all spinous, projecting with sharp points above the membrane; the first two scarcely connected by membrane with those succeeding; a membrane extending from the last ray to the very base of the caudal fin.

The *anal* fin, arising at a distance from the snout a little greater than one third the total length, does not quite reach the caudal. Height about equalling that of the dorsal; rays articulated, branched.

The pectorals, rounded, have their height a little greater than the depth of the fish.

The *ventrals* are half as high as the pectorals, a little anterior to which they are placed.

The *caudal*, rounded, scarcely equals the pectorals in height.

D. 71; A. 47; P. 16; V. 5; C. 13.

In *color* this species is of a light greenish olive, with numerous dark blotches in the form of narrow, irregular lines, extending over the back, upper part of the sides, dorsal fin and caudal, on which latter they constitute tolerably regular transverse bands; lower portion lighter; irides silvery. Entire fish translucent.

The grouping of characters here described indicate a new generic division, closely allied to *Gunnellus*, to be thus limited—

LEPTOGUNNELLUS, Ayres.—*Body elongated, much compressed. Forehead not abrupt. Mouth of moderate size. Small even teeth in the jaws and on the palatines; vomer smooth. Dorsal rays all spinous. Ventrals well developed. Branchial aperture free.*

L. gracilis is apparently rare. But a single specimen has yet been seen, which was obtained

at a fish-stall; it had been taken in the Bay of San Francisco.

San Francisco, Jan. 29, 1855.

Col. L. Ransom in the chair.

Rev. I. S. Diehl deposited the skin of a Wild Cat,—*Lynx rufus*.

Mr. Eugene A. Upton presented a series of fine specimens belonging to the Serpentine group, consisting of tremolite, asbestos and chlorite schist—also green stone trap and vitrious scoria.

The thanks of the Academy were tendered to Mr. Upton for his valuable donations.

Dr. J. B. Trask exhibited a portion of the jaw of a Mastodon, containing two molar teeth, found near Columbia.

Dr. Kellogg presented sixty specimens of Californian and other plants.—also a drawing of native millet.

Dr. Kellogg exhibited a specimen and drawing of a Linariad considered new—it was found by Dr. Andrews near Punta de los Reyes.

Antirrhinum vexillo-calyculatum, Kellogg.–Stem erect, branching, extremities and branchlets long filiform, pubescent, glandularly pilose, and slightly viscous on all parts, (except stem and leaves below,) leaves and branches opposite below, alternate above; ovate acute at both ends, 3-nerved, smooth sub-pubescent on long petioles below, gradually diminishing above until sessile, subcordate and very minute. Flowers axillary on short peduncles; calyx 5-parted, upper division very large, leafy, ovate, acute, mucronate 3-nerved, as long or longer than the flowers' lower divisions, two on each side, linear-lanceolate mucronate (1-nerved) intermediate lateral divisions smaller or sub-equal, as long as the tube; corolla personate, palate very prominent, limb 5-parted, upper lip reflexed, 2-parted, divisions oblong emarginate, lower lip 3-parted, divisions obovate emarginate, middle lobe largest, lateral lobes reflexed, tube sub-cylindric, pubescent, gibbous at the base on the lower side, pseudo-spur compressed.

Stamens 4, inserted into the tube of the corolla, didynamous, included, filaments twisted compressed, kneed at the base, or ascending, glandularly pubescent above, anthers 2-celled, cells parallel before expansion, afterwards reniform or divided, sub-lateral; style filiform; glandular pubescent, stigma, 2-lobed, upper longer lobe beaked; capsule 2-celled many-seeded, oblique at base; seeds oblong-ovate.

This plant is one of the Linariads of Lindley, commonly known as Figworts, Snapdragons, or Toad-flax &c. This description is taken from a dried specimen, of which we have seen but one, further examinations are needed to determine its complete characters, our specimen has no mature fruit. The peculiar leafy division of the calyx is about one third longer than the flower, the tube about half an inch long, it appears to be an annual plant, somewhat like flax.

Dr. K. also reported on the native Millet referred to him, accompanied with a drawing and description.

This specimen furnished by Mr. Dosh of Shasta is from the head valley of the Sacramento River. It is remarkable for its size, being ten to twelve feet high, bearing a head from ten inches to one foot in length, dense clustered, and very prolific. Horses and cattle eagerly devour it.—When we consider the great changes caused by culture, there is no doubt but this will prove a valuable acquisition to the farmer. It furnishes the most wholesome food for birds; it also abounds in farina to such an extent as to be capable of furnishing flour for domestic and economical purposes. It is quite similar to the *S. Italica* and *S. Germanica* or Italian and German Millets, the stalk with its large swelled joints emulates the common Broom-Corn, the ripe grain is shining with a light golden tinge.

Setaria californica, Kellogg.—Sheaths hirsute and ciliate at upper point where the laminae first embraces the stem; the compound paniculate spike, cylindric, very long, erect, in heaped clusters or spikelets; bristles in bundles, about four, bearded upwards, three or four times longer than the seed; valves three, two ovate concave subequal ¼ to ⅓ shorter than the seed (outer very small,) 5-nerved, rachis densely hirsute, seed channelled and slightly flattened on one side.

It is to be hoped flowering specimens will be sent by our friends in that vicinity to enable us to complete the description.

Dr. K. also exhibited a drawing and specimens of the *Dendromicon rigidum*, or California Yellow Rose Tree.

The comparatively recent discovery of this beautiful flowering shrub in California, has elicited much interest among botanists, as forming a connecting link between the Poppyworts and Rock-roses.

Feb. 5, 1855.

Col. L. Ransom in the chair.

Dr. H. Gibbons presented a specimen of Magnesian Limestone from the border of the hills east of Oakland.

Dr. Kellogg presented various native flower seeds.

Mr. Geo. E. Drew presented thirty six specimens of earth &c., from an Artesian well at Stockton four hundred feet in depth, illustrating the stratification at that place. The thanks of the Academy were voted for the donation.

Dr. Kellogg exhibited a drawing and speci-

mens of the Olive,(*Olea Europea,*) with notes illustrative of its emblematic use in all ages.

This native Asiatic tree is well acclimated in California, from San Josè, south at all the old Missions; these specimens were brought by Col. L. Ransom of the U. S. Survey, from San Fernando.

Along our sea-coast declivities and sloping vallies where the soil is sweet, or free from stagnant moisture, and mostly composed of calcareous and granitic, or schistous and micaceous debris, commonly known as "flat gravel," the olive is very thrifty and prolific. It grows to the height of twenty or twenty-five feet with a trunk of eight or ten inches in diameter, and forms a picturesque ornament to avenues, and out-grounds, as well as in plantations: an eminent instance, among the many that claim our notice, of the bountiful resources with which Providence has blessed our State. No tree is more useful in every point of view, than the olive—its extreme longevity—graceful branches—evergreen foliage—close-grained useful wood—rapidity of growth and early maturity, yielding after the second year, and bearing for ages—ease of propagation, by simply planting a chip of the stump, or a cutting, in short for unnumbered reasons, it cannot fail to reccommend itself to the attention of the public. There are several species, with some varieties in the form of the fruit and foliage not necessary to notice.

Dr. Wm. O. Ayres presented the following description (with the specimen) of a Lamprey from this vicinity.

Petromyzon plumbeus, Ayres.—*Form* elongated, slender, sub-cylindrical anteriorly, compressed posteriorly; length of the only specimen yet observed, four inches and three fourths.

Eyes large, distant twice their own diameter from the anterior border of the head; length of the head, to the posterior margin of the orbit, not quite one twelfth of the total length.

Branchial orifices small, circular, disposed in nearly a straight line on each side, occupying a space about equal to the distance from the anterior one (which is near the eye) to the front of the head.

Mouth provided with smooth fleshy lips, not quite united posteriorly.

The appendages, commonly described as "teeth" are only two, near the lips, one superior, and one inferior, both elongated transversely. The superior is low in the middle, and elevated to a point at each end, causing it at first sight to appear double. The inferior is serrated, having eight or nine smooth nearly even points. In the throat is a partial, smooth, horny ring, or rather ridge.

The *first dorsal* fin arises a little nearer to the tip of the caudal than to the front of the head; it is very low, arched, and has a length about equalling one eighth of the length of the fish.

The *second dorsal*, separated from the first by an interval equalling about half the length of that fin, is at first low, rises to a height about twice that of the first dorsal, then decreases until at a point half an inch from the tip of the caudal its height is very small, and continues nearly evenly so through the remainder of the dorsal space. At the extremity of the body, and in all the region occupied in other species by the *anal*, scarcely even the semblance of a fin can be traced.

This species is of a plain, uniform lead color, inclined to green, above; bright silvery beneath.

P. plumbeus is apparently quite distinct from any previously recognized type of this genus.—The only one from which it is not widely separated in the arrangement of the "teeth" is the large species described as inhabiting the Columbia River, *P. tridentatus*, Gaird. With any of the European forms, or those found on the eastern slope of this continent it is scarcely necessary to compare it; the "teeth," the fins, the colors, the size distinguish it from *tridentatus*. It is undoubtedly always a small fish.

The specimen described was taken in the Bay of San Francisco, in November 1854.

I have not been able, as yet, to ascertain the occurrence of Lampreys in any of the rivers of California.

A letter was received from the Royal Academy of Sciences at Berlin, acknowledging the receipt of the first No, of the Proceedings of this Academy; also a letter from Prof. Henry of the Smithsonian Institution, promising to send to the Academy a suite of Meteorological and Magnetic instruments.

On motion of Mr, Sloat, it was

Resolved, that the proposition of Dr. W. P. Gibbons to deliver a course of Chemical Lectures, in aid of the funds of the Academy, be accepted.

Mr. Heflly was elected Recording Secretary.

FEB. 12, 1855.

Col. L. Ransom Vice President, in the chair.

Dr. J. B. Trask, presented three specimens of Naiades, with descriptions, from the Sacramento River, and Lagoons.

Anodonta Randalli, Trask.—*Shell*, obtusely triangular, rather thick, posterior margin alated, attenuate, obtusely rounded, anterior margin roundly-pointed, posterior margin sub-accuminate near the line of the ventral margin, ventral margin nearly straight, slightly compressed along the line of the edge laterally and internally, rather acutely rounded at the posterior end, an elevated ridge extends from the umbo to the posterior angle of the ventral margin, umbones much corroded, rather indistinct, lateral ridge sub-acute and rounded, becoming somewhat obsolete as it approximates the umbo, dorsal line arcuate inclu-

ding the ligament, lateral ridge of the shell forming the chord of a circle equal to 105°, epidermis rough, finely wrinkled anteriorly, very dark brown, semi-opaque, surface of the shell often very much denuded.

Interior of the Valves. Muscular cicatrices two, anterior deep and at times granulated, posterior confluent, the cicatrices usually with raised tumid edges; pallial line rather deep in old specimens, rather indistinct posteriorly in young shells, nacre opaque reddish brown, pearly, annual lines imperceptible within, but distinct externally, internal cavity deep, cavity of the umbo deep; Length three and one tenth inches, Breadth one and four tenths, Diameter one and two tenths.

The habitat of this Shell is the Sacramento and San Joaquin Rivers. I have not found it at any point north of the confluence of the Feather with the former stream. The shell is not plentiful, as one only was obtained during three days dredging; it is difficult to obtain good specimens, or even any considerable number, from the fact that the Indians place a high value on them, their use being the manufacture of ornaments for their persons.

I have some hesitancy in placing this shell with the genus *Anodon*, since there is in some specimens, the semblance of a rudimentary tooth. In the majority of shells which have come under my observation, this characteristic is wanting or at least so obscurely defined as to render it extremely difficult to determine the point with any degree of certainty. I have never seen the animal but once, and that was in such a state of decomposition as to render any diagnosis from this source of no value. I have, from these circumstances placed this shell in the genus *Anodon* until such time as there are more evidences for its removal than are now in our possession. A specimen of this species is in the cabinet of Col. L. Ransom, from the upper San Joaquin, which measures three and eight tenths inches in length and one and seven tenths in height—it is the largest that has yet been taken in our waters.

Anodonta triangularis, Trask.—*Shell*, thin, contour nearly triangular, inequi-lateral, equi-valved, compressed; anterior margin truncated; ventral margin nearly straight for the central half of its length; valves slightly compressed near the ventral margin producing a flattened elevation on the inner disks; posterior extremity obtusely rounded; dorsal margin elevated into a high connate wing; beaks nearly obsolete; epidermis greenish in young and dark brown or nearly black in old specimens; annual lines somewhat prominent externally, raised on the inner disks; pallial line entire; cavity of the valves shallow; nacre white, slightly iridescent; dorsal ligament strong; valves closed. Length three and three tenths, Height two and two tenths, Diameter seven tenths.

The habitat of this Shell is the Sacramento River, and it has not to my knowledge been found above the American Fork. It is seldom seen by the fishermen engaged on that stream, notwithstanding high prices have been offered for them; within 18 months I have procured three specimens only. The outline of this shell alone would separate it from the lake specimens, which are found in great abundance.

Anodonta rotundovata, Trask.—*Shell* inequi-lateral, compressed; umbo rather flat; dorsal line straight; projection of the epidermis above the dorsal line arcuate, horny and brittle; anterior margin rounded; ventral margin regularly arched and smooth; dorsal margin elevated into a high connate wing; darkish brown colored line surrounding all the margins; muscular impression rather indistinct; posterior cicatrice confluent; pallial line small but easily perceptible, conforming to the marginal border; epidermis yellowish brown, polished, finely corrugated near the margins and becoming darker; substance of shell thin; annual lines transverse, elevated exteriorly and perceptible on the disk; cavity of the beak shoal; nacre bluish white, pearly, at times mottled with yellowish spots. Length three and six tenths inches, Height one and nine tenths, Diameter seven tenths.

This shell is found in the lagoons of the Sacramento Valley; but has not to my knowledge been taken in the river. The plates were drawn from an adult specimen; it differs from the preceding species in its general contour, in being more expanded between the dorsal line and ventral margins, and in the much greater acuteness of that line, with the projection of the epidermis beyond, as delineated in the figure. The arched form of the ventral margin in this specimen, and the roundness of the anterior, compared with those of the *A. triangularis*, will separate it from that shell.

Dr. Winslow, exhibited two embryonic specimens of a species of Shark-Ray, inclosed in the egg-case.

Dr. H. Gibbons exhibited specimens of the Redwood and the Mammoth Tree, with the cones of both, showing the analogy between them, and the propriety of placing them in the same Genus viz: *Taxodium*. The Genus *Wellingtonia*, which Lindley had framed for the gigantic tree of California, was at best, named in bad taste. If the name of a hero, unknown to science, were at all appropriate for a genus of plants, an American hero, might easily have been found, to give a name to the giant of the American forest. But there is not likely to be any difficulty about the name, as Dr. Torrey and other botanists, both at

home and abroad, now concur in abolishing the new genus, and placing the so called Wellingtonia gigantea in the old genus Taxodium, retaining the specific name *giganteum*.

Dr. H. G. also presented specimens of Trillium, Asarum, and other plants, from Alameda county.

Col. R. D. Cutts presented the skin of a Fox.

Messrs. Ellery & Doyle presented an antiquated work on Natural History, published at Edinburgh, in the last century.

FEB. 19, 1855.

Col. L. Ransom, Vice President, in the chair.

Col. R. D. Cutts, of the U. S. Coast Survey was elected corresponding member.

H. G. Bloomer, Wm. Heffly, Dr. A. Kellogg, were elected Library Committee.

Donations. Report of the Smithsonian Institute, for 1854, presented by the Institute.

Dr. Behr, presented a species of Nepa.

Dr. J. B. Trask, read the following paper on a new species of Alasmodon, from the Yuba River. He also presented three specimens of the shell.

Alasmodon Yubaensis, Trask.—*Shell*, thick, transversely elongate; umbones low, situated rather below the line of the hinge margin, and near the middle of the anterior third, very much eroded, hinge and ventral margin unequally curved, shell broader before than behind, anterior margin bluntly and regularly rounded, slightly obtuse below, dorsal margin and ligament rather flatly arched, (in young shells the dorsal line from the end of the ligament posteriorly is often angulate) posterior margin obtusely rounded in mature specimens, its superior portion comprising the posterior third truncated, or but very slightly arched; edge of the valves thick anteriorly and rounded, thin posteriorly and rather sharp, slightly everted, shell gaping at both ends, (in young specimens the valves at the posterior end are closed) broader before than behind, considerably inflated from the umbones along its posterior slope, epidermis nealy black, opaque, smooth toward the beaks, rather roughly corrugated from the middle of the disks to the margins, surface undulated with annual lines of growth. *Within*, smooth; color lilac-greenish and iridescent posteriorly; rayed upon the surface beyond the pallial line, and seen by direct or transmitted light; cardinal teeth one in each valve, erect, that in the right valve sub-connate, bluntly rounded at the apex, grooved on the upper part, pitted at the posterior base, tooth in the left valve erect, flat, sub-triangulate, three small oblique grooves upon its upper surface producing small denticulations on the edge; five small transverse grooves on the under surface; tooth sub-acutely pointed; pallial line impressed anteriorly, obsolete posteriorly; anterior cicatrices distinct, deep, posterior confluent, shoal; nacre not extending to the margins, leaving a narrow border surrounding the latter: a somewhat tumid elevation of the shell between the pallial line and margin anteriorly. Length, four and five twentieths inches; height, one and six tenths; breadth, one.

The habitat of this shell is the Yuba River, and the specimens on which this description is based were taken from that stream about forty miles above its confluence with the Feather, by Hon. C. E. Lippincott, from whom they were procured. The shells are somewhat abundant, and have often been found at considerable depths inbedded in the gravel drift of that stream. There are shells of this genus in many of the running streams of this country, but thus far there seems but little diversity in the species, with the exception perhaps of the more northern rivers.

This shell represents *A. arcuata*, of the Atlantic coast, but differs from that shell as described by Dr. Gould, and also from the description of Dr. DeKay. The particulars which separate it from the Atlantic species are the following: *A. arcuata*, has two cardinal teeth in the left valve; our species has but one, or even a denticulation on that valve that could be considered even rudimentary. The form in the one is pyramidal and has from three to five grooves, while the California shell is flat and sub-triangulate, having scarcely three distinct grooves upon its surface, which is a constant character.—The tooth in the right valve is erect and has no twist as that described in the Atlantic species.

The beaks in our species are situated near the middle of the anterior third, and their summits are below the line of the hinge margin, and it is much broader before than behind; the color of the inner disks being so distinct from that of the Atlantic species, and the rays visible on the inner surface beyond the pallial line, are sufficient with the above to separate our shell from those east of the Rocky Mountains.

The difference of climate and the space of a broad continent between, would have the effect to produce wide differences in specific character of allied genera. I therefore consider this species as undescribed and have selected the name of the stream from which it was taken, for its specification.

The corresponding secretary, read a letter from Dr. D. W. Hatch of Sacramento, in which he promises a copy of his Meteorological Journal, and one from Prof. Nooney, dated at Washington, recommending the Society to send copies of the Bulletin, to the Smithsonian Institute for exchange with foreign scientific bodies.

FEB, 26, 1855.

Dr. Kellogg in the chair.

Dr. Andrews presented for the Library two volumes of Congressional Documents, relating to California, of the dates of 1849, and 1850.

Dr. Kellogg exhibited a drawing, and specimens, of a variety of *Lonicera Californica* or California Yellow Honeysuckle.

The specimens were found at the Mission of San Antonio, by Dr. Andrews.

Vine twining, all parts glabrous, leaves ovate mucronate, distinct, upper ones not connate-perfoliate; one inch, to an inch and a half long, petioles about an eighth of an inch, without stipuliform appendages; peduncle and rachis neither hispid nor glandular, tube of the corolla ascending, conspicuously gibbous at the base on the lower side, about the length of the deeply 2-lipped limb; ovaries not glandular, in all other respects the same as *L. Californica.*

The Yellow Woodbine or Honeysuckle above described, and the Red or Rose-colored, *L. hispidula*, are both found in this State. They furnish very desirable rural ornaments at only the cost, or comfort, of a pleasant walk. Why not associate with a happy home another delightful object to thrill and refine the heart of humanity.

Mr. Bloomer presented a plant, having the aspect of a *Fritillaria*, which was referred to Dr. Kellogg and Dr. Andrews for examination.

Dr. Wm. O. Ayres presented a specimen representing a new generic type among fishes, with the following description.

Anarrhichthys ocellatus, Ayres.—*Form* much elongated, anguilliform, compressed; the greatest depth (at the origin of the dorsal fin) contained nineteen times in the length; the thickness, at the same point, a trifle greater than half the depth; the depth becoming constantly less and less, until the body terminates in a point at the caudal extremity.

Head compressed, with the dorsal outline evenly arched. Eyes distant their own diameter from the snout; their length contained five times in the length of the head. Gape of the mouth free, the tip of the maxillary reaching the plane of the posterior border of the orbit.

Teeth strongly developed. In the upper jaw four (in one specimen only three) stout, canine teeth; behind these a transverse row consisting of three or four, smaller but of similar form; and on each side an imperfect row of three or four small ones extending back; all of these are on the intermaxillaries. The entire anterior portion of the vomer covered with a mass of large, close-set, rounded, grinding teeth. Each palatine bone provided with a firm row of teeth, like those on the vomer but smaller. In the lower jaw four or five strong canine teeth in front, similar to those above and interlocking with them as the mouth closes; all the jaw posterior to these filled with strong molar teeth. Pharyngeals with small, rounded teeth.

Lips loose and fleshy. Nostrils nearer to the eye than to the snout.

Opercular apparatus without spines or processes of any kind; operculum very thin, almost membranous. Isthmus broad; branchial aperture equalling in extent the distance from the snout to the posterior border of the orbit.

Skin smooth, with a somewhat copious mucous secretion. Scales minute, rounded oblong, imbedded in the skin, not imbricate, scarcely visible without close examination, becoming less abundant anteriorly, and entirely disappearing before reaching the pectoral fins; all anterior to this being scaleless.

No trace of a lateral line.

Dorsal, anal, and caudal fins entirely continuous.

The *dorsal* fin, arising almost at the back of the head, continues to increase for nearly a fourth of its length, attaining thus a height equal to the depth of the head of the fish. A little posterior to this the elevation becomes less, and the fin gradually decreases in height until, near the caudal extremity, it has only one third of its greatest elevation.

The *anal* fin, arising at a distance from the snout, a little greater than one fifth of the total length, is similar to the dorsal in form, having, in most parts, about two thirds the height of that fin. The rays at the extremity of the body, which represent of course the *caudal fin*, are about equal to the longest rays of the anal. The rays of the anal and caudal are articulated, little branched. Those of the dorsal are single, not articulated, flexible; the point at which these simple rays join the articulated rays of the caudal is not marked by any depression in the outline of the fin. The junction of the anal and caudal cannot so readily be determined, as the rays of both are articulated.

The *pectoral* fins are rounded, scolloped on the margin by the projection of the rays, their height a little greater than the depth of the head.

No *ventral* fins.

Dorsal rays about 250; anal and caudal, about 233; P. 19. All the rays are enveloped in a somewhat thickened membrane.

In *color* perhaps no more beautiful fish than this has yet been found in our waters. It is elegantly mottled with light ashy grey and dark olive green, disposed in irregular rings, lines, and blotches, which cover the head and body. They extend also upon the dorsal fin, which in addition bears a remarkable row of large, brilliant, sharply defined ocellations: these are of such size as

to occupy about half the height of the fin, each consisting of a light ring enclosing a much darker space. At about the middle of the length, these rings (in one specimen) become blended, forming thence a black band with a light line above and below it which extends to the caudal. The anal is dark brown, (black near the tail) with a border almost white in its whole lengh.

These notes of the coloring are taken from a young specimen only twenty two inches long.—In another, fifty two inches in length, the colors though not essentially different were less brilliant.

We find here grouped the arched head, the mouth, the remarkable dentition, the branchial aperture, the surface, the scales, the structure of the fins, belonging to *Anarrhicas*. But they are associated with an eel-like elongation of body and a corresponding complete union of the vertical fins, which must remove it from that genus. The fish has in fact, at the first glance (excepting the head) much the aspect of a Muraena. Its generic features may be thus stated.

ANARRHICHTHYS, Ayres.—*Head smooth, arched, obtuse. Body very much elongated. Scales small. Dorsal, anal, and caudal fins united.—Canine teeth in the front of the jaws; blunt, rounded teeth on the vomer and palatines and in the lower jaw; none on the superior maxillaries. No ventral fins.*

A. ocellatus is apparently rare. Only two specimens have yet been seen, which by a singular coincidence were brought into the market within two days of the same time. None of the fishermen had seen the species previously. The stomach of the larger specimen contained fragments of a Sea-Urchin, apparently a *Cidaris*, so that their habits appear to be like those of the species of Anarrhicas. Both specimens were taken in the Bay of San Francisco.

MARCH 5, 1855.

Dr. H. Gibbons in the chair.

A valuable collection of fossil shells was presented in the name of Dr Antisell from Santa Margarita. The thanks of the Academy were voted for the donation.

A letter from Mr. Philip B. Carpenter of London, to the Rev. Mr. Cutler of this city, was read, asking for authentic information or exchange of specimens in illustration of the Mollusca of California.

Dr. Wm. O. Ayres presented specimens of the following fishes—*Ophiodon elongatus*, Gir., *Leptogunnellus gracilis*, Ayres; *Scorpaenichthys marmoratus*, Girard; and *Catostomus labiatus*, Ayres, with a description of the last mentioned species.

CATOSTOMUS LABIATUS,—Ayres.

Form elongated, fusiform, somewhat compressed. Greatest depth, which is equal to the length of the head, contained in the total length not quite six times. Dorsal outline gently arching from the dorsal fin to the snout. Head subquadrangular in transverse section; elongated in front of the eye, so that the distance from the eye to the border of the operculum on its own plane, is contained nearly twice in the distance from the eye to the tip of the snout. Length of the eye about one fifth of the length of the head.

Nostrils almost immediately anterior to the eyes; the posterior aperture much the larger, oval, covered by a large crescentic valve from its anterior border.

Mouth large and very protractile, the pedicels of the intermaxillaries being long and the tissues lax. Lips quite large and thick, papillose, the papillae imperfectly arranged in rows; the posterior lip deeply lobed.

Lateral line nearly straight, curving but slightly downward near its origin. From its anterior extremity two rows of tubes diverge; one passes directly across, on the line separating the head and body, till it meets the tube from the opposite side; the other passes forward, and quickly divides into two branches, one running along the supraorbital space and terminating at the nasal cavity, and the other curving down and passing along the suborbital bones in their whole length. These rows of tubes are quite prominent.

Scales largest on the posterior portion of the body, quadrangular, longer than high, with numerous radiating furrows. Sixty four scales along the course of the lateral line, and eleven above it in an oblique line at the origin of the dorsal fin.

Dorsal fin, trapezoidal in form, arising at a point equidistant from the snout and the base of the caudal fin. Its length, which is a little less than its height, is equal to the length of the head anterior to the preopercular border. The fourth ray, unbranched, is the highest, the first two being very short; the last ray has a little more than half the height of the fourth.

The *ventrals*, rounded, arising posterior to the middle of the dorsal, have a height not quite equalling the length of that fin.

The *anal*, somewhat acutely rounded, with a height equal to the length of the head, is separated from the ventrals by a space nearly equal to its own height. The fifth and sixth rays are highest, the first very short. This fin overlaps the caudal for more than a third of its height.

Pectorals rounded, their height equalling that of the anal.

Caudal concave, the central rays only a little more than half as high as the external, which are about equal to the anal.

D. 3-12; V. 2-10; P. 17; A. 2-7: C. 18, with six accessories.

Color dark blackish brown above, becoming lighter on the sides, and white beneath.

C. labiatus must be rather rare as but a single specimen has yet been observed; it was taken at Stockton, was seventeen and a half inches in length. It was brought to market in company with a number of *C. occidentalis*, from which it was not distinguished by the fisherman who call them both *Sucker*.

We knew in California, previous to the discovery of this species, but one representative of the genus *Catostomus*, *C. occidentalis*, Ayres. By a somewhat singular coincidence this latter had been described by Prof. Aggassiz (Am. Jour. Sc. and Arts, Vol. 19, p. 94,) and by myself (Proc. Cal. Ac. Nat. Sc. Vov. 1, p. 18, under the same specific name, at almost the same time, but the reading of my paper and the publication of our Proceedings have priority by a few days. Prof. Agassiz' account of course did not reach us till several weeks later.

From *C. occidentalis*, the present species is distinguished by the following characters—the head, anterior to the eyes, is more elongated; the centre of the eye is decidedly nearer to the lower angle of the subopercle than to the anterior edge of the upper lip; the mouth is larger, the lips thicker; the opercle and subopercle are smaller; the dorsal fin is situated further back, and is smaller, its length being less than one seventh of the length to the tip of the central caudal rays; the pectorals are larger; and the anal is much more developed.

From *C. communis* it differs in the greater length of the head, the larger mouth, the thicker lips, the form of the dorsal, and the greater development of the anal; and from *C. Bostoniensis* in nearly the same points.

To Lesueur's *C. aureolus* it has much resemblance, but from that it is now generically separated, as in the recent revision of the old genus Catostomus by Prof. Agassiz, *aureolus* is included in the genus *Ptychostomus*.

In a paper read by me before the Academy some months since, the remark was made that further investigations in our Californian fauna would probably show a necessity for many modifications among existing genera. In the present species we have a partial illustration of the truth of this. In the revision of this group of fishes already mentioned, Prof. Agassiz after much study has set forth the characters which in his judgment should indicate generic divisions, attaching much (though not undue) importance to the inferior pharyngeal bones and the teeth upon them. In the arrangement thus proposed by him, the species now under consideration belongs evidently to *Catostomus* proper. And yet we find the pharyngeal teeth (but not the pharyngeal bones themselves) much more nearly corresponding to those of *Ptychostomus*. They increase in a very even manner from above downward, so that those of the middle of the arch are not "already of the same cast as those of the lower part of the comb," in fact they do not assume that cast till quite near the lower part. We find "the inner edge of the lower ones square," while in the middle and upper ones the inner margin rises into a rather sharp cusp. Still the body of the bone is that of *Catostomus* and we have thus a blending of the characters of the two genera.

Without question other types of this group of fishes will yet be discovered on this side of the mountains. Quite a remarkable representative of the Chondrostomi was found by the U. S. Exploring Expedition, under Capt. Wilkes in the Columbia River. It is *Acrocheilus alutaceus*, Agass. and Pick.

March, 12, 1855.

Dr. Ayres in the chair.

Dr. Antisell was elected a Corresponding Member. and Mr. Julius Frœbel a Resident Member.

On motion it was ordered

That copies of the proceedings of the Academy be furnished to the San Francisco Journal, to be published in the German language.

Dr. Kellogg exhibited a drawing and specimens of *Arabis blepharophylla*, or Cal. Purple Rock-cress.

This beautiful purple flowered Rock-cress, as its common name implies, is only found in rocky localities. It has been supposed to be from the interior of this State, but it is found abundantly on the rocky peaks of mountains and high hills in this vicinity, and along the coast; this habit of growing on high hills has also obtained for it the names of Purple Alpine Wall Flower, &c.,

It is a perennial cruciferous plant: 4 to 6 inches high, the flower stem rising from a cluster of radical leaves, obovate-spatulate; those of the stem oblong, sessile, all toothed and naked, except the margins, which are ciliate with simple or forked white hairs; the hairs on the calyx stellate, petals purple, obovate, crenate on slender claws &c.

For ornamental purposes this plant is superior to many of our cultivated species.

Dr. Ayres presented the following description of a new ichthyic type, together with a specimen of the species described.

Mylopharodon robustus, Ayres.

Form, elongated, fusiform, compressed; ventral outline more arched than the dorsal; dorsal outline ascending without curvature from the

snout to the nape, thence arching very slightly, the line of union of the head and body not marked by any depression or change of form. The greatest depth contained not quite five times in the total length. Length of the head a little greater than the depth of the body. Depth of the head at the plane of the eyes equal to the distance of the same plane from the snout.

Mouth oblique, gape tolerably free, the plane of the tip of the maxillary passing about midway between the nostrils and the eye. Lower jaw the shorter. Lips smooth, a little loose and fleshy, not corrugated. Each jaw provided with a firm, thickened layer, placed along the inner border of the lip; this layer is narrow, and becomes more attenuated as it passes back along the jaw until, before reaching the angle of the mouth, it terminates; it is whitish, with a slight tendency to plication transversely; its connection with the mucous membrane both of the roof of the mouth, and of the lips is feeble, so that it is quite easily detached; it corresponds to the lips of the Suckers, though the structure of the mouth is not at all like that of these fishes. No traces of barbels are discernible.

Eyes very nearly circular, their diameter contained a little more than seven times in the length of the head.

Posterior aperture of the nostrils much the larger, nearly circular, covered by a crescentic flap from its anterior border.

The posterior superior and posterior inferior borders of the operculum meet at nearly a right angle, but as the suboperculum continues the border of the opercular apparatus from this point, this border becomes nearly a regular curve, only slightly angulated.

Scales of moderate size, not varying much in dimensions on different parts of the body, about eighty two along the course of lateral line, and seventeen in an oblique line above it at the origin of the dorsal fin. Scales oval, not much angulated; concentric lines very fine; radiating lines of the posterior portion numerous, encroaching somewhat on the lateral portions. Those forming the lateral line have the tube commencing near their anterior border.

The *dorsal* fin, trapezoidal in form, arises at a point a little nearer to the snout than to the tip of the central caudal rays. Its length is equal to the depth of the head at the plane of the pupils: its height is a little greater, the fourth ray (which is simple, articulated) being the highest and just double the height of the last ray; the first two rays are very short.

The ventrals, arising a little in advance of the dorsal, which they equal in height, are rounded. Their tip does not quite reach the vent.

The *anal*, similar to the dorsal in form, is a little less in both length and height. It arises a little in advance of the point to which the rays of the dorsal reach. The fourth ray, branched, is the highest, the first being very short.

The *pectorals*, rounded, have a height equal to the distance from the origin of the ventrals to that of the anal.

The *caudal* is beautifully waved on its posterior margin, each lobe being convex. The height of the central rays is half that of the external.

D. 3-8; A. 2-8; V. 1-9; P. 17; C. 19, with eight or nine accessories.

Color dark greenish brown above, becoming lighter on the sides, abdomen white.

Lateral line convex downward, passing nearer to the ventral fin than to the dorsal. A similar row of tubes is continued forward from upper angle of the branchial aperture, descends behind the eye, turns forward beneath it, and occupies the entire length of the chain of suborbital bones. Another row, imperfectly manifest, crosses the top of the head, at its line of junction with the body.

M. robustus appears to be by no means common. It is brought to market from the San Joaquin, in company with *Gila grandis* from which it is not distinguished by the fishermen, both being sold under the singularly inappropriate name of Salmon Trout. It has in fact much resemblance in external characters to that species, though the body is stouter, and the head relatively larger not being concave on its dorsal surface and as it were separated from the body. In contour it is quite like the Dace of the Connecticut River, (Leuciscus pulchellus; Storer.) But it is readily removed from these species, and from every other Cyprinoid hitherto described, by the structure of the teeth on the inferior pharyngeal bones. The bones themselves are short, strongly curved, and very stout; somewhat resembling in form those of *L. pulchellus* already mentioned, though much more robust than those of any other Californian type of this family. The teeth are arranged in two rows. Those of the external row are four (in some instances five) in number, remarkably thick and strong, rather short, each provided with a broad enamelled crown which is truncate obliquely inward, thus affording a large smooth grinding surface; they are closely placed, the crowns nearly touching each other. The inner row is but an imperfect one, consisting of two teeth, or at the most three, which are small, with their crowns blunt, but not truncate as in the outer row.

We find in this formation an intermediate condition between that of the open mouthed Cyprinidæ, and that of the tribe of Catostomi. We have the pharyngeals, the small number of teeth with their nearly cylindrical bodies which represent the former, while we have also the abruptly truncated summits which occur in the latter. And as another illustration of the passage toward the Catostomi we have the thickened de-

posite along the lips. One feature not yet indicated allies this type to the first mentioned tribe —the presence of the pair of slender bones suspended beneath the interbranchial series for the attachment of the muscles which separate the inferior pharyngeals; these bones appear to be wanting in all the Catostomi.

A new generic division therefore seems needed, for which the characters specified suggest the name.

MYLOPHARODON, Ayres.

Scales, fins, and lateral line very similar to those of Lavinia. Mouth rather large. Lips not corrugated. A thickened deposite, slightly rugose along the inner surface of each lip. Pharyngeal teeth in two rows; those of the outer row blunt, truncate abruptly.

The position which this genus must occupy has been already shown.

It may here be stated that for the fish with which this is associated in name by the fishermen, the one already described by me as *Gila grandis*, a new genus must presently be constructed.

M. robustus attains a weight of six to eight pounds, being thus the second in size of the California Cyprinidae with which we are yet acquainted.

The following communication was received from Dr. Antisell:

I take the liberty of submitting to the Academy of Natural Sciences of San Francisco, the accompanying fossils derived from San Luis Obispo County: they are found occupying a very extensive tract of country, not being confined to the above named county, but well marked there and having made a more close investigation of the extent of their distribution in the Valley of Santa Margarita, I am better enabled to localize them and I present a rough diagram, giving a section of that Valley. The trail through from the Salinas Valley to the town of San Luis Obispo passes along this valley whose western limit is the range of the Coast Mountains, and its eastern, the Salinas river from which it is separated by a low granite range—when this section is made, the distance between these two points is about nine miles. The Valley lies to the Eastward and is about 1000 feet above sea level: the strata are very much contorted and bent by augitic and magnesian (Talcose) rocks which are protruded in a few places and since which the whole surface has been smoothed down and denuded by current-actions. The rocks on the west side of the Valley are sandstones, grits and conglomerates having a general dip to N. West, varying from 20° to 50°, intersected by Felspathic, Amygdaloid, and Augitic trap which are the elevating agents of the littoral range of hills On the East of the Valley as stated is a granitic axis upon which the sandstone conglomerate rests conformably, although the beds have, by no means the same thickness as upon the west side; upon those beds of sandstone just mentioned repose the fossiliferous layers, from which they are separated by a few feet of aluminous rocks, with lamellar, flinty layers, presenting in some parts a distinct onyx-lamina: this layer as it is a constant one, is that which indicates alike the position of the fossiliferous bed, and the intruding effects of the trap rocks; the fossil beds always rest upon this layer, and in some places are not more than four feet apart from it. It is the western limit which this bed forms, for I have not found it appear in the eastern side.

The fossiliferous beds dip generally eastward or south-east, and have no defined synclinal axis, but repose conformably on the subjoined flinty bed. These beds in a few cases occupy the lower portion of the Valley, but at its southern extremity, it is elevated and forms the low, rounded whitish hills which are so prominent a feature in the landscape. They occupy a width in the Valley from ¾ to nearly 3 miles and having a direction of N. 10° W. (Magnetic.) The total thickness of these beds, I do not think exceeds 450 feet and may be conveniently divided into four beds, beginning at the bottom of the Series.

1. Bed. Reposing on the flinty layers—about 200 feet thick a fine whitish sandstone with layers of Ostrea interstratified; these shells are generally in layers from 2 to 4 feet thick and connected together by a calcareous paste including fine grains of rounded quartz pebble. The sample of oyster which I forward is a fair specimen of the size and form, though not by any means the largest; the largest I have seen measured 14 inches long, by seven inches wide, the great weight of these shells is an objection to their transport; the thickness the under shell attains is remarkable, 6 inches in some cases. I send a portion of an upper shell to show a characteristic which exists in many though not all the specimens, viz: the thickness of the process near the hinge. I have not a work by me to name this shell, and I am not familiar with it as fossil. I think I have two other species well marked.

The 2nd bed lies above the first from which it is separated by quartz grit—it contains a mass of broken shells forming a calcareous mass and layers of oyster and Pecten—the Pectens are large, rarely perfect, and when so, in such a soft condition that it is difficult to preserve them.—Some specimens resemble closely the Pecten Jacobæus; this varies from 70 to 85 feet in thickness.

The 3d bed varies from 60 to 90 feet thick, is made up almost completely of the white calcareous cement and quartz pebble; the fossils in it

are Ostrea, and an Echinoderm, a Cidaris or Spatangus, I think the latter; these last are the characteristic of this layer, for I have not found the Echinoderm in the lower beds—the specimens vary in size from ¼ inch to 1½ inches across, and are variously marked upon the surface. I have ascertained four distinct species of them, some of these specimens especially those from Rio Estrello, perhaps belong to the radiate family, in the upper layers of this, Pecten again occurs, with an occasional Cardium and Terebratula and a bivalve mollusc, either "Mya" or "Unio"—Astarte modiolus, and Belemnite.

The 4th bed is a soft brown sandstone which possesses some layers hardened and perforated by molluscs.

Such are the beds as they exist in San Luis Obispo Co., and Santa Margarita. The farthest point north (the 1st point) where I observed them was on the San Antonio, near its head and the farthest point I have observed it, is the the south limit of the county, as I have not followed it into Santa Barbara. Its western limit is the littoral range of the Coast Mountains. I give this term to the most westerly of the many chains which receive the name of Coast Range: towards the east it is found passing into Tulare County, and extending to the foot of that chain which is known as the extension of the Sabilan or Mt. Diabolo range. In this course it is not continuous, but is broken and uplifted by the chains and separate hills which occur in passing east, and in some places fine sections are exposed, such occurs in the Panza hills along the Estrella River from which the best specimens were obtained. The hills from which the Santa Maria derives its supplies of water, expose these beds on their foot ranges.

Independent of the character of the fossils, there are two points of interest connected with these beds.

1st. They lie conformably upon the granite upheaved, which lies beside the Salinas river—they are older than the granite.

2nd. They lie *east* of the littoral range; all the beds on the west side of this latter chain are *more recent* than those on the east. They were not uplifted at that period, and the depth probably greater than could sustain those animals.

I am inclined to look upon these as Early Eocene shells. They closely resemble cretaceous fossils and had I found *Ino ecrimus* among them, I should not have hesitated. It is not easy to compare American specimens with European, as the species differ; if they be Eocene fossils, the beds of sandstone below belong to the same period, and those occupy a thickness of 2,200 feet; they are all of marine origin, and nowhere have I seen any trace of land plant or animal. This is a large thickness for a single Tertiary bed, larger than I am acquainted with elsewhere; but it is no insurmountable objection to its admission into that series.

March 19, 1855.

Dr. H. Gibbons in the chair.

Dr. Kellogg presented specimens of the fruit of *Torreya Californica*, the California Nutmeg Tree.

Dr. Kellogg exhibited a drawing and specimens with seeds of a species of *Cyclobothra*, a plant of the Tulip family.

This species is known by the common name of Alabaster Tulip, on account of its pure white color; it is found several feet in height with branches at the axils of the leaves, and numerous nodding bell-shaped flowers scarcely expanded. Several months since, two other smaller species were figured; one with golden flowers, known as the Golden Star Tulip, and another with blue or striated flowers called Blue or Striated Star Tulip.

We have no means of reference to the descriptions of such species as are known, and must therefore be content to lay before the Academy only our personal observations. It is to be hoped our friends of Placerville and elsewhere will furnish specimens for illustration and exchanges.

Dr. W. P. Gibbons presented the following description of a new Trout.

Salmo iridea, Gibbons.—Body elongated, subcompressed; head about one fourth of total length. Eyes large, circular, horizontal diameter nearly one third the length of the head. Facial outline elliptically rounded. Vertical line from the posterior extremity of the upper maxillary, will graze the posterior edge of iris. Teeth minute, numerous, regular, incurved. A series of from 3 to 5 incurved teeth in each margin of the tongue.—Those on the edges of the palatines and on the vomer, numerous.

Length of body to its greatest depth, 9 to 2.—First dorsal rises from a point midway between the extremity of the snout and the end of the lateral line. The adipose and anal terminate opposite to each other. Ventrals under the first fourth or half of the first dorsal. Caudal forked. First dorsal with five irregular, interrupted black horizontal bands. Other fins black punctate, ventrals tipped with orange, caudal and adipose with black margin.

Scales small. Back cineritious, with light purple tint. Sides along the lateral line light vermilion, interrupted by rounded dark patches, which become nearly or quite obsolete in older specimens. Sides and belly below these, silver tinted, finely black punctate.

D. 14; P. 13; A. 12; V. 11; C. 19, with accessories. Length 5 inches.

The three specimens from which this description was taken were obtained by Mr. Nevins from the San Leandro creek. They are evidently young fish.

Donations to the Library—American Philosophical Transactions, Vol. X; Notes on the Classification of the Carabidae of the U. States, and Revisions of the Elateridae, by John Le Conte, M. D., from the Author; A *Memoir of Samuel George Morton, M. D.*, by *Charles Meigs*, M. D., from the Philadelphia Academy of Natural Sciences; also a *Notice* of the Origin, Progress and Present Condition of the *Academy*, with its Proceedings from Jan. 3d 1854 to August 29th 1854.

Catalogue of the described *Coleoptera* of the United States, by Friedrich Ernst Melsheimer, M. D., from the Author; also Journal of the *Academy of Natural Sciences* of Philadelphia, Vol. VII, part II., Vol. VIII, part I. and II., together with the first and second Volumes of the new Series.

Dr. Wm. O. Ayres presented a specimen, a canine fœtus of full term, exhibiting a singular instance of abnormal formation resulting from the union of two ova, one developed of course in part at the expense of the other.

Externally, the head, neck, left fore-leg, trunk, and posterior extremities showed nothing worthy of attention, except the entire occlusion of the auditory opening on both sides. From the abdomen, however, anterior to the umbilicus, protruded on a broad pedicel the hind legs which belonged to the arrested ovum. They were placed with their anterior surface toward the same surface of the other pair, but were much smaller and weaker. In the place of the right fore-leg was a member consisting of three legs, joined in one, the outer one evidently belonging to the trunk to which it was attached, the other two being the pair which corresponded to the supernumerary posterior extremities. They were of uniform size, the feet in a measure distinct from each other.

On removing the integuments, an ovoid body half an inch in length was brought to view, lying on the outside of the abdominal muscles. This was a kidney, belonging to the protruding posterior extremities, and connected with them in a normal manner; but it was the only one with which they were provided.

The developement of these extremities was found to be very imperfect. The pelvis consisted of two slender, nearly cylindrical cartilages, placed longitudinally side by side, united at their anterior part, and ending there abruptly without trace of vertebræ. The position of the muscles was merely *indicated*, the chief part of the bulk being made up of adipose tissue. The circulation for these members was drawn from the descending aorta, by a single branch of no considerable size, just above the great mesenteric. The only portion of alimentary canal which appertained properly to them was a rectum, which branched from the main canal, and even for this no outlet existed.

The liver connected with this ovum was a mere lobe projecting from the upper surface of the normal one.

The organs belonging to the most developed of the two ova, (that which seemed to constitute the true animal, of which the other was only an appendage) were all of normal and healthy condition. The arterial distribution from the heart presented nothing peculiar. The *subclavian* going to supply the triple arm was not even changed; after passing the axillary region it divided into three branches and was thus enabled to reach the whole space. (The three *humeri* were perfectly joined, forming one flat bone, and articulated with a single scapula; in the fore-arm all the bones were soldered, except the external radius.) The nerves were merely those of a single arm divided like the artery.

The placenta of the one ovum was joined with that of the other; the vessels remaining separate, though included in one cord, and each ramifying on its own organ.

March, 26, 1855.

Col. L. Ransom in the chair.

Dr. T. L. Andrews presented a copy of Dana's Mineralogy.

Dr. Laub, U. S. A. presented a specimen of silicified wood, found at Benicia in sandstone.

Mr. S. V. Bowman presented two specimens of a large and remarkable Crab, taken in the vicinity of the Farallones.

The thanks of the Academy were voted for the donations.

Dr. Kellogg exhibited a drawing and specimens of a plant from Alameda known as the California Elecampane.

The general appearance of this low, grey-leaved Sun-flower, shooting up from the earth large clusters of broad lance leaves from the branching head roots and suckers around the flower stem, very aptly suggests the common name. The root is of a dark colored texture with radiating lines similar to the Elecampane. The odor is strongly balsamic, or terebinthine.

Its medical properties are tonic, gently stimulating and diuretic, useful in chronic diseases of the mucous membranes, and especially expectorant in chronic diseases of the lungs, &c; an ounce of the root to a pint of boiling water in doses of a wine-glass. Cut and mixed with grain it is also good for horses. These thick fusiform roots are eaten by the Indians; they are first beaten and fermented a day or two in a hole made in the ground, then heated rocks are thrown in; they are thus said to furnish a sweet agreeable repast.

Botanically this plant belongs to the natural family *Heliopsideæ*, and occupies an intermediate position between *Wyethia* and *Balsamorhiza*; with some slight alterations this, and the former, might constitute one genus.

The provisional name proposed is

MELARHIZA.—Kellogg.

Heads many-flowered, ray-flowers numerous, fertil pistillate, with sterile filaments, scales of the involucre loosely imbricated in 3 to 4 series-unequally foliaceous, longer than the disk, inner, most smaller, glabrous within, resembling the soft herbaceous chaff. Receptacle nearly flat; the chaff linear-lanceolate, 2 lateral teeth obsolete, carinate acute, somewhat foliaceous, half embracing the achenia, and in the unexpanded flowers about the same length. Corolla of the disk cylindrical, elongated, with a short proper tube, 5-toothed, teeth bearded externally. Branches of the style in the ray-flowers sub-villous; in the disk elongated filiform, revolute, villous throughout. Achenia of the ray stout, sub-compressed, arcuate, all elongated, 4 to 5-angled, prismatic, terminated with a membranaceous coroniform laciniate pappus, 5 to 10-toothed, one or more of the teeth often prolonged into a rigid persistent awn, largest at the two principal angles, anthers, disk and rays, yellow. Low perrennial plants with the labit of Inula Helenium, long black tap-roots branched at top, stems simple erect often decumbent or ascending, head solitary, leaves chiefly radical.

M. inuloides.—Stem simple, erect or ascending, 1-flowered, whole plant lax fleshy densely tomentose-canescent, radical and lower leaves very broad lanceolate 3 to 5 inches wide, 8 to 14 inches long, veiny, laminæ somewhat waved, gradually tapering at base into the petiole, entire subacute; upper cauline leaves broad rhombic-lanceolate, seldom ovate-lanceolate, alternate, chiefly radical, from forked head roots, or lateral sucker buds; leaf-scales of the involucre in 3 or 5 series, loosely imbricated broad-lanceolate acute and acuminate, somewhat unequal, exterior longer than the disk, innermost smaller; florets, styles, pappus, achenia and chaff pubescent; rays 1½ to 2 inches long, 2 to 3-toothed 20 or more; anthers, disk flowers and rays yellow.

There are also two other very distinct species of this genus not yet in bloom.

Dr. Kellogg also presented the following description with the specimens.

MARAH MURICATUS.—*California Balsam Apple.* This new plant was described about two years since before the California Academy of Natural Scienees accompanied by a drawing and illustrations afforded by abundant fresh specimens.

This herbaceous vine climbs over shrubs in a similar manner to the *Echinocystis* or Balsam Apple of the older States and is closely allied to that genus as well as to a similar plant found in this vicinity. Besides these there are several other plants in California of this natural family,—*Cucurbitacæ*, or cucumber tribe,—which so far as we are informed, have not been described.

One of the most remarkable features of this climber is the gigantic fleshy root which shoots its numerous branching angular stems ten to thirty feet in length, which climb over and festoon the shrubs within their reach with a dense, green broad, roundish foliage, somewhat heart-shaped. The claspers or tendrils by which it clings are many-parted or from one to five. From the intense bitterness of the root it must prove an excellent tonic. The seeds abound in oil, which burn with a clear, bright flame, with little or no smoke or odor. It is readily obtained by simply bruising and pressure. There is also a pungent acrimony determined to the larynx and throat after chewing the pits, besides a bitter laxative property. We have still much to learn of its medical virtues.

Generic Character.—Flowers monœcious—Calyx flattish; in the fertile flowers constricted above the ovary, tubular-campanalate, segments five, subulate, shorter than the corolla. Petals, five, lanceolate, united at the base into a rotate-campanulate corolla. Stamens three to five; filaments short, united; anthers sigmoid, connate. Fertile flowers, solitary; abortive filaments, three to five, distinct.

Style short; stigmas two, very large, broadly obcordate, connivent. Fruit, oblong, tapering at both ends, sparsely muricate, with weak prickles, fleshy, bursting elastically near the summit, at length dry, membrano-coriaceous; carpels not separable, two-celled; seeds six, enveloped in a dry, reticulated, membranaceous arillus, three in each cell, imbricately ascending, large, flattened, broadly oval, margin obtuse; dark brown.

Root perennial, very large, tubero-fusiform.—Stem annual, a climbing, succulent vine. Leaves palmately five to seven-lobed; three to five-cleft tendrils.

Flowers small, white; sterile in long simple or compound racemes; the fertile ones from the

same axils, solitary, on long, enlarging, ebracteolate peduncles.

Specific character.—Stem smooth, angled, slightly ribbed, and furrowed, sparsely pubescent; tendrils many-parted, (three to five) lateral or opposite the leaves; ten to thirty feet long, climbing over shrubs. Leaves slightly scabrous above, pubescent beneath along the veins; four or six inches broad, roundish, sub-hastate, cordate palmate, with an obtuse sinus at the base; five to eight sinuate-lobed; lobes angled entire or repand-toothed, mucronate, alternate. Corolla white, glandularly pubescent within; petals oblong-lanceolate sub-acute; sterile flowers in simple or compound paniculate racemes eight inches to one foot in length, from the same axils of the leaves as the fertile. Fertile flowers three-fourths to one inch broad on an elongated tapering point of the fruit and calyx tube. Calyx divisions subulate, often lanceolate petaloid, one-fourth to one-half the length of the petals.

Fruit four to five inches in length, two to three inches in breadth, oblique tapering to both ends, green, marked from base to apex by six or seven dark green stripes, slightly depressed and somewhat irregular; fleshy, bursting elastically by irregular fissures on the swelled side near the summit, the lacerated edges of the orifice becoming revolute; two-celled (rarely three-celled at the base.) Seeds three-fourths of an inch long by upwards of an inch broad, flattish, undulated, rounded obtuse margin, sub-reniform or hilum apparently on the side, imbricately ascending, placental attachment opposite the gibbosity, surface slightly pitted, dark brown verging to black.

This plant we have seen growing nowhere except on the declivities of the hills back of the Mission Dolores, on Mr. Hutchinson's Ranch, near San Francisco.

The fruit is somewhat in six divisions, by the green veins that mark the surface, and after discharging the seed fades to a whitish creamy brown, drying on the stem. The drawing in the archives of the Academy represents one instance of the leaves being opposite; this is sometimes observed, but more frequently this secondary little axillary leaf is only partially developed, and more generally still, entirely wanting.

The seed of this fruit is remarkable for its size and shape, position, &c. It bears a resemblance to some forms of Kidney or Butter Beans.

The flower, also, sometimes anomalously has a six-parted border, and corresponding divisions of the calyx, but such instances are rare.

The significance of the name we have chosen would be better understood by perusing Exodus xv: 22–26.

April 2, 1855.

Col. Ransom in the chair.

Mr. S. R. Throckmorton was elected a Resident Member.

The Committee appointed, some months since, to make examination in regard to a method for preserving submerged timber from the attacks of the Ship Worm, offered the following report.

"Shortly after our appointment we made to the Academy a partial report, stating that the method proposed had every prospect of being highly successful. We had visited the ship-yard of Neefus & Tichenor, below Rincon Point, where a set of "ways" had been coated with the preparation recommended by Mr. Swan. We were assured that the timber was then entirely sound, though timber equally exposed near it for the same period was almost destroyed by the Teredo. A recent visit however to the same "ways" reveals the fact that the Ship Worms are now rapidly destroying them, and that the coating of the supposed preservative has merely delayed their attack a few months. In the judgment of the parties interested, the success is not sufficient to induce a renewal of the attempt.

We are therefore forced to the conclusion that we are scarcely more advanced in knowledge concerning this important subject than we were before the trial of these experiments of Mr. Swan. Such a result is much to be lamented. A very great number of buildings, in the lower part of the city, are supported upon piles which must sooner or later yield. The fall of a block of dwellings on Sacramento St., a few days since, is merely a warning of much greater losses; the piles which were there found bored to a honeycomb, had been driven only about twelve months. Timber covered with the bark is nearly safe, so long as the bark remains, but so soon as that is removed, by a blow, or by the gradual wear of the water, the destruction commences. And it is therefore a source of great regret that no method of protection from this evil, at once cheap and effectual, has yet been discovered. Many have been devised, but none have thus far resulted in any degree more favorably than that which your Committee were appointed to investigate."

W. O. Ayres, M. D.

J. B. Trask, M. D.

Mr. Frœbel presented specimens of Tertiary

Coal, and impressions of leaves, &c., from the head waters of San Francisquito Creek, San Francisco County.

Dr. Behr exhibited a Willow of singular formation, each male ament being bifid or trifid; it is closely allied to *Salix caprea*, perhaps a new species.

Dr. Kellogg exhibited specimens with four drawings illustrating the different species of *Iris* now in blossom near this city: *I. sambucina*, and two other forms not yet named.

Dr. Trask presented a specimen of a new Ammonite from Arbuckle's Diggings, Shasta County, with the following desciption of that fossil.

AMMONITES BATESII.—Trask.

Shell thin: discoidal, and orbicular; three and one-half convolutions, each smaller one of which is unconcealed by the larger; convolutions nearly round; slightly undulating well defined costæ on each whorl, which appear uninterrupted, and on the last convolution are about one-tenth of an inch asunder; the ribs become more approximate toward the ventral portion of the whorl; between the larger ribs are seen smaller divergent rudimentary costæ which appear to converge about midway from the dorsum to the sides of the last whorl; siphon ventral; dorsum round; septa arborescent; umbilicus perforate; greatest diameter four and three tenths inches. Aperture one and two tenths inches.

This specimen is presented by Dr. Bates, member of the Assembly from Shasta City, and is peculiarly interesting as exhibiting the broad extent over which the secondary rocks are spread in the northern part of the State. In the month of November I discovered the equivalents of this group about forty miles to the east of the locality from which this specimen was taken, and of which, mention is made in my report for 1855 to the Legislature,under the head of Carboniferous Limestone. The developement of the coal beds in the latter locality since that time, and the occurrence of coals among the rocks, from which the specimen before you was taken leads to pleasant anticipations, that the time is not far distant when this State will produce an ample supply of this desirable material for domestic consumption.—The specimens from east of the Sacramento with the fossil before you from the mountains west of that stream, place the question of the existence of the coal bearing rocks in this State beyond the shade of doubt. I would state in connection with this subject that there are evidences of the same rocks being met with in the county of El Dorado, but I cannot yet speak with absolute certainty on that point, as the specimens thus far found are small and fragmentary. These fossils are sometimes called "snake stones" from their resemblance to a coiled snake.

Dr. Wm. O. Ayres presented specimens of *Gasterosteus plebeius*, Gir., brought from San Jose by the Rev. Mr. Douglas. They were taken in a stream formed by the water flowing from Artesian Wells, and are believed by many persons of that vicinity to have issued from the wells. But inasmuch as this little Stickleback is very abundant in all the salt and brackish marshes of the Bay of San Francisco, their presence in the locality where they were taken may be much more readily accounted for, on the supposition that they had ascended the streams by which the waters of the wells are discharged into the Bay. They have none of the features which belong to the fishes inhabiting subterranean regions.

Dr. Ayres also presented a specimen of a Flounder, representing a new form, with the following description.

PLATESSA BILINEATA,—Ayres.

Form oval, the dorsal and abdominal outlines being nearly symmetrical; *depth* a little less than $\frac{1}{2}$ the entire length. Length of the head contained in the total length not quite four times. Snout projecting somewhat, not being continuous in direction with the descending line of the nape.

Eyes large, elliptical, their longitudinal diameter contained three and a half times in the length of the head; situated on the right side; a strong prominent ridge separating the two sockets and extending somewhat further posteriorly, as in *Paralichys*.

Mouth of moderate dimensions, the tip of the upper maxillary scarcely reaching the plane of the pupil of the lower eye. Lower jaw the longer. A single, even row of strong, blunt, conical teeth in each jaw, shorter and less developed on the colored side than on the colorless. Inferior pharyngeal teeth like those of the jaws, but stouter, placed in a single row; superior of similar size, arranged in several obliquely transverse rows.

Scales larger and more conspicuous than in any other fish of this tribe yet found on our coast.—Those of the anterior portion of the body are nearly smooth; further back they become gradually more and more ciliate though none of them are so rough as in most Flatfishes. Those of the head cover the entire opercular region and cheeks, and in part also the inter-ocular ridge; those of the cheeks are strongly ciliate.

The lateral line arches freely above the pectorals, and runs thence straight to the caudal fin. Another, with a structure entirely similar to that of the ordinary lateral line, arises just above the eye, passes a short distance directly backward, then ascends and follows near the dorsal margin and ends abruptly just anterior to the plane of

the opercular angle; it communicates with the true lateral line by a branch.

The *dorsal fin* arising over about the anterior third of the orbit, terminates at a distance from the caudal equal to the breadth of the eye.

The anal arising a little posterior to the base of the pectorals, is coterminal with the dorsal.—A small abrupt depression exists at the termination of each; the peduncle of the tail posterior to this is somewhat wedge-shaped. A strong, concealed, pelvic spine, directed forward and downward precedes the anal.

The *pectorals* are pointed, their height equalling half the length of the head.

The *ventrals*, more than half their own height anterior to the pectorals, resemble these fins in form.

The *caudal* is large, somewhat rounded; its height forming one-sixth of the entire length.

D. 77; A. 59; P. 11; V. 6; C, 16.

Color rather light grayish brown, with lighter clay-colored blotches, on the colored side; left side colorless.

This Flounder is quite distinct from any other species brought to our market. It is allied to *P. dentata*, Mitch., but is readily distinguished by its form, scales and teeth. It is taken in the Bay of San Francisco, but is apparently not common. It seldom grows to a greater length than fourteen inches.

We find constantly three species of flatfish offered for sale here: *Platichthys rugosus*, Gir., called by the fishermen "Turbot," weighing often ten to twelve pounds; *Parophrys vetulus*, Gir., and *Psettichthys melanostictus*, Gir., both of small size, and both sold under the name of "Sole." Girard's *Pleuronichthys cœnosus*, and *Psettichthys sordidus*, though said by him to have been taken at San Francisco, we have not yet been able to detect. The great *Hippoglossus vulgaris*, universally known as the "Halibut," the fishermen have assured me is sometimes caught near the Farallon Islands. Most of those sold in our market, however, if not all, are brought from the coast further north.

From Mr. Richardson, U. S. Deputy Surveyor were presented a suite of specimens of mineral waters, from near Clear Lake, Mendocino Co. They contained Sulphur in large percentage, with a decidedly acid reaction. With them were specimens of the sulphur &c., deposited by them, together with volcanic products from their vicinity. Heated air issues from the ravines near one of the springs.

From Mr. J. S. Ruckel was presented a specimen of Maple wood, from Washington Territory, the tree growing there to the height of 75 to 100 feet; also a skin of an animal unknown to the Indians and Fur Traders of that region. The skin, though much mutilated and very imperfect was apparently that of the *Mustela canadensis*.

The Catalogue of the State Library was presented from the office of the Secretary of State; and Nos. 52, 53, 55, and 56 of the American Journal of Sciences and Arts, by Dr. J. B. Trask.

Dr. H. Behr was elected Curator of Botany.

April 9, 1855.

Col. L. Ransom in the chair.

Quincy A. Brooks, of Olympia, W. T., was elected a Corresponding Member.

Dr. H. Gibbons reported the existence of *Dirca palustris*, in great abundance, in the ravines of Alameda county.

From Judge Eno was presented a Geode, containing a moveable nucleus, and bearing numerous particles of gold in fissures on its surface; it was taken from a gold mine in Calaveras county. Also, a specimen of agatized wood, from the same region, found at the depth of 150 feet. This mineral appears to be extensively dispersed throughout the State.

Dr. Behr exhibited a species of *Smilacina*, which he deems quite equal in valuable properties to the officinal Sarsaparilla.

Dr. Trask presented the following descriptions, with the specimens, of fossil shells from the tertiary deposites of the lower coast.

Chemnitzia papillosa—Trask.

Shell small; acutely elongate; sublanceolate; substance of the shell rather thick; eleven slightly oblique rounded whorls, separated by rather deep sutures, those separating the lower five whorls deeper than the upper; eleven distinct rounded folds on each whorl; four revolving lines on each whorl, which, upon the last whorl, extend down the base of the shell, in rather shallow but distinct furrows, easily seen in good specimens.

Aperture roundly ovate; outer lip moderately thick; columella arched; and terminating somewhat acutely anteriorly.

Length, five-tenths of an inch; breadth, one-eighth of an inch. From Santa Barbara.

Dr. Gould has described two species of this genus, from the coast of Santa Barbara, Cal., viz: C. torquata and C. tenuicula, neither of which appears to be our fossil species. The fossil differs from C. torquata, in the size of the two shells, in the number of folds, and in the ab-

sence of revolving lines; from C. tenuicula, in the number of whorls, in the greater number of folds in his specimen, and in the shouldered character of the last whorl. My description is founded on an examination of thirty shells, and I am unable to identify this fossil with any described species. The well marked characteristics of the fossil, arising from the revolving lines crossing the folds, giving them the appearance of small papillæ upon their convex surfaces, were considered sufficiently suggestive of the specific name applied.

TORNATELLA ELLIPTICA—TRASK.

Shell small; acutely elliptical; substance of shell rather firm; six subspiral shouldered whorls; twelve slightly oblique folds on the three last whorls, which terminate about half way down on the body whorl; the three middle whorls encircled by four cordate lines each; the last whorl has fourteen lines; spire acute; last whorl about three-fifths the length of the shell.

Aperture elliptical; half the length of the shell; outer lip subcrenate from the termination of the cordate lines on the last whorl: a minute reflection of the inner lip passes around the posterior edge of the aperture, and becomes obsolete on the edge of the aperture.

Length, five-twentieths of an inch; breadth, one-tenth of an inch. From Santa Barbara.

Two specimens only of this shell were found at this locality, and though an inhabitant of lower latitudes, yet we find it fossil with Murex among the marine deposites of our hills, associated in the same beds which contain the northern types.

MUREX FRAGILIS.—TRASK.

Shell thin; small; six deeply shouldered sub-oblique flattened whorls; last whorl traversed by eight rather small fringed varices; the periphery of the body whorl is surmounted by a small rounded spine on each varix, and stands obliquely outward upon the edge of the shoulder; the last whorl is traversed by thirteen unequal tranverse ribs; the three middle whorls have respectively four and three of the transverse lines, the central one of which is usually the most prominent; indistinct folds on the middle whorls formed from the varices on the last whorl; anterior portion of the canal closed; lip thin. The aperture of this specimen (it being the only one found that was near entire,) was so badly broken, it is impossible to make out its form with accuracy. It is very difficult to obtain a specimen entire, although fragments of the fossil are abundant.

Length, four-tenths of an inch; breadth, three-tenths. From Santa Barbara.

FUSUS BARBARENSIS—TRASK.

Shell fusiform; rather thin; about seven convex whorls; turreted; the last whorls have about twelve rounded folds becoming obsolete near the middle of the last whorl; eight or nine wavy transverse threads traverse the lower whorl, becoming less defined from the middle forward; folds interrupted at the sutures; apex sub-acute.

Aperture semicircular; canal, slightly oblique; external lip rather sharp, and thin; indistinct striæ within, columella smooth.

Length, nine-tenths of an inch; breadth, four-tenths. From Santa Barbara.

In sculpture this fossil approaches F. Missisippiensis of Conrad, but is very much smaller, and differs also in the number of folds and the many forms of the transverse threads. It is not plentiful at the locality where it was found; three specimens only were met with, and the above description is from the largest shell.

FUSUS ROBUSTUS.—TRASK.

Shell fusiform, turreted, thick; about seven convex whorls; eight varicosed, distant folds on the last whorls, which are interrupted at the sutures; about five revolving lines on the upper whorls, and twelve on the last; folds become obsolete a little anterior to the middle of the body whorl; greatest breadth across the posterior portion of the aperture.

Aperture obovate; outer lip thick; canal straight; distance from the posterior edge of the aperture to the end of the canal, equal to half the length of the shell; apex of the spire bluntly rounded.

Length, one inch and two-tenths; breadth, five-tenths. From San Pedro.

Found at heights varying from eighty to one hundred feet above the sea.

FUSUS RUGOSUS.—TRASK.

Shell fusiform, somewhat thin, turreted; spire acute; eight convex whorls; two first without folds; nine distant folds on the last whorl, becoming obsolete on a line parallel with the posterior edge of the aperture; two last whorls traversed by small longitudinal wrinkles; about fourteen elevated, somewhat squared, lines on the last whorl, with intermediate smaller lines between, which are continuous to the base of the shell.

Aperture semicircular; canal oblique, and somewhat elongated; from the posterior edge of the aperture to the anterior end of the canal, is little more than half the length of the shell; outer lip thin; columella smooth.

Length, one inch and four-tenths; breadth, six-tenths. From San Pedro.

In sculpture, this shell resembles somewhat *F. ambustus* of Gould; the fossil differs from that shell in the more abrupt and rounder termination of the upper part of the whorls at the sutures, and in its presenting no furrows within the aperture. The upper whorls of the latter also become somewhat flattened, while in the former they appear to preserve much uniformity in their form throughout. It has the appearance of be-

ing closely allied to that shell, judging from the figure as given by Dr. Gould of his species.

It is distinct from *F. robustus*, by the more acute form of the spire, the thickness of the shell, the greater number and angular character of the elevated transverse threads and by the size of the shell.

Dr. Kellogg exhibited a drawing of the fruit and foliage of the gigantic tree of California, with analytical and microscopical figures of the male flowers, &c.

Also a drawing and specimens of a new Cucurbit, probably a *Marah* or *Echinocystis*, from Placerville. As soon as the mature fruit can be obtained, a full description will be published. The vine is commonly known as Giant Root, &c. Other specimens, similar to those here, were received. Dr. K. exhibited blooming specimens, and a drawing of a beautiful bulbous plant—a species of *Cyclobothra*, or Golden Star Tulip.

The Academy are indebted to Mr. Garvitt for the two last named, together with flowering specimens of *Dendromicon rigidum*, *Cerasus mollis*, a species of cherry. These were received by Express, in wide-mouthed glass jars—a novel and successful mode of transportation.

Dr. K. exhibited specimens and a drawing of a new and singular personate leafless plant, for which further time is required for investigation.

Also, a drawing and specimen of a new and beautiful *Calochortus* or Butterfly Tulip, from the vicinity of Canada de Las Uvas, furnished by Wm. A. Wallace, of Los Angeles; color bright vermilion, stem leafless, two inches high, the flowers as large as usual, pistil capitate, &c.

Dr. K. also exhibited a drawing and specimens of *Wyethia angustifolid* (*Alerconia*, of De Candolle,) from the hills of Mission Dolores, known as the creeping sunflower—a name probably suggested by the habit of the stem. Rising and bowing archwise, it hugs the soil, creeping beneath the grass about a foot from the radiated cluster of root leaves, then ascending in a curve a few inches from the earth, crowned with a single flower; or perhaps also from the creeping character of the root.

It is worthy of remark, that the achenia is sometimes entirely destitute of pappus, but more commonly one long awn from the inner angle, and often a smaller or tooth-like one opposite; leaves long, narrow, strongly waved; and black, with lighter radiating lines within.

April 16, 1855.

Col. L. Ransom in the chair.

Mr. Heffly, Chairman of the Committee on Rooms and shelves, reported that Messrs. Palmer, Cook & Co., had donated to the Academy, for one year from April 1st 1855, the use of Room No. 4, Phœnix Block. On motion it was

Resolved, That the thanks of the Academy be presented to Messrs. Palmer, Cook & Co. for their liberal gift.

Mr. Joshua Child of Encinal was elected a Corresponding Member.

Donations to the Cabinet—

Dr. W. P. Gibbons; Magnesian Conglomerate from the Serpentine Rocks near Mountain Lake.

Dr. H. Gibbons; a worn mass of Serpentine, containing fossorial shells, from near Fort Point. Also a specimen of the Common Gopher, from Alameda.

Dr. Trask; *Cytherea crassatelloides*, Lam. from Santa Barbara.

Dr. Ayres presented the following descriptions of fishes, with the specimens.

Salmo rivularis,—Ayres.

Form elongated, compressed; dorsal and abdominal outlines very evenly arched; greatest depth, anterior to the dorsal fin, not quite equalling one fourth of the total length; thickness at the same point, half as great as the depth.

Head of medium size, its length being a trifle less than the depth of the body; dorsal outline continuing the curve of the back; muzzle somewhat blunt and rounded. Mouth free, a vertical line from the end of the superior maxillary just touching the posterior border of the orbit.

Teeth on the tongue in two rows, each row containing five or six teeth; those in the lower jaw, in a single row, of about twelve on each side; those in the upper jaw, in a double row on both maxillaries and intermaxillaries, (the outer row alone being conspicuous) of which the outer row on each maxillary contains about twenty, and on each intermaxillary about five; those on each palatine bone, in a somewhat irregular row, fourteen to sixteen in number; those on the vomer, in two rows (of five or six each) placed so close together as to seem like a double row. All the teeth are small, conical, acute, curved. The largest are those on the tongue and lower jaw.—A few minute, very sharp teeth are crowded on the pharyngeals.

Scales small, elliptical, with the concentric lines numerous and crowded; about one hundred and forty along the lateral line. Head naked. Lateral line nearly straight, curving very slightly downward. The first *dorsal* fin arises midway between the snout and the commencement of the accessory rays of the caudal fin. The first four rays are simple, the first two being very short; the sixth and seventh are longest, their height equalling the length of the fin, being about one eighth of the length of the fish.

The *adipose* fin is separated from the termination of the first dorsal by a space equal to the distance from the ventrals to the anal, being directly above the termination of the latter fin. It is narrow; its height equal to the diameter of the eye.

The *ventrals* arise very nearly beneath the middle of the first dorsal, being almost midway between the snout and the tip of the central caudal rays. They are rounded, their height equal to half the length of the head. At the external base of each is a narrow membranous appendage half as high as the fin.

The *pectorals* are somewhat pointed, their height equal to the length of the first dorsal.

The *anal* is in form very similar to the first dorsal, but about two thirds as large. The first four rays are simple, the first two being very short; the fifth and sixth longest.

The *caudal* fin is of medium size, concave, the height of the central rays being about two thirds that of the external.

Branchial rays twelve.

D. 4-11; P. 1-14; V. 1-10; A. 3-10; C. 19, with six or seven accessories.

This species recalls at once by its characters, the *Brook Trout* of the Northeastern States, the well known *Salmo fontinalis*, M. and is indeed very closely allied to it. It is one of those known to sportsmen here as *Trout* and sometimes *Mountain Trout*. The specimens from which this description is drawn were taken a few miles back of Martinez, toward the foot of Monte Diabolo. They therefore represent the form occurring in that portion of the State. But from the accounts which we have received it seems highly probable that under the name *Mountain Trout* several distinct species are confounded in different parts of California, and the attention of observers, who may have opportunity to examine our mountain streams and lakes, is therefore requested in regard to this point. The species found on the west of the Contra Costa Mountains, in San Leandro Creek, has in fact been already described, (*Salmo iridea*, Gibbons, Proc. Cal. Acad. Nat. Sciences, Vol. 1, page 36) and is quite distinct from this. *S. rivularis* is separated from *S. fontinalis* by the teeth, the proportions of the head, the position of the dorsal fin, the form of the adipose, the scales, and the colors.

The ground colors are quite similar to those of *fontinalis*, though without the mottlings, but the yellowish circles and vermilion dots are absent. Instead of them we have on the head, and back, and upper portion of the sides numerous reddish brown, irregularly circular spots. The dorsal fin bears also several rows of spots forming imperfect bars; a few of these are found on the caudal.

The largest specimen was eight inches in length. They were reported smaller than the average, so that in size also this species comes near to *fontinalis*. We are indebted for them to the kindness of Dr. Winslow.

PETROMYZON CILIATUS,—Ayres.

About two months since a small Lamprey was exhibited and described, before the Academy, under the name *P. plumbeus* (Proc. Cal. Ac. Nat. Sciences, Vol. 1, p. 28,) being the only Californian species at that time known. Within a few days the specimen herewith presented has been obtained. It is of a type quite distinct from *plumbeus*, and is allied very closely indeed to *P. Americanus*, Le S.

It is twenty four inches in length, four inches and a half in circumference.

Form elongated, subcylindrical anteriorly, compressed posteriorly, enlarged over the branchial region, head smaller.

Eyes distant six times their own diameter from the anterior border of the head, nearly circular, only one fourth of an inch in diameter.

Branchial orifices elliptical, disposed in nearly a straight line on each side, occupying a space about equal to the distance from the anterior one to the front of the head. To the middle of the posterior border of each orifice a short, filiform appendage is attached.

Mouth circularly continuous. Lips provided in their whole extent with a beautiful ciliary fringe, nearly a tenth of an inch in height.

"*Teeth*" numerous. In the throat are two large plates, placed laterally, which close the entrance almost in the manner of a glottis; they are finely serrate on their inner border. Immediately below these is another, not quite so large, placed transversely, supported on a concealed pedicel, serrate, with its central serrature slightly elevated. Posterior to this and below it is another much stouter and larger, more than half an inch across, placed transversely, with five strong serrations. Facing this, so as to leave the entrance to the mouth between them, is another of similar solidity but not quite so broad with a large, conical prominence on each side and a smaller one in the middle. The bases of these two plates are so extended as to form a continuous ring. External to them is a circular row of "teeth" consisting of small, single points in its posterior and anterior portions, while laterally they are imbedded plates supporting two, and those opposite

the middle of the mouth three points arranged in radiating lines. External to this row is another of still smaller "teeth," forming a ring immediately within the lips.

The *first dorsal* fin arises a little anterior to the middle of the length; it increases gradually to its greatest height, which is only twice the diameter of the eye, its length being not quite one sixth of the length of tne fish.

The *second dorsal*, which is separated from the first by an interval of about one third the length of this latter fin, rises more abruptly so as to be obtusely angular in its outline as it commences decreasing toward to tail, until at about two inches from the termination of the body, its height having become very small indeed, it begins to rise again, forming a sort of third dorsal or upper lobe of the caudal. This again, after attaining a height nearly equal to that of the first dorsal, decreases so that with the lobe which is continuous from it on the inferior border it makes nearly a right angle at the caudal extremity.—The inferior lobe is about equal to the superior in both length and height. Ventral surface anterior to this entirely smooth.

Anal orifice a little posterior to the origin of the second dorsal.

Color plain uniform greenish olive, quite similar to that of the Common Eel of our Eastern States, lighter on the throat, with some fuliginous blotches.

This Lamprey is clearly the Pacific representative of the one known as the Lamprey or "Lamper Eel" in the rivers of New England during the months of spring and summer (*P. Americanus*, Le S.) It is distinguished by the arrangement of the "teeth," the relative position of the dorsal fins, the form of the fins at the caudal extremity, and the colors. It has little need of comparison with either of the species previously known on this coast *P. tridentatus*, Gaird., or *P. plumbeus*, Ayres; the "teeth" are sufficient at once to separate it from them. The specimen from which the description is drawn, was taken in the Bay of San Francisco. But if examination could be made, at this season of the year, in the parts of the rivers accessible from the tidewaters of the Bay, the Lampreys would in all probability be found in them, perhaps in considerable numbers. Very possibly their presence might be indicated by conical heaps of stones in the river beds, such as the eastern species is in the habit of constructing.

Dr. Kellogg exhibited a drawing of a new species of *Bahia*; the specimens were received to-day by Express from Wm. A. Wallace of Los Angeles.

Bahia Wallacii,—Gray. This species is very small, growing only a few inches high; it is clothed with a dense cottony pubescence, and its radiant yellow flowers, tinged with orange are in pleasing harmony with its neat white dress. Dr. Gray named this plant after its discoverer, to whom we are indebted for the specimen, a very ardent lover of nature.

The leafless plant figured and noticed at the last meeting of the Academy is the *Anoplanthus uniflorus*, a small parasite allied to *Orobanche* or the Beech Drops &c., the stem a mere bristle, with a single blue flower, lower lip with a doubly prominent palate, thoat yellow, the colored stripe extending down the tube, in some respecta differing from the figure of Lindley, of which we have seen no specific description.

Two numbers of the Proceedings of the Boston Society of Natural History were received, from the Society.

April 23, 1855.

Col. Ransom in the chair.

Mr. G. M. Burnham, and Mr. M. G. Read were elected resident members.

Donations to the Cabinet—

From Dr. Behr, specimens of *Lactophrys* and *Acanthurus*, from Tahiti;

From Mr. Frœbel, land and fresh water shells from Texas near Port Lavaca;

From Dr. Randall, Sienitic Granite from Mormon Island; Copper ore from the Gadsden Purchase, 80 miles northeast of Fort Yuma; and Aluminous Sandstone, from the Cosumnes River 22 miles from Sacramento;

From Dr. A. Kellogg, specimens and drawings of the following plant.

Leptarrhena inundata,—Behr.

Rhizoma foliorum lapsu cicatricatum. Folia serotina. Scapus totus hispido-glandulatus.—Flores cymosi, mediocres. Petala obovata, brevissime unguiculata, calycis sepalis reflexis multo majora.

In rivulorum marginibus inundatis prope Placerville.

A plant belonging to the saxifrages, growing in ravines, rivulets, and in the watery margins of our larger mountain streams. The root is tuberous, elongated, 1 to 2 inches in diameter, in folds or broad shoulders, formed by the scars of the old decayed leaves; scape 18 inches to 2 feet high, naked, or only a vestige of abortive foliage, woolly and glandularly pubescent, flowers numerous, large, corymbose, pale pink. The foliage not developed, probably roundish and lobed. It is hoped these will be sent to complete the drawing. The tender fleshy inner portion of the

stem is eagerly sought after, and eaten by the Indians; it has somewhat the flavor of apples, and probably contains malic acid. The root is a strong astringent; and is said to be useful for medical purposes.

Dr. Kellogg also exhibited drawings and specimens of the following plants, the detailed description of which is not deemed necessary, to-wit:

Asarum Canadense or Wild Ginger. In some slight points unlike eastern and more northern specimens. *Viola pedunculata* or common large yellow violet, with its two upper petals light madder brown on the back. *Nemophila aurita* or long-eared lilac cups, specimens from Goat Island, a beautiful species.

A singular and beautiful species of *Trillium* or Wave-wing Wake-robin; petals very long, purple, waved.

A drawing and specimens of the Black Mountain Currant, probably the *Ribes malvaceum*; flowers delicate pink, roundish, urceolate, fruit and foliage glandular pubescent, leaves 5-lobe-angled &c.; our specimen was injured in transportation; we look for the mature fruit and foliage to perfect the figure.

Drawings and specimens of two species of native *Pæonia*, or Peony of the gardens. The *P. Brownii*, with 3 carpels and striated stem &c., also *P. Californica* with smooth stem, crowded and more numerous leaf-divisions, 5 carpels &c. The flowers in the wild uncultivated state are simple, and in both species, madder purple color.

Specimens of the *Taxus Canadensis* or Canadian Yew Tree, in blossom, also Mountain Spruce —cone of *Pinus Douglassii*—*Cornus Nuttallii* or California Dogwood or Box tree in bloom, together with specimens of wild plum, and a species of *Frangula* or Alder-Buckthorn.

The Academy are greatly obliged to Mr. Garritt of Placerville for most of the above specimens.

Dr. K. reported on the Lilial plants referred to him and Dr. Andrews, viz: one from this vicinity furnished by Mr. Bloomer, and the other from Monterey by Dr. A. Some doubt is still entertained as to their reference; drawings, analysis and specimens are preserved and the following description submitted.

The first is presumed to be *Fritillaria alba.*—Root composed of numerous small bulblets around the parent bulb; stem succulent, very glabrous, round, 6 to 10 inches high, divided into two branches at the tip, diverging so gradually as to appear double, each branch terminated by a single nodding flower about ½ to 1 inch long and ½ to ⅓ broad, swelled campanulate, peduncles about two inches long; leaves spatulate below, sub-linear and remote above, intermediate ones narrow lanceolate, all sessile, sub-amplexicaul, entire, smooth, delicate fleshy, often obscurely 3-nerved, alternate, collected near the base of the stem, often opposite and sub-verticillate, about 2 inches long; the 3 inner petals obovate, somewhat abruptly narrowed or rhomboid, slightly inflexed at the apex, 3 outer petals narrower, broad elliptic, slightly keeled below, all sessile, a nectariferous cavity at the base; white, often variegated within as in the *Calochortus*, or with feeble shades of greenish yellow, veins within slightly ridged and granulated; stamens six, inserted into the base of the petals, about half their length, anthers turned outwards, half the length of the filaments, yellow, mucronate, erect, attached to the centre, style deeply parted, stigmas villous on the inner surface, long revolute, capsule oblong, 3 divisions strongly marked by depressions, and 3 other lesser sub-divisions 3-celled, seeds many, flat, obovate, cuneate at base, double rows in each cell.

The general appearance of this plant is like the *Uvularias*, but in the shape of the flower and especially the seeds, it must be at present a Fritillaria.

The specimen from Monterey has the lower leaves verticillate by 3s, and opposite, alternate above, one flowered, nodding, about twice the size of the above, leaves broad and somewhat oblique, probably only a variety. There appears to be some variation in the color of the flowers of these species; and also in the mature capsule, some being found winged, while others are smooth.

More recently another new and beautiful species has been received by Express from Placerville.

Fritillaria multiscapidea, Kell. or Blushing Bells. Leaves two, radical, lanceolate tapering at base into a thick concave petiole, entire, 7-nerved; scapes three, leafless, each terminated by a single nodding flower; flowers campanulate, unexpanded, three outer petals sessile, broad lanceolate, acute, point inflexed, three inner petals somewhat longer, lanceolate, acute, waved, a double ridge within extends down the centre terminating in two teeth at the base of the very short claw, stamens six about ½ an inch in length or ⅓ less than the petals, filaments flattened, enlarging below, anthers ⅜ of an inch long, quadrangular; style one, longer than the stamens, stigmas three, villous on the inner surface, revolute; capsule 3-celled.

The root we have not seen; the leaves are 4 to 5 inches long, about an inch or so in width; subterranean stem swelled at the common origin of

the leave and scapes. The color of the flowers a delicate pink blush. These and some allied species will ultimately require a new genus.

Mr. Geo. Black presented a volume of Mantell's Pictorial Atlas of Fossil Remains. The thanks of the Academy were voted for the donation.

April 30, 1855.

Col. Ransom in the chair.

R. A. S. Wood, Esq., presented a specimen of Wild Cotton from the Island of Maui.

Dr. Ayres presented a specimen of *Raia binoculata*, Gir. from the Bay of San Francisco.

Dr. Kellogg exhibited a drawing and specimen of *Fritillaria*, from Placerville. A species remarkable for its very small purple flowers: some specimens are seen with thirty or more of these nodding flowers in a leafy top—lower leaves long and narrow, verticillate by 5s, from 2 to 4 feet high. Root a collection of numerous bulblets, around the parent bulb. Also a drawing and specimen of *Trillium* found recently at Saucilito, a white flowered species. Further investigations are required.

Dr. K. exhibited a drawing and magnificent specimen of Tulip grown in the garden of A. H. Myers of Alameda, illustrating the prolific power of our soil and climate in a horticultural point of view—the petals were 4½ inches long, and about 3 inches in breadth. The largest ever seen.

Dr. Behr presented a drawing of a native Silk Worm of California, with a specimen of the cocoon, and the following description.

Saturnia rubra, collare album, abdominis segmenta albo marginata. Alarum fascia radicalis angulum versus discum porrigens; secunda fascia stricta lunulaque alba, margo exterior luridus linea undulata nigra, et in ala superiori inter costam secundam et tertiam ocello signatus.

Alae subter violaceae, signaturis eisdem instructae, ut supra, excepta fascia radicali, quae deest.

Dr. Behr remarked that it would be likely to prove highly valuable. It is found on the Ceanothus thyrsiflorus, and also on a Rhamnus and a Photinia.

Dr. Ayres presented the following desciption, with a specimen, of a fish believed to be new.

Gasterosteus serratus, —Ayres.

Length of the specimen described, two inches and one fourth; greatest depth, at about the first dorsal spine, contained five and one fourth times in the length; thickness, at the same point, equal to half the depth.

Sides *plated* in their whole length; plates thirty one or thirty two in number, each one marked with granulated striae which, to a certain degree radiate from the lateral line. The last eight or nine plates are elevated in the middle, forming a sharp lateral crest on the peduncle of the tail.—A narrow naked space, covered with smooth skin, is left below the plates, extending from the pectoral to the caudal fin; a similar space, but with the skin granulated, from the first dorsal spine to the caudal fin. The bones of the head, the dorsal plates, the cubital bones, and the ossa innominata are similar in surface to the plates of the sides.

Head forming a little more than one fourth of the entire length. Lower jaw the longer. Teeth fine, even, and close-set in both jaws; those in the lower jaw a trifle larger than those in the upper. Diameter of the eye contained three and a half times in the length of the head; distance between the eye and the tip of the upper jaw, equal to the diameter of the eye. Nostrils nearer to the eye than to the tip of the jaw, in a depression above the first suborbital plate. This plate is prolonged into an acute angle anteriorly. The second suborbital is much smaller, sub-quadrangular. The third is about as large as the first, irregularly quadrangular, extending so far down as to rest upon the narrow horizontal limb of the preoperculum, while between its border and the vertical limb of the preoperculum a naked space is left. Operculum sub-triangular, with the border rounded, marked with striae radiating from the upper anterior angle. Interoperculum very small, at the angle of the preoperculum. Suboperculum long, narrow, falcate.

Naked space before the pectoral fin sub-quadrangular, equal in diameter to half the depth of the fish. Cubital bones narrow, pointed anteriorly, and meeting in a point beneath the throat, diverging posteriorly so as to leave a naked space between them. Ossa innominata united by strong suture, prolonged into a lanceolate point posteriorly a little shorter than the ventral spines, sending off a flat vertical branch similar in structure to the lateral plates upon which it is articulated.

First dorsal spine situated a little anterior to the base of the pectorals, its height equal to one eighth of the length of the fish, acute, broad at base, sharply serrate on each side, its point just touching the base of the second spine, which is entirely similar to the first in form, height and serrations. A third, much smaller, is attached to the soft dorsal; the point of the second scarcely reaches to its base. The soft dorsal is highest in front, its height about equalling that of the

first dorsal spine; it is separated from the caudal fin by a space equal to it own height.

The anal fin, coterminal with the dorsal, resembles it in form, but is shorter, arising about opposite the fourth ray; it is preceded by a short spine.

Each *ventral* fin consists of a strong, flat spine and a soft ray. The spine is a little more than one sixth of the length of the fish, serrated like the dorsal spines, though the serratures are less conspicuous on the inferior border than on the superior. The soft ray lies concealed in the hollow of the spine which it about half equals in height.

The *pectorals*, narrow and rounded, have a height about equal to the depth of the body.

Caudal fin concave.

D. 2, 1-11; A. 1-9; V. 1-1; P. 10; C. 12 with six or seven accessories.

Color grayish brown above, lighter on the sides and beneath; a blackish band at the base of the tail.

The existence of two free, detached spines anterior to the soft dorsal, instead of affording a specific character among the *Gasterosteï* is now known to prevail in quite a large division of the genus. We have at least eight American species of this type, three on the Atlantic, and five on the Pacific side.

1. Gasterosteus biaculeatus, Mitch., from New York.

2. " Dekayi, Ayres. This is the one described by Dr. Dekay as *G. biaculeatus*, supposing it to be identical with Mitchill's species; as this however is undoubtedly incorrect it is proposed to name it as above.

3. Gasterosteus Cuvieri, Girard; supposed by Girard to be the one described by Cuvier as *G. biaculeatus*, and yet distinct from both the preceding. As however Cuvier's specimens were obtained in Newfoundland, and Girard's were those brought by H. R. Storer from Bras d'Or and Red Bay, Labrador, and as Cuvier's description is very imperfect it is quite possible that the two are distinct species, and that the Newfoundland form is yet unnamed.

4. Gasterosteus Williamsoni, Gir., Williamson's Pass, Cal.

5. Gasterosteus microcephalus, Gir., Tulare Lake, Cal.

6. Gasterosteus plebeius, Gir., Marshes of San Francisco Bay, Cal.

7. Gasterosteus inopinatus, Gir., Mountain Lake near San Francisco, Cal.

8. Gasterosteus serratus, Ayres, Marshes of San Francisco Bay, Cal.

Of these No. 2 and No. 8 have the side plated in its whole length. No. 3, No. 5, No. 6, and No. 7, have the side plated as far as the second dorsal spine. No. 4, has the side entirely smooth. As to No. 1, the character of the surface is uncertain.

G. serratus is very closely allied to *G. Cuvieri*, though the one has the side entirely plated, the other has it partially naked; it is in fact chiefly by this character that the two are separated.—The affinity to *G. Dekayi* is less striking, though both are plated; the surface of the lateral plates, the form of the caudal carina, the structure of the ventral spines &c., are quite sufficient to distinguish them.

G. serratus is found in the marshes of the Bay of San Francisco, but is apparently not common.

Dr. W. P. Gibbons presented the following description of a new species of crab, which had been read at the meeting of March 26.

Ctenorhinus—Gibbons.

Shell globular, granulate tuberculous, antero-lateral margins toothed, retrousse, posterior margin arched. Accessory plate of external antennae conical triangular, with its upper surface echinate. Ocular pedicles approximate, shorter than the rostrum, with the superior surface spinous.

C. septimanus,—Gibbons.

Shell convex, granulate, tuberculate, antero-lateral margins toothed, retrousse, posterior margin arched. About eight principal teeth on the antero- lateral margins, without including the orbitals, which are shorter and more pointed than the adjoining exterior ones. Rostrum four lobed: the two lateral ones equal, superior one shorter; the inferior large, stout, curving upwards and projecting beyond the others. Latero-posterior margin of the shell with from 8 to 12 principal tubercles. Surface of the shell along the median line with one principal anterior tubercle, having a pointed apex, another at the posterior extremity of the middle third; two more large ones on the transverse diameter drawn in front of this, and 4 or 5 of smaller size around the base of the large ones. The surface of the carapace is thus rendered exceedingly uneven.

Basilar plate of the external antenna with a tooth on the outside. Second segment scalloped, inferior border terminating in a stout spine, having a tooth at the base, on the inner side. Superior border with 3 or 4 crenulate spines, inner one longest, projecting beyond the external orbital teeth of the shell. Next segment trigonal, upper surface echinate, spines along the two upper angles pectinate. From the internal fossa of the second segment the antenna arises, having 4 segments, the last joint with about 30 articulations, and extending beyond the spines of the pectinated plate. Internal antennae with three articulations, terminated with a mandibular appendage. A bicipital groove is midway on the superior surface of the basal joint.

Ocular peduncles approximate, shorter than the corner of the rostrum, echinate on the upper surface. First joint of external foot jaws trian-

gular, inner edge black dentate, outer one hairy. A large tooth on the outer edge near the apex The other segments rounded, pilose.

First segment of the tail broad, and articulated at right angles to the carapace. About eight principal tubercles on the superior edge, twelve on the inferior, and one large one near the middle of the plate, on each side of the median line. Those on the superior edge in pairs. A cavity near each end of the segment, and two deep, well defined, depressions about half an inch in diameter, midway toward the middle of the plate. The remaining segments of the tail are divided longitudinally by articulations, the outer one on each side being about half an inch from the edge. The inner articulations divide the tail into three sub-equal conical sections, thus forming eleven quadrilateral plates. The internal angles of the 3d, 4th and 5th are truncated, and the spaces filled with semilunar plates. Between the 3d, 4th, 5th and 6th central segments, are interarticular plates. All of these plates are largely tuberculous and covered with minute spines. The tail margins are represented by 12 or 15 serratures, each of which is on a separate plate. As the shell grows older, these coalesce with each other and with the internal adjoining plate, so that but three longitudinal sections remain. The segments connecting the tail are articulated by means of a fold of the epidermic membrane, and the entire arrangement is calculated to give pliability to its broad surface, so that it shall the more completely protect the large mass of ova which the abdominal appendages support.

Hand robust, covered with a tuft of hair; four large rounded teeth on the outer edge of the pincers, three dentations on the inner side, and a basal tubercle across the finger. Left hand much smaller than the right. Arm sub-quadrate, with a triangular crest projecting at right angles to the inner side, having conical tubercles on the edges. Internal condyle with a broad, bidentate, excurved spine. All the legs are covered with conical tubercles studded with short acuted. Irregular tuberosities on the lower side of the trochanter and on the haunches. All the legs quadrangular. The second, third and fourth legs terminate by short claws, the tarsal joint of each being ginglymus, so that the feet can be directed forwards or backwards. Fifth pair of legs rudimentary, inclosed in the shell, rounded at the extremity and thickly set with bristles.

Ground color of the shell vermilion, granules and spines generally deep blue and purple. The entire shell is covered with minute bristles.

Length of largest specimens 10 inches; greatest transverse diameter 10¼ inches. Length of first pair of legs 9 inches. Weight of the animal 6¾ lbs.

The specimen from which this description was taken, was caught near the Farallones, in about thirty fathoms water. It was presented to the Academy by S. M. Bowman, Esq.

Dr. Winslow read the following paper on the causes of Tides, Earthquakes, Rising of Continents, and Variations of Magnetic force.

CAUSES OF TIDES, EARTHQUAKES, RISING OF CONTINENTS, AND VARIATIONS OF MAGNETIC FORCE.

By C. F. Winslow, M. D.

The recent discussion in the Boston Society of Natural History on the paper of M. Alexis Perry, Prof. in the Faculty of Sciences of Dijon, entitled "*On the relations* which may exist between *the frequency of earthquakes and the age of the moon*," and also on the doctrines of centrifugal force being the cause of earthquakes, advanced in a paper by Mr. Stodder, on the "*Changes of the surface of the earth*," has led me to make a communication to the Academy of Sciences of San Francisco, on the same subject; but as the theory advanced in my Cosmography, published two years since, covers a much larger ground, and embraces a multitude of phenomena to which the views of Mr. Perry and Mr. Stodder will not apply, I trust the whole subject will receive a new impulse of inquiry by physicists who have opportunities for research and observation and who and whose tastes may direct their minds to this department of science. The physics of the globe is in its infancy and is involved in extreme obscurity in many particulars. The utmost care should be observed in noting all facts in relation to the air, ocean, the motions of the pendulum, the periodical fluctuation of springs in mountains, valleys, and mines, independent of rains, and magnetic phenomena in connexion with earthquakes, and volcanic eruptions whether from known craters or at the bottom of the sea, and indeed in every department of physical research and statistics. No fact imperfectly observed should be noted without explanatory comment, and at last a sufficient basis will be established on which to build up a truthful structure that will embrace the entire and perfect history of the globe, and, I have faith to believe, even of the Universe itself. But the connexion between this planet and all the others, and between our own solar system and all the rest of the cosmos, is so intimate that the most extensive and accurate observations must also be made in every direction through space, to complete the materials for building up a truthful theory of the connexion between force and matter, and to establish a clear and intelligible history of the Universe from the primeval dawn of force to its present connexion with, and action on, material forms. But without consuming time in prefatory remarks, I will at once boldly open a field of inquiry which I trust may lead to results useful to science and mankind.

In reference to the views of Mr. Stodder, it is very questionable to my mind, whether any absolute centrifugal results do transpire upon the fluid-interior and solid and aqueous and atmospheric matters composing the earth and other planets, during their rotary motion and as a *consequence* of this rotary action. Physicists generally, indeed altogether and without exception, declare the flattening of the poles to depend on the centrifugal force imparted to the solid material of the globes by their rotation on their axes.

The flattening rather seems to me to be the result of the polarizing force which acted more energetically from N. to S., (if I may allow myself to use these words,) than in other directions during the condensation of matter into spheres.

Agglomerating atoms, in the *globe-forming epoch*, flew from all directions toward a common centre of gravity in space, or rather toward countless centres, but the act of polarization long previously imparted to molecules and exerted now on a cosmical scale, condensed matter more rapidly, continually and powerfully in the direction of the polar diameter of planets than in their equatorial diameter. This is more than probably the cause of the difference between the polar and equatorial diameters of the planets—for the gravitation of matter to the centre of the globe is much more predominent than apparent centrifugal phenomena; and indeed no centrifugal force can be imagined to be exerted from the axis of the globe, when we view planets as independent spheres moving by their own internal vital forces—I mean their aggregate molecular forces—through space, and independent of any rotary motion forced upon them at the date of their origin by external and projective impulses. This whole subject needs to be completely and candidly reviewed by physicists—and ultimately, I doubt not, and I feel triumphant in the belief that, a cosmical power of *repulsion* will be discovered to act from the centre to the circumference of the globe antagonistic to the polarizing and condensing or attractive force, and affecting not only the motion and action of the fluid interior of the globe so as to produce earthquakes by pressure on, and rupture of, the crust; but also of the aqueous envelope, so as to produce the tides and govern their action entirely, so that in fine, the tides of the ocean are not the result of lunar attraction of the water away from the solid surface of the planet, which is the present theory, but rather the result of a *repulsion* of the particles of water by a power exerted from the centre of the globe by which the moon is kept, and forever to be kept, from falling to the earth. The tide on the globe opposite the lunar tide, and said to arise from the solid mass of the earth being attracted away from the aqueous mass, so that a heap of water is left behind, is only the result of a more feeble repulsion than that exerted on the side of the earth beneath the moon, because there the force is required in its greatest degree, and being exerted from the centre of the globe, the mobile envelope rises to its fullest extent as a mere phenomenon or resultant of the play of molecular forces in a repulsive aggregate to maintain the present relation of the satellite to the earth, and inasmuch as the polarizing, or rather the attractive and repulsive forces must be exerted in straight lines, it follows that the chain of molecules from the centre of the globe, to that point under the moon, called the prime vertical must be connected with a corresponding chain from the same central point to the antipode of the prime vertical point, and I think the phenomena of the tides are all the result of repulsive influences exerted in this manner from the interior to the exterior of the globe, the primary object of which is to prevent the moon from approaching nearer to the earth than the bounds fixed by the laws of density governing the two bodies—and also to prevent the earth from approaching the sun nearer than the bounds fixed by the laws of density governing their relations. And it is the varying density of all these bodies in proportion to their distances from each other as they move through the different points of their orbits, which governs the various *periodical* phenomena manifested so unmistakably on the earth and so observable when the earth is in perihelion and aphelion—and the moon in apogee and perigee, and when the two bodies are passing through points at varying distances from their central and controling body. If the sun governs the earth in the development or exhibition of terrestrial forces in such a manner that marked material changes are correspondingly observed in the solar centre, (as the agitations of its envelopes, creating openings called solar spots with periodical regularity of 5 years between maximum and minimum, in direct conjunction with periodical magnetic phenomena in the earth,) should we not have strong reason to believe that the agitations of the aqueous envelope of the globe, following so constantly the movements and position of the moon in relation to the earth, arose rather from a repulsive force exerted from within the central and controlling sphere, than from attractions exerted by a body without and beyond it?

The idea of centrifugal force being the cause of earthquakes, advanced by Mr. Stodder in his paper on "The changes of the earth's surface" read before the Boston Society of Natural History some years since and introduced again at the 1st January meeting of this year, I think unsound, inasmuch as a multitude of other phenomena cannot be embraced within its application, which harmonize with the "theory of repulsion," set forth in my Cosmography. The facts published by M. Perry relative to the influence of the moon on the fluid interior of the earth, are very remarkable, and I have no doubt from my

own study of the subject that correspondences of earthquake phenomena may take place in direct relation to the moon's position in her orbit. But the method of accounting for the phenomena on the tidal theory, I do not agree with. I think all volcanic phenomena are produced by molecular repulsive force exerted from the centre of the globe to its periphery to resist the nearer approach of the moon to the earth—and nearer approximation of the earth to the sun. In my "Cosmography" I showed the greater frequency of earthquake phenomena during the passage of the earth through the perihelic portion of its orbit—and on the well established astronomical and physical fact that planets increase in density in an inverse ratio to their distance from the solar centre.

I advanced the opinion that the density of the individual planets and of the numerous revolving spheres varied during their respective orbital periods in an inverse proportion to their distance from their central body. This variation of density could not take place without *molecular* expansion and contraction, or variation of distance between the molecules, and as a necessary consequence the whole mass of the planetary sphere would contract and expand more or less (though on the whole very little, in solid globes, on account of the fixed law determining their density,) or rather the forces necessary to produce expansion and contraction would be exerted, which end in the phenomena transpiring on the surface of our globe, such as the elevations and depressions of continental areas, earthquake shocks by rupturing of the crystalline crust and injection of lava through solid igneous rock, and between sedimentary strata, thereby producing the various motions, heretofore inexplicable, attending volcanic convulsions as the gyratory movements which result naturally from the circular injection of prodigious whirlpools of lava between strata, or into immense fissures at greater or less depths below the unbroken surface-crust,—the outpourings of lava from volcanic openings, and the remarkable simultaneousness and universal occurrence of all sorts of earthquake phenomena throughout the globe; also the varying intensity of movements of the best compensating pendulums; also, such as the variation of the pressure of the ocean and its periodical shrinkage and expansion, which will hereafter be proven to take place when more careful observations have been made on tides, and which phenomena will be found *not* to depend on *atmospherical* pressure, as is supposed by Sir James Clark Ross, in his paper read to the Royal Society of London, in June 1854; such as also the periodical variation of atmospherical pressure, sufficient observations on which have already been made to establish the fact, and, as I believe from my study of them, to show as conclusive and regular variations of atmospheric pressure as are now known to exist in the annual variations of the magnetic needle. Even these annual, periodical and regular variations of declination of the magnetic needle, in other words the variations of atmospheric electricity or magnetic intensity at the surface of the earth, well known now by observation, not to depend on barometrical circumstances, but which annually increase and diminish according to the position of the earth in the perihelic and aphelic portions of its orbit, I believe to depend on the molecular motions—or the play of molecular forces, which transpire to produce the annual increasing and diminishing density of the globe and which molecular forces and motions take place throughout the sphere from the centre to the circumference of the entire surface of the earth. The variations of these electrical or magnetic phenomena, occurring so regularly periodical, have been supposed by physicists to only exist in the atmosphere, either in its lower or upper regions, and to have been derived from the sun by induction, whereas, I think from a profound study of this subject, that they are produced within the globe by the more or less intense motion of, or action in the lines of molecules which in all directions extend from every point on the surface of the globe, through the terrestrial centre to its antipode, and the motion in these is constantly taking place by virtue of the inherent forces of attraction and repulsion in each molecule, which forces are exerted not only to preserve the law of density fixed for this planet by its position in space, but to maintain the form and position of the planet in its permanent relation to the sun on the one hand as its source of power and excitement, and to the moon on the other, as a dependent on its radial forces of attraction and repulsion. In other words, cosmical magnetism is a planetary force produced by the constantly varying intensity of the forces of the molecules which in the aggregate constitute the planetary masses; and terrestrial magnetism, as a consequence, is a power radiating from every point of the globe, and generated within it in consequence of its orbitual relations to the solar centre, its orbit being an ellipse, and the sun fixed in one of the foci of that ellipse, whereby it being at different distances from the sun at different periods of the year, the number and intensity of terrestrial phenomena of all sorts transpiring in the air, ocean, solid crystalline crust, and molten interior, and in the forces pervading its molecules, differ accordingly; and, as a consequence of my theory, if all these phenomena are studied by physicists from a different point of view than that from which they have been heretofore, I believe the most remarkable advances in every department of physical science will be rapidly made, and a new world of knowledge opened to future

generations of a meteorological, geological and astronomical character, the value and extent of which it is not now possible for us to conceive. Once on the track of truth, all conflicting opinions and laborious processes of research will cease. Extreme simplicity will ensue in all departments of physical observation, and the darkness which has beclouded the awakening ignorance of past ages will be dispelled before a pure and serene light, every ray of which will reveal the most beautiful, sublime and useful truth for the future improvement of the human mind.

January 27, Feb'y 18, March 15, April 16, May 13, June 12, July 11, August 17, Sept. 21, October 27, Novem. 30, Decem. 25,

Of 232 earthquakes and volcanic phenomena, recorded by myself, as they have occurred from time to time within three years in different parts of the globe, and which have been collected from different sources, of anterior dates taken at random the number for each month show remarkably strong evidence in favor of this theory—and they are so extraordinary as to stimulate the most active enquiry into this department of the physics of the solar system. The statistics copied from my memorandum are as appended: As the notes of the phenomena were made without any reference to favoring or discouraging the hypothesis of molecular repulsion as an earthquake force, the facts afford almost conclusive proof of the Theory.

San Francisco, May 7th, 1855.

Col. L. Ransom in the Chair.

Dr. H. Gibbons presented a vertebra of a whale, und near the Presidio, in ploughing.

Dr. Downer presented a specimen of *Tridacna gi-as*, from the Navigator Islands.

Dr. H. Gibbons presented a Journal of Meteorolo ical Observations, at San Francisco, from Dec. 1850 March, 1855, showing the Thermometrical and arometrical depressions and elevations; also obser-ations on the winds, clouds, &c.

Dr. Kellogg exhibited drawings of the *Taxodium mpervirens* of Don, or the common Redwood, with icroscopical and analytical figures of the flowers.

The thanks of the Academy are due to Dr. Willard, ho furnished the blooming specimens.

Drs. Kellogg and Behr reported on the species of *axodium*, improperly described by English authors *Wellingtonia*, commonly known as the "Great ee" of California.

AXODIUM GIGANTEUM—OR THE WASHINGTON CYPRESS. —Kellogg and Behr.

This world-renowned monarch of the American rest is now in bloom, and from the data thus fur-shed, it is evidently a species of *Taxodium* of Don. its early growth it has the foliage of the common edwood or *Taxodium sempervirens*, i. e. forming a t lamina as in the *Taxus* and *Torreya*; but as it lvances in age, the foliage is metamorphosed into iangular scale-like leaves, attached by a broad base ith an imbricated arrangement similar to many ecies of the *Cypress* and *Juniper*. Hence the me we proposed for it in 1853—*Washington Cy-ess*.

TAXODIUM GIGANTEUM.—Kellogg and Behr.

Ramorum sterilium folia membranacea, alternan-a, disticha, folium pinnatum mentientia, fertilium lia acuta, carinata, imbricata, cupressoidea.

Male flowers in small ovoid catkins at the extrem-y of the branchlets, solitary or in clusters of three more, composed of scale-like filaments, concave, oid, margins thin membranous frilled, and when parated infolded, bearing three or four oblong an-er-cells under the lower margin, outside as it were, a small portion of the torn rachis adhering to it— lls opening by a longitudinal fissure, valves slight-collapsed at the sides near the middle; pollen herical, some apparently with the remnant of a pe-eel. Cones solitary, or two or three together, on ng pedicels, oblong-ovate about two and a-half ches long, and two inches broad at the thickest ameter, axis ligneous. Scales numerous, closely pacted, thick, angular, sub-peltate, cuneate, trun-te, apophysis transverse, sulcate, mucronate, seeds to eight to each scale; cuneate compressed, wings ick corky membranous, often oblique, emarginate ove—general outline obovate-emarginate. Leaves the young stateexpanded, long linear, acuminate, lternate; by age becoming triangular, somewhat ruptly acute, imbricate, sessile, appressed, persist-ent, adhering by a broad base and half or three-quar ters of the inner surface; dull pale green; sterile aments of a creamy or ochreous hue, branchlets round. somewhat drooping; bark, cinnamonbrown, shreddy fibrous, like the Cypress, Arbor-Vitæ and Redwood; one to one and a-half feet in thickness. Heartwood coppery-red and lustrous, grain straight, and easily splitting, lasting, but soft.

This towering and colossal forest tree attains to the height of 322 feet, and upwards of 29 feet in diameter, perfectly symmetrical in all its proportions. From the features indicated, this gigantic tree is evidently of Cypress lineage; a family we respectfully submit, already too much divided.

Dr. Kellogg exhibited a drawing and fresh specimens of *Madaria corymbosa*, var. *fragaria*.

Stem and involucre clothed with a long soft pubescence, glandless and glanduliferous hairs intermixed —leaves linear-lanceolate, sessile, remotely denticulate, inconspicuously three-nerved, villous, glandless, chaffy scales in a single series, all united;—rays about thirteen, cuneate below, expanding, deeply three cleft apex, yellow. Achenia oblong-obovate cuneate, compressed, sub-angled, incurved, bright lilac colored; anthers brown.

This plant exhales the fragrant odor of ripe strawberries.

Dr. K. exhibited drawings and specimens of *Viola longipes*, or Long Spurred Blue Violet, in some points varying from the received description; e. g. the points of the leaves sub-acute, somewhat cuculate, margin crenulate, teeth obtuse as if cut off, stipules large, semi-cordate-lanceolate; peduncles quadrangular; sepals lanceolate-acuminate; upper petals much reflexed; lateral petals strongly bearded near the upper margin; stigma papillose, glabrous beneath; spur long, produced, often recurved upwards; appendages of the lower anthers long filiform; stem slightly flattened or sulcate by two decurrent lines opposite the leaves extending down to the axils and alternating.

Dr. K. also exhibited a drawing and specimens from Placerville and this vicinity, of the common plant *Sidalcea diploscypha*, Gray, called in the Flora of North America by T. & G. *Malva diploscypha*, by others described as a *Sida*. It is worthy of remark that the leaves are not digitately five-parted, but seven-parted; flowers in a long naked raceme at the summit of the branches; bracts not three, but one, two or three-parted, or toothed, &c.

The Academy is greatly obliged to Mr. E. W. Garvitt, for the fine specimens sent them from Placerville.

May 14th, 1855

Dr. Randall in the Chair.

Donations to the Cabinet.

From Dr. Trask, three specimens of *Cottopsis parvus*, Gir. from the Sacramento river.

From Dr. Winslow, a *Tropidonotus*, allied to *T. tænia*, found near the Mission Dolores.

From Mr. James O'Meara, a suite of specimens of volcanic products, from Hawaii. The thanks of the Academy were voted for the donation.

Dr. Behr exhibited a very beautiful specimen, probably the larva of an *Elater*, showing strong phosphorescence.

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MAY 21, 1855.

Dr. Kellogg in the Chair.

Donations.

From Ellery & Doyle a synoposis of the contents of the British Museum.

From Dr. Lanszweert, a nest and young of the Humming Bird, so common in this vicinity, *Polytmus Anna*, from the Mission Dolores.

Also from Dr. Lanszweert, specimens of the Mistletoe (*Viscum flavescens*, Pursh), found on the Redwood. (*Taxodium sempervirens*) at Nevada.

From Mr. Nevins, the skin of a *Pituophis*, from Alameda.

From Dr. Enscoe, a specimen of *Pituophis catenifer*, B. & G. known as the Gopher Snake, from Santa Clara. The thanks of the Academy were voted for the donation.

From Mr. Bosqui, two specimens of the Mole which is found here.

From Mr. Carlton, one specimen of the same.

From Mr. Nevins, two specimens of the same.

In connection with these Dr. Ayres presented the following description:

The *Ground Mole*, so common in this vicinity, and often so troublesome in gardens, furnishes another illustration of the fact already many times referred to, that species occurring in the Atlantic regions of this continent seldom extend their range to the Pacific slope, but are on the contrary in many instances *represented* here by their analogues. The animal in question is closely allied to a Mole found in New England, and as far south as Virginia, *Scalops Breweri*, Bach. It is, however, quite distinct from that eastern type, and we propose to call the western species

SCALOPS CALIFORNICUS—Ayres.

Teeth forty-four. In the upper jaw are two incisors, large, rounded in front, flattened posteriorly—following these are six false molars, nearly cylindrical, obtusely pointed, the first three sub-equal, the fourth much the smallest, the fifth a little larger, the sixth scarcely as high as the first; behind these are four true molars, the first smallest with a single point, the second and third larger. In the lower jaw are four incisors, the anterior pair very small, cylindrical, blunt; the pair behind them, larger, cylindrical, pointed; following these are six false molars, the first five sub-equal, similar in form to those of the upper jaw; the sixth larger, pointed, sometimes lobed; behind these are three true molars, each consisting of two transverse prisms connected by an isthmus, the points of the anterior prism being more elevated than those of the posterior. The dental formula is therefore

$$\frac{2}{4}\ \textit{Incisors} - \frac{12}{12}\ \textit{false molars} - \frac{8}{6}\ \textit{true molars} = 44$$

Color of the fur, in the specimens seen, dark glossy brown, almost black, above and beneath; this, however, as in other species, is probably subject to variation. Feet sparsely covered with hairs, light flesh color.

Cartilaginous snout tapering, flattened beneath.—Nostrils intermediate in position between those of *Sc. Breweri* and *Sc. aquaticus*, not as directly terminal as those of the former, and not as plainly on the upper surface as those of the latter. Palm broad, not elongated. Tail not flattened, nearly circular in section, somewhat constricted near the body, then enlarging, and thence tapering; clothed, but not thickly, with hairs about two lines in length.

Length of the head and body five inches and one tenth; of the caudal vertebrae one inch and two-tenths. Breadth of palm six and a-half tenths;—length of palm, to end of middle claw, eight-tenths. Length of skull, one inch and three-tenths.

Sc. Californicus is, as mentioned, nearly allied to *S. Breweri* with which it agrees in the number of teeth, the form of the skull, and in general appearance. It is, however, a smaller animal; the hand is very differently proportioned, the tail is round and more naked, and longer; and the skull is relatively larger. From *S. aquaticus*, the animal universally known in New England as the "Mole;" it is distinguished by its smaller size, and more widely by the number of teeth. From *S. Townsendi*, the only species hitherto known on this side of the mountains, it is at once separated by its size and color, though it is similar to it in dentition.

This Mole is quite common in this part of California, and appears to be entirely identical in its habits with the eastern species. From information recently obtained, it seems probable that another type takes the place of this in the vicinity of Monterey, of which, however, no specimen has yet been received.

Dr. Kellogg exhibited a drawing of the *Taxus canadensis* or Yew-tree, illustrating the appropriate origin of the generic name *Taxodium*, which includes the Washington Cypress, Cypress of the South and the common Redwood.

Also a drawing of *Chryseis cæspitosus*, Lindl or Dwarf California Poppy.

A drawing and specimen of *Ribes subvestitum*, or Mountain Gooseberry, a splendid species, flowers about an inch in length, the divisions of the calyx bright purple on the inside. The stem is not "very bristly," as usually described, but smooth and bright cinnamon color. The segments of the reflexed calyx are not "oblong," but long, acute, with a subulate apex.

Dr. K. exhibited drawings and specimens of four species of *Ceanothus*, or Tea-tree, to wit:

C. cuneatus. This species we think deserves the attention of ornamental gardners and culturists. It is one of our most promising native shrubs; forming evergreen interwoven mats of the densest verdure, even in the dryest soils and seasons. As a beautiful border for walks we think it much preferable to the Box, Baccharis, and other shrubs. Its flowers are fragrant and of a delicate lilac color; i. e. calyx, corolla and pedicels. The whole shrub exhales a balsamic odor.

The specific description seems to be at fault so far as our own observation extends; the leaves are not "entire," but always with two or more conspicuous teeth with mucronate points at the obtuse extremity; reticulately pitted and glaucous beneath, but never "tomentose-canescent;" glabrous.

The specimens from the interior are dwarfish, growing only a few inches from the earth; branches dark cherry-red, not pubescent, but sometimes hoary. This species is quite distinct from the following with which it has been confounded.

C. macrocarpus. The fruit of this species as its name imports, is unusually large. The flowers are white and calyx expanded, the points not inflexed or cowled as usual. The leaves of this species are very small, sometimes 2 or 3-toothed at the apex, and the branches also opposite and sub-alternate The short lateral condensed racemes, opposite, usually four together, decussated, leafy at the base, about six flowers in each, with a distinctly alternate insertion, but so closely approximated as to appear like umbels.

C. azareus, Kellogg. This species is supposed to be new. The provisional name indicates the exquisite beauty of its flowers, which are the most vivid azure or cobalt-lilac color. Stem dull red, minutely warty, with occasional pubescence: branches terete. The young branches and racemes short canescent pubescent. Leaves ovate, sub-acute; lesser leaves obtuse, somewhat fasciculate, glandulously serrate, strongly 4-nerved from the base; densely white velvety beneath and along the veins, glabrous and shining as if varnished above. Flowers on axillary, elongated, compound racemose-peduncles leafy at the base, about three inches in length; fascicles of flowers covered by a single ovate, acute, pubescent bract, at length descending.

The fruit we have not seen. The largest leaves are scarcely one inch in length, five-eighths broad, on short petioles from one-eighth to one quarter of an inch in length; the smaller and more numerous fascicles of axillary leaves about one-quarter to one-half these dimensions.

C. Californicus, Kellogg. This species is nearest allied to *C. Oreganus*, hence to contradistinguish it we give the above provisional name.

Branches robust, bright green, glabrous, swelled at the axils; those of the present season's growth thick, tender and succulent; leaves in the young state lanceolate, acute and long acuminate, becoming broadly ovate, cordate at base, acute, or sub-acuminate, three nerved, veins very prominent, lamina thin, entire, glabrous above, glaucous beneath, sparsely pubescent, with appressed hairs along the veins.

Stipules conspicuous, texture leafy lanceolate-acuminate, numerous short shoots of tender axillary branchlets- Flowers white, on long, stout, lateral branch-like compound paniculate peduncles, 6 inches in length, one or more leaves at the base. Appears to be a deciduous species.

Dr. K. exhibited a drawing and specimens of *Asclepias aeornutum*—Kellogg.

Herbaceous stem glabrous, purple, decumbent, leaves large, much spreading, cordate, amplexicaul, broad-acute, veins purplish; umbel terminal, peduncles dark lilac purple, sparsely pubescent, calyx strongly pubescent, sepals lanceolate, acute, brown madder purple; petals oblong-ovate, acute, slightly pubescent on the margins and back, at the apex obscurely 5-veined, dark purple expanded or loosely reflexed, the involuted leaves of the staminal crown without any horn from the hollow centre as is usual in this genus, both the upper inner margins ascending into points scarcely longer than the crown.

The Academy are indebted to E. W. Garvitt, of Placerville, who furnished the above specimens.

Col. R. D. Cutts presented for the Library Owen's Report on the Survey of Wisconsin and Minnesota; Lieut. Maury's Astronomical Observations, at the National Observatory, Washington, D. C., 1845; Annals of the Observatory of Georgetown College, D. C., No. 1.; Catalogue of N. A. Reptiles, Part 1., Serpents,—Baird and Girard; Five volumes of the Proceedings of the American Association for the Advancement of Science; and the Report of the Smithsonian Institution for 1852.

Dr. Ayres presented two specimens of a new species of fish, with the accompanying description:

APODICHTHYS VIRESCENS—Ayres.

Form elongated, much compressed, tapering both anteriorly and posteriorly, dorsal and abdominal outlines gently arched. Greatest depth not quite one seventh of the total length; head sloping, with the muzzle somewhat rounded: length of the head a little less than one-tenth of the total length.

Mouth oblique; a line vertical to the tip of the superior maxillary intersecting the pupil. *Teeth* conical, blunt, not numerous, arranged in a single row along the side of each jaw, and somewhat irregularly placed anteriorly; one or two on the vomer, none on the palatines.

Eyes nearly circular—their diameter contained scarcely six times in the length of the head; distant nearly their own diameter from the border of the upper jaw.

Branchial apertures tolerably free, continuous, the membranes forming a complete union beneath.—Scales small, imbedded. Lateral line not perceptible.

Dorsal, anal, and caudal fins united.

The *dorsal* fin arising above the base of the pectorals, is of almost uniform height in its whole length, the height being about equal to the diameter of the eye. Rays all spinous, enveloped in a thick membrane. The point at which it joins the caudal is manifest from the difference in the character of the rays, though the union is complete.

The *anal* fin, arising at a point nearer to the root of the caudal than to the tip of the snout by twice the length of the head, is of nearly uniform height, (about equal to that of the dorsal) rays all soft, articulated; the point of its junction with the caudal is a little posterior to that of the dorsal with the same fin. It is preceded by a lanceolate bone, concave on its anterior surface, joined to the fin like a spinous ray; the membrane covering this is incom-

plete at the tip, so that the anterior concavity is a chamber communicating with the surrounding water, but no duct can be traced opening into this chamber from the internal organs.

The *pectorals* are short, broad, and rounded, their height being less than half the length of the head.

Ventral fins, none.

Caudal fin rounded, its height just half the length of the head. It has twenty-six rays; the rays of the dorsal and anal can scarcely be counted, from the thickness of the membrane.

Color almost uniform greenish olive, in some instances a bright pea-green. A narrow, vertical, black vitta runs from the lower border of the eye downward; another of similar breadth, from the upper border inward and backward to the occiput.

A. virescens is taken in the bay of San Francisco, but is apparently not common. The largest specimens yet seen are about nine inches and a-half in length.

From *A. flavidus*, G., a species said to be found here, but which we have not yet seen, the present is distinguished by the length of the head, the gape of the mouth, the size of the eye, and the coloring;—from *A. violaceus*, G., it is separated by the length of the head, the absence of a lateral line, the form of the dorsal, the extent of the anal, the union of the caudal with the two adjoining fins, and the coloring.

San Francisco, May 28, 1855.

Col. L. Ransom in the Chair.

Mr. James Tallant and Mr. Henry C. Macy were elected resident members.

Donations to the Cabinet.

From B. W. Brooks, a specimen of Sandstone from the vicinity of Lake Merced.

From O. H. Thomas, a fossil tooth and part of a tusk from Matelot Gulch, near Columbia, Tuolumne Co.

From F. Johnson, a species of *Eutainia*, taken near the Presidio.

The thanks of the Academy were voted for the above donations.

From H. G. Bloomer, specimens of the *Rafinesquia Californica.*

From J. B. Trask, specimens of a *Murex* and of *Ranella Trigonalis.*

Donations to the Library.

Characteristics of some Cartilaginous Fishes of the Pacific Coast of North America, by C. Girard, from the author.

Proceedings of the Boston Society of Natural History, vol. 5, pages 81 to 96, from the Society.

Dr. Kellogg exhibited drawings and specimens of two species of violet from the interior, neither of which are described, so far as we are able to learn.

Viola montana, Kellogg. Acaulescent, branches procumbent, glabrous, angled; leaves thick, somewhat succulent, pale green, and slightly glaucous, all pedately 7-lobed, lateral lobes largest, oblique, deeply 4 to 5 toothed or sub-lobed; middle lobe simple, or cuneate tridentate; stipules broad, obliquely ovate, lanceolate incisely dentate, acuminate; peduncles rather longer than the leaves, sepals broadly lanceolate, acute, the lower broader, somewhat oblique; two upper petals, glabrous, lilac-blue on the back, delicate straw color in front, with blue lines; lateral petals yellow, with blue veins and a tuft of short velvety pubescence; lower petal beautifully striated with dark brown radiating lines on a shaded ground of orange, deeply emarginate, glabrous; spur short, appendages of anthers carinate, not spurred, as long as anthers; style attenuated towards the base, stigma capitate, hirsute especially on each side, glabrous on the lower side, foramen large. About three inches in length.

Viola purpurea, Kellogg. Stem strongly angled, purple, hirsute, as also all parts of the plant, except the upper surface of the leaves, lower leaves round, decurrent into the thick grooved petiole, upper leaves ovate, sub-acute, obtusely crenate, lamina thick fleshy, granular and glabrous above, veins purple; pubescent and purple beneath; stipules very broadly fin-shaped, thin, about 6-nerved, setaceously dentate, long mucronate-acuminate; peduncles nearly twice the length of the leaves; two setaceous bracts near the middle; pistil clavate, attenuated below, a tuft of long hairs on each side only, foramen large, stigma purple; spur very short, obtuse; sepals subemarginate behind, lanceolate, acute, mucronate.

The flowers medium size, all the petals light brown madder purple outside, yellow within; upper petals not striated; the lateral, with three or four brownish purple lines, a minute tuft of hairs near the upper margin, lower petal slightly emarginate, striated, capsule canescently pubescent (in the specimen before us) marked with three broad stripes of purple, alternating with three green.

Dr. Kellogg also exhibited specimens and a drawing of a species of *Senecio*, to which the provisional name of *S. spatulifolia* has been given.

Stem fastigiate, striate, sparsely arachnoid tomentose, upper leaves linear-lanceolate entire, margins revolute, sessile, sub-hastate at base, arachnoid tomentum beneath decidnous; lower and radical leaves narrow-lanceolate, spatulate on very long and slender petioles, expanded insertion, thick fleshy, very glaucous entire, mid-rib prominent, obscurely triplinerved; corymb simple, flowers few (about six to eight), large, on long fastigiate peduncles, with three to five alternate bracteal scales; involucre large, cylindrical, somewhat swelled at the base, calyculate by a few subulate bracteoles, scales glabrous, (light green tipped with orange) rays four or five, long reflexed or lax-recurved.

This species is found near Placerville, the involucral scales about 18, achenia 5-angled 40 to 50; rays ¾ inch long 3 toothed; leaves 4 to 5 inches in length, ¼ to ⅜ inch in width, stem 1 to 2 feet high.

Also a drawing and specimen of *Trientalis Americana*, or Chickweed Wintergreen.

The specimens we have examined have six instead of seven divisions to the calyx, and the same of the corolla, divisions ovate-acute, not "acuminate," also six stamens; the whorl of delicate leaves at the top of the naked stem, are very broad and large, oblong-lanceolate or obovate-lanceolate, acuminate, entire, not "serrulate;" upwards of 3 inches in length, about 1½ inches in width.

Dr. K. also exhibited specimens and drawing of a beautiful *Pentstemon* or Beard-tongue, supposed to be new.

P. TENELLUS—Kellogg.

Stem perennial, somewhat ascending glabrous, lower leaves numerous, very narrow lance-spatulate on long attenuated petioles, in opposite and decussate fasiculate clusters, acute, mucronate, entire; the upper leaves opposite, sessile, narrowly lance-pointed, cordate clasping at base, the lower portion of the

lamina reflexed, entire, apex ending in a subulate mucro. Flowers opposite, peduncles 1 to 2-flowered 2-bracted, bracts linear-lanceolate, subulate, sessile closely underneath the calyx; sepals ovate with long narrowed subulate recurve-spreading points, corolla inflated, glabrous, sterile filament naked, point compressed, slightly expanded, curved, anthers hirsute, pistil capitate.

The flowers of this interesting plant are among the most showy and beautiful we have ever seen; the color is an ultramarine lilac shading into the pink colored tube; the panicle is loose and airy with long internodes above, shortening below to ½ or ¼ the length of the leaves, about 1 to 2 feet in height.—Leaves seldom two inches in length, about ⅛ or a little more in width.

Dr. K. exhibited a drawing, accompanied with blooming specimens from Placerville, of a new and interesting species of *Egletes*.

E. Californicus—Kellogg.

Stem annual, striated, arachnoid-tomentose, branching above, forming a large open compound corymbose top; leaves alternate pinnatifid, obscurely 3-nerved, white tomentose beneath, dark green glabrous above, margins revolute; upper leaves sessile, lanceolate acute, mostly dentate, rays three or four times the length of the involucre, ligulate, 3-toothed, lax, apex recurved? tube very glandularly villous, corolla of the disk villous and viscid with glandular hairs as in the rays, border 5-toothed, pistils exsert recurved, achenia quadrangular, hirsute, sulcate, pappus of five chaffy scales lancinately-cleft or ciliate at the extremity, receptacle convex pitted; involucre in two series; peduncles fistulous above.

Rays about 13, yellow like the disk florets, showy, an inch or more in length; flowers very fragrant, having the odor of a ripe Newtown pippin.

San Francisco, June 4, 1854.

Col. L. Ransom in the Chair.

A letter was read, addressed to Dr. Randall, from Dr. S. G. George, of Visalia, Tulare Co, accompanying specimens of vegetable fibre, of great strength and beauty, taken from a plant common in the swampy lands of Tulare Co. It is hoped that attention may be drawn to this plant, as its cultivation may at some future time become of much importance. Specimens of it were promised for investigation.

Mr. H. P. Carlton presented specimens of Cornelian, Agate, &c., from Crescent City.

The thanks of the Academy were voted for the above donations.

Dr. Kellogg exhibited complete specimens and a drawing of an herbaceous vine from the vicinity of Placerville.

This plant legitimately belongs to *Echinocystis;*—but many alterations in the received description of this genus appear to be required. The provisional name offered is—

E. Muricatus—Kellogg.

Some of the generic differences are as follows:—Fertile flowers; calyx not "flattish," but tubular-companulate, segments 5, not "6," petals 5, united at the base into a tubular-companulate corolla, no abortive filaments; stigma barely marked by a very obscure transverse line across the top. Sterile flowers in simple? racemes 8 inches to 1 foot in length, calyx deeply tubular-campanulate (tube ¼ of an inch or more in length) border rotate, sepals obsolete, flowers small, white, or greenish white; stamens 3 to 5, anthers sigmoid.

Stem about 5-angled, glabrous, very glaucous, swelled at the axils. Leaves palmate broadly sinuate-cordate at base, 5 to 7 lobed, separated by deep and spacious sinuses, lobes long, cuneately somewhat attenuated below; lobes 3 to 5 sub-lobed, with angular margins, points mucronate, slightly scabrous, pubescent above, sparsely soft pubescent and very glaucous beneath, lamina thin and delicate, on long slender petioles; tendrils simple or 2 or 3 parted.—Fruit on long slender pedicels pendent from the same axils as the sterile racemes, &c., small, round, about 1 inch in diameter, glabrous and shining, light green, muricate with a few obtuse short weak points mostly aggregated at the base, striped somewhat in sections with conspicuous dark green veins, 2-celled, 2-seeded, bursting irregularly at the summit, seeds roundish dark brown inclining to black, pitted.

This plant, like several other species, is known as Giant Root; the root is of great size, creamy russet color, rough, yellowish fleshy within and intensely bitter. A vine climbing over small shrubs, about 6 to 8 feet in length. The seeds abound in oil, and the root is said to be a valuable tonic.

Dr. K. exhibited specimens and a drawing of a species of *Fritillaria*. In some of the specimens the leaves were long and narrow, or linear-lanceolate whorled below in 5s, 5 inches in length, alternate, lanceolate and at the racemose top, arcuate, linear.—There appears to be some variation in this respect; by further observation should it prove to be new, we suggest the specific name *F. multiflora*. Stem about 3 feet high, 30 to 40 flowered, flowers small, nodding, purple, spotted, about ½ an inch in length.

Stamens ⅓ shorter than the petals, anthers longer than the filaments, inner petals rounded at the apex, outer petals acute, point incurved, 3 stigmas revolute, glabrous. Root crowned by a great number of smaller bulbs.

Dr. K. also exhibited a drawing and specimens of *vicia*, or vetch, from Placerville.

V. truncata, var. villosa, K.—The specimens found in this vicinity answer the description usually given. Further observations are required to determine how far the locality will account for the changes we find in this specimen from the interior. Leaves 6 to 7 pairs, broadly obovate-truncate, teeth numerous, 6 to 8 along the upper third and truncate end, mucronate, short villous pubescent above, very villous with long hairs beneath, vertical or reversed; stipules semilunate, semisagittate, incisely mucronate-dentate, spur or barb long acuminate-mucronate, versatile, on a central pedicel, stigma very villous; ten-seeded.

The stem pubescent, quadrangular, slightly winged at the angles. A very handsome species, 1 to 2 feet high, weak. Leaves from ¼ to ½ an inch in length, and nearly the same in breadth.

Dr. K. presented a drawing and specimens of the flowers of the *Torreya Californica*, or California Nutmeg. Anthers peltate, 9-celled.

Also a drawing and specimen of the leaf of *Leptarrhena inundata*—Behr; thus completing the drawing and essential descriptions furnished a short time ago.

The leaf is highly interesting; the specimen received by the politeness of the Pacific Express Company, is about one foot broad, funnel-shaped, round, peltate, border angularly-lobed, sinuses obtuse, doubly-serrate, petiole about 2 feet in length, clothed

like the stem with glandular hairs, also glandular and pubescent along the veins beneath, which gradually diverge around the hollowed tubular centre of the lamina, glabrous above, somewhat membranous.

Dr. K. exhibited specimens and a drawing of a new species of *Ceanothus*, from Placerville.

C. diversifolius—Kellogg. Branches, both old and young, peduncles, petioles and leaves, densely villous; lateral branches divaricate, slightly nodding. Leaves oblong-ovate or elliptical-ovate, obtuse, or sub-acute, 3-nerved, in most of the young leaves the lateral nerves are obscure, lamina thin membranous, densely villous, bluish green and slightly glabrous beneath, shorter villous pubescent above, not shining, retuse-mucronate-dentate, teeth somewhat cuspidate, glandular, petioles about ⅓ the length of the leaf. Flowers in long axillary, simple racemes, somewhat pendant, flowers mostly crowded into a corymbose cluster at the extremity on pedicels of ½ to ⅔ of an inch long, colored racemes 2 to 3 inches long, scarcely leafy at the base, although a few scales are observed, and occasionally a very minute leaf; flower buds covered with small pubescent bracts, at length deciduous,—calyx more infolded, and less cowled than usual in this genus, giving the flower an angular or ribbed appearance, style exserted, united to the top, stigma barely divided, branches green, colored on the sunny side, and studded with small flat glandular warts.

Dr. K. also exhibited a drawing and specimen of an *Œnothera*, or Cupid's Primrose, supposed to be new.

Œ ARCUATA.—Kellogg.

The lobes of the stigma linear yellow, capsule elongated, attenuate at the base, slightly pubescent, seeds ascending in a single series, flowers large.

Stem annual, terete, glabrous and shining tender fleshy branchlets, somewhat woody at the base, flesh colored and red, branched above, recurve-nodding or tortuously curved, circinal? leaves linear-lanceolate, narrowed at the base, nearly sessile, conduplicately closed, arched or ascending, twisted and curved in large and graceful bows or circles, acute or subulate, entire, minutely pubescent above and below, tender fleshy, obscurely 3-nerved; flowers axillary, flesh-colored turning to rose-color, anthers lilac-colored, longer than the somewhat compressed filament, erect, fixed by the base, apex mucronate, point expanded or glandular, recurved, white; stamens opposite the petals shortest; alternate longer stamens ⅔ the length of the fan-shaped-crenulate petals; style red, shorter than the petals, stigmas stigmatose; flowers with 8 cuneiform lines of red at the base within the funnel-form calyx, tube ⅓ the length of the sepals 4-nerved and grooved; segments ⅔ the length of the capsule, 3-nerved, lance-pointed, carinate, ovary cylindric, 8-grooved, attenuate at each end, densely minute pubescent, as is also the calyx, sessile, 3-nerved, an inch or so in length, or ⅓ longer than the sepals.

For the above specimens, furnished by Mr. E. W. Garvett, the Academy return their thanks.

Dr. Wm. O. Ayres presented the following description with the specimen:

CEBIDICHTHYS CRISTA-GALLI.—Ayres.

Form much elongated, rounded anteriorly, then compressed, becoming much flattened near the tail. Depth contained a little more than six times in the total length.

Head rounded, with the cheeks arched, and muzzle very blunt. Top of the head provided with a thick fleshy crest, which rises abruptly immediately behind the upper jaw, and terminates as abruptly at the occiput; it is highest posteriorly, its height there being nearly double the diameter of the eye. This crest consists mainly of adipose tissue, though it is partially supported by an osseous occipital ridge.—The breadth of its base is about equal to its height anteriorly, narrowing to a thin edge at its dorsal outline, which is nearly straight. From the occiput the back rises at once to about the height of the crest, curving thence gently to the tail.

Eyes nearly circular, prominent, on the upper surface of the head, so that as the profile slopes downward they look upward and forward, giving a most singular monkey like expression to the face. They are separated from each other by a space equal to their own diameter, and from the anterior border of the upper jaw, by twice that space; their diameter is a little less than one twelfth the length of the head. The length of the head is not quite one seventh of the total length.

Opercular bones entirely destitute of spinous processes, concealed in the thick, loose integuments.

Lips very thick and fleshy.

Teeth fine, somewhat crowded, nearly even in both jaws; those of the lower jaw a little the largest. A small patch on the vomer, and a band of very fine ones along each palatine.

Nostrils small, near the base of the crest, less than half the distance from the eye to the snout.

A row of pores, commencing back of the angle of the mouth, follows the preopercular border, turns backward above the top of the operculum, and meeting there another row which has been formed by two—one from the occiput and one from the angle of the eye—the two constitute the lateral line, which at first ascending till near the dorsal fin, follows then the curve of the back, and terminates abruptly a short distance before reaching the caudal fin. This lateral line consists, in almost its whole length, of two irregular parallel rows of pores all communicating with one main tube.

Scales small, oval, soft, imbedded, covering the body (but not the head), and ascending partially the fins. The whole fish is coated with a thick mucous secretion.

Dorsal, anal, and caudal fins united.

The *dorsal* fin, arising a short distance from the occiput, extends to the caudal fin. The rays of the anterior portion are simple, feebly spinous; those of the posterior, articulated, branched. The fin is at first low, becoming then higher, and again diminishing, till it rises somewhat abruptly at the commencement of the articulated portion, maintaining thence a nearly even height throughout; this greatest height is a little more than one third of the length of the head. The last ray is connected fully by membrane with the caudal, though leaving an emargination between the two fins.

The *anal* fin, arising a little nearer to the tip of the snout than to the base of the caudal, is of nearly uniform height throughout, being lower than the soft portion of the dorsal. The rays articulated and branched. Its union to the caudal is like that of the dorsal.

The *caudal* is rounded, its height a little greater than the greatest height of the dorsal.

The *pectorals* are rounded, equalling the caudal in height, the length of their base being scarcely half their height.

Fig 1

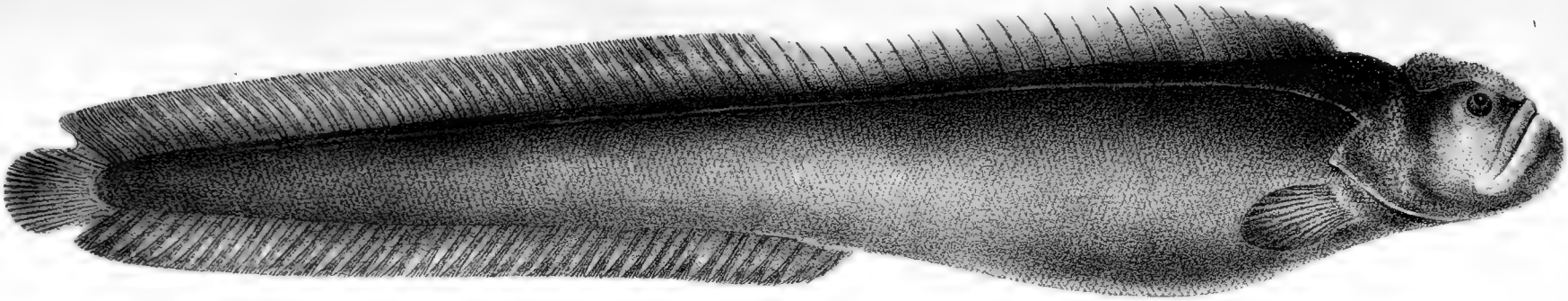

Fig 3

Fig 2

Fig 1. Side view $\frac{7}{24}$ natural Size
" 2. View of face
" 3. Scale from side

CEBIDICHTHYS CRISTA-GALLI, AYRES.

Ventral fins, none.

Branchial rays six.

D. 25–40 ; A. 42 ; P. 11 ; C. 19.

Color nearly uniform, dark grayish brown, a very little darker beneath.

Length of the specimen described, twenty-five and a half inches

This singular and grotesque-looking fish occupies a position nearly intermediate betwein *Zoarces* and *Anarrhicas*. It agrees with the former in the aspect of the body, the union of the vertical fins, the fleshy lips, the form and size of the teeth; with the latter in the absence of ventral fins; and with both in the scales, the abundant mucous secretion, the branchial rays, and the rounded muzzle. It differs from *Zoarces* in the character of the dorsal rays, the presence of ventrals, and the position of the mouth; from *Anarrhicas* in the form and size of the teeth; and from both in the crest.

A new generic division becomes therefore necessary, for which the peculiar monkey-like *face* of the fish, viewed in front, suggests an appropriate name. The strange resemblance to several of the American monkeys is, in fact, quite striking, and we may call the genus

CEBIDICHTHYS,—Ayres.

Head smooth, rounded, muzzle obtuse; body elongated, with minute, imbedded scales; dorsal, anal, and caudal fins united; no ventral fins; lips fleshy; mouth opening obliquely upward; teeth small, in both jaws, and on the vomer and palatine bones; branchial rays six; a fleshy crest on the head.

C. crista-galli is apparently rare. But a single specimen has yet been seen, and none of the fishermen had met with anything like it previously. It was taken in the Bay of San Francisco Its food had consisted of small fish in part, but chiefly of sea-weeds.

SAN FRANCISCO, June 11, 1855.

H. G. Bloomer in the Chair.

Charles H. Cook, Esq., presented for the Library a copy of the Annals of San Francisco.

The thanks of the Academy were voted for the donation.

Dr. Kellogg presented specimens of a small and beautiful *Mimulus*, accompanied by a drawing. It is believed to be known, but having seen no description, we give the following:

M. ATROPURPUREA ?

Stem short, branched mostly from the base, branches opposite, decumbent, 2 to 3 inches long, square, glandularly pubescent with white transparent frosty hairs; leaves opposite, spatulate-ovate, acute, entire, or sparingly serrate, with coarse teeth, petioles half-clasping, 5 to 8-nerved, ciliate along the lower margin of the petiole, sparsely hirsute above, purple beneath, some pubescent along the prominent veins; flowers opposite, axillary on short peduncles, ¼ to ½ the length of the calyx, calyx obliquely saccate at the base on the upper side, upper tooth and calyx erect or arched; tube of the corolla very long, club-shaped, throat ventricose somewhat compressed and infolded from beneath on each side of the palate, lower lip very short recurved, two upper divisions much larger reflexed spreading, reddish purple, variegated throat and palate; capsule carinate-compressed oblique. From Placerville.

Also specimens and drawing of a *Cerasus*, from Placerville.

C. GLANDULOSUS, or Mountain Cherry.—Kellogg.

Shrubby, stem reddish, slender, young branches pubescent; leaves obovate acute, somewhat cuneate at base, biglandular, mucronate, serrulate, sub-glabrous above, pubescent beneath, particularly along the veins; flowers in erect racemes terminating the leafy branches, appearing after the leaves; flowers fasciculate-corymbose at the extremity of the long raceme, pedicles ½ an inch or more in length, villous, as is also the rachis, calyx segments short, acute, reflexed, petals rounded, style, one, exserte infolded and tortuously bent, stigma capitate; fruit ovoid.

This species or variety has the glands much more conspicuous and uniformly constant than the *C. emarginatus* of the coast.

Dr. K. presented specimens with a drawing of *Amelanchier Canadensis* var. *alnifolia* Nutt. or Alder-leaf June-berry.

Branches smooth, robust, dark purple; leaves obtuse, cordate at the base, upper third and end toothed, entire below; lamina flat or plane, thin, pinnately veined, stipules lanceolate dry membranous, fuscous-pubescent, caducous; very delicately pubescent above and below; flowers, in short dense racemes, about 6 to 12, sessile and sub-sessile, calyx and rachis pubescent, styles 4, stamens short, calyx divisions short, triangular-lanceolate, strongly reflexed, racemes with one or two large leaves at the base.

The specimens furnished us by the generosity of the Pacific Express Co, were past the flowering period. The shrub abounds in prussic acid, and must be useful for medical purposes. Fruit black and sweet.

Also a drawing and specimens of *Maderia elegans?* from Alameda and vicinity of San Francisco.

Stem simple, about 2 to 3 feet high hispid with long glandless and shorter glandular hairs intermixed on the upper part of the stem, peduncles, and involucre; radical leaves linear-spatulate and linear oblong, elongated to 3 to 6 inches, ¼ to 1 inch wide, remotely denticulate, waved, 3 to 2-nerved, upper cauline leaves gradually reduced in size, very villous, with short glandless hairs, interspersed hirsute, sessile, sub-cordate clasping, alternate; flowers in a loose compound-paniculate corymbose top; involucre naked, scales 18 to 20, or the same number as the rays, somewhat alternately long and shorter; rays long, cuneate deeply 3-cleft at the apex, middle lobe sub-spatulate, points obtuse emarginate, twice as long as the involucre (or about 1 inch,) ⅜ inch wide, slightly attenuate to about ¼ of an inch below, 3 greenish veins along the back; tube pubescent, ligules light yellow throughout; receptacle conic, villous with soft hairs; chaffy scales in a single series (between ray and disk florets) united, greenish points, villous, acute, incurved; disk corolla, 5-parted, segments very villous within, a tuft of long hairs on the back at the tips, glabrous, only the narrowed tube pubescent; branches of the style in the disk flowers subulate, very acute, minutely hispid on the back, connately erect, anthers dark brown or black, all destitute of pappus.

Achenia of the ray enclosed by the carinate-complicate involucre, oblong-obovate, somewhat compressed, slightly incurved, sessile areolar disk above, little clawlike process below, glabrous, neither angled nor striated, dark purple, nearly black.

Annual hairy and glandular gummy herbs; flowers large, delicate straw-colored, or bright pale yellow, about 1½ to 2 inches in diameter.

These herbs singularly vary in size in the same proximity; whilst one has long leaves ¼ of an inch wide, stem tall and slender, another side by side, may be of similar height, but very sturdy stemmed with broad leaves, &c., without any important specific difference.

Dr. K. exhibited a drawing of *Echinosphace*, Bentham, or "*Ch.a*" of the Mexicans, by the Americans called also Tower Castle, and Castle plant.

The specimens presented were raised by T. J. Nevins, Esq., in his garden at Alameda, from seeds furnished by Col. L. Ransom, U. S. Survey.

We have seen no specific description. Only one species, we believe, has been noticed; there are, however, two distinct species, at least. It is a plant of much beauty and use, closely allied to the Sage.—It has been long cultivated for the seeds, although growing abundantly wild; a cold infusion in water is held in high estimation by the Spanish population of California. It forms a very pleasant and delicate cooling mucilage for fevers, inflammations, etc., and is well worthy of further investigation from the medical profession.

San Francisco, June 18, 1855.

Col. L. Ransom in the Chair.

Mr. Charles E. Rich, of Sacramento, was elected a Corresponding Member.

Donations to the Cabinet.

From Mr. Geo. H. Ensign, a specimen of the sedimentary rocks at Clark's Point, San Francisco, exhibiting many perforations by shell-fish.

The thanks of the Academy were voted for the donation.

From Dr. J. B. Trask, two specimens of *Cebedichthys crista-galli*, Ayres, and two of *Porichthys notatus*, Gir., from Tomales Bay.

From Dr. Lanszweert, the nest and young of the Chestnut Crowned Titmouse (*Parus minimus*, Aud.) nest and eggs of Yarrell's Goldfinch (*Carduelis Yarrellii*, Aud.), and of the Brown Song Sparrow (*Passerella cinerea*), from the vicinity of the Mission Dolores.

From Mr. T. J. Nevins, specimens of various plants, *Abronia rosea*, *Oenothera viminea*, &c., from Alameda.

From Dr. J. B. Wells, a specimen of silicious deposite, taken from a tunnel at Table Mountain, Tuolumne Co., at a depth of about sixty feet.

The thanks of the Academy were voted for the donation.

The May No. of Silliman's Journal, one No. of the Monterey Sentinel, and two new sheets of the Proceedings of the Academy were received.

Col. Abert presented a volume of Tables and Formulæ for the use of the U. S. Topographical Engineers, by Capt. T. J. Lee, U. S. A.

A paper by Mr. W. P. Blake, Geologist to the Southern Pacific Railroad Survey, was read, describing the polishing of rocks and sand stones by wind-driven sand. Mr. Blake's observations were made in the Colorado Desert, and in the pass below Mount San Bernardino, and are very valuable, as illustrating the possible forces that may have produced the well-known drift scratches and furrows. The paper will be published in full.

A letter was read from the Societé Imperiale des Sciences Naturelles, Cherbourg, France, proposing interchange of communications with the Academy.

Dr. Kellogg presented specimens of an *Azalea* from the interior, accompanied by a drawing.

A. NUDIFLORA var. ciliata.—Kellogg.

California White Honeysuckle.

These little shrubs are among the most beautiful and fragrant ornaments of our moist and shady forests; and are deeply enshrined with the earliest recollections of every American heart.

The plants of this genus vary so much, that it is confessedly difficult to establish uniform characters. For this reason we furnish such evidences as we find in the forms and figures before the Academy. It is with the hope of ascertaining the irregularities occasioned by different soils and situations that we desire to contribute our mite to the general stock of knowledge by offering the following description:

Flowers large, irregular, white, (a shade of pink on the back) lower largest segment ochroleucous, villous viscid without, also the calyx and peduncles; one or two upper sepals 3 or 4 times longer than the others, obtuse, ciliate, sub-spatulate; lower segments short, rounded, stamens declined, longer than the corolla, filaments hirsute below, style exsert, capitate hirsute at the base.

Leaves obovate-lanceolate, sub-acute cuneate at base, lucid, colored alike on both sides, minutely pubescent above and below, mid rib sub-hirsute beneath, entire, ciliate, a colored gland at the mucronate point.

A shrub 3 to 6 feet high, young branches glabrous, many membranous rudiments of linear or linear-lance leaves at the base; old bark light gray satiny, somewhat shreddy, in silky fibres. Flowers in dense clustered racemes at the extremity of the branches, appearing with the leaves, from large bracteacous caducous bud-scales, on peduncles 1 inch long, segments of the flower not very deeply divided, sub-compressed funnel-shaped.

Also a specimen and drawing of *Anoplanthus uniflorus* from the interior, differing in color, size, &c., with the specimens on the sea-coast; about 10 inches high, their flowers 1 inch in length, &c.

Also specimens and drawing of *Œnothera amœna* or Red Spotted Primrose. A beautiful rose-colored species, from the hills in this vicinity; petals red spotted at the base.

Also a drawing of a purple flowered *Œnothera*, from Alameda, the specimens furnished by T. J. Nevins, Esq.

Œ. VIMINEA, Doag. var. *intermedia*—Kellogg,
or the Willow-leaf Primrose

4th sub-division of T. and G., xx *lobes of the stigma oval, short, dark purple, capsule sessile, oblong, tapering near the summit, seeds ascending in a single series.*

Stem 2 to 3 feet high, erect, branching above, twigs very long and slender, bark fibrous and shreddy, membranous, satiny, silvery hue below, flesh-colored and reddish above, somewhat pubescent. Leaves narrow lanceolate, nearly entire, or rarely minutely and remotely dentate, very minutely satiny puberulent on both sides. Flowers in long racemes, dark lilac-purple, petals ¾ of an inch long, or twice as long as the stamens, sepals about ¾ the length of the petals, calyx tube from ¼ to ½ the length of the segments, anthers white, filaments flat, widening be-

low; style exsert beyond the stamens ; capsules sessile, slightly 4 sided, or sub-cylindric, oblong, with a conical apex, strait, or somewhat curved, very villous canescent pubescent.

JUNE 25th, 1855.

Col. L. Ransom in the Chair.

M. Auguste Le Folis, of Cherbourg, France, was elected a Corresponding Member.

Donations to the Cabinet.

From Capt. A. Hanson, a fossil specimen, being part of the lower jaw of an Elk, from Shoalwater Bay.

From Geo. H. Hudson, Esq., a suite of eggs of the Murre, (*Uria troile*, L.) brought from the Farallon Islands.

From H. R. Bloomer, Esq., three nests of the Gold Finch, (*Chrysomitris tristis*, L.)

From S. P. Whitmore, Esq., an Indian skull, from the vicinity of the Mission of San Jose. The thanks of the Academy were voted for these donations.

From Dr. W. O. Ayres, the skull of a Sea Lion, (*Otaria jubata ?*) from the Farallon Islands.

This specimen is of interest, as illustrating in one particular the habits of these animals. The left zygomatic arch had been perforated by a bullet, and the lower part of the left inferior maxillary bone shattered by another, both of these injuries having been received so long since that the action of the absorbents had almost perfectly smoothed the splintered edges of the bones. Inside of the wound of the zygoma was found the piece of lead which had caused it, which was at once recognised (from certain peculiarities of form) as one which had been fired, without fatal effect, at a Sea Lion on the same rocks in the summer of 1854. We have thus a demonstration that these huge seals return, in some instances at least, year after year to the same localities. They leave the Farallones in November, and return in May, being absent about six months. How far they migrate during the interval we have at present no means of determining.

The one from which the skull presented was taken was estimated to weigh about a ton.

Dr. Behr presented the following description of a plant representing a new genus and species

CHLOROPYRON, mihi.

Calyx bifidus, antice fissus. Corolla hypogyna, exserta, ringens, tubo filiformi, labiis aequilongis, superiori plano triangnlari, inferiori latiori, inflato. Stamina quatuor, didynama, corollæ tubo inserta, inclusa ; superiorum antheræ uniloculares, peltatæ, inferiorum biloculares, loculis disjunctis, altero medifixo, terminali, altero filamento infra affixo. Ovarium biloculare, loculis multiovulatis. Stylus simplex, ad apicem incrassatus. Stigma subbilabiatum. Capsula..... Semina.....

Genus inter Adenostegiam et Triphysariam intermedium, certe quidem ab utraque diversissimum.—Corollæ conformatione maxime cum Triphysaria convenit, a quo cæterum antherarum structura, Adenostegiæ simili, omnino differt.

CHLOROPYRON PALUSTRE, mihi.

Herba annua, ramosa, pubescens. Folia alterna, cuneata, apice tridentata. Spicæ terminales, foliosæ.

Planta humilis, læte viridis, flores albidi, labio inferiore atropurpureo suffuso.

Habitat locis humidis salsaginosis, prope locum *Russ Garden* dictum.

Mr. Horace Davis presented a valuable series of geological specimens, with the following statement :

The accompanying specimens of wood and clay came from some mining shafts in Caldwell's garden, which is a portion of Shaw's Flat, about two miles north of Sonora. That immediate locality (the garden) has not been mined until quite recently, but was cultivated as a ranch, until last fall, when a very rich lead was accidentally discovered, in a portion of which these specimens were found. Shaw's Flat is a broad stretch of rich mining country, quite high in itself, and yet surrounded by hills much more elevated than itself.

The gold is quite evenly diffused over all this flat ground, save in the south-west corner, where it is confined to a narrow strip—a single line of claims. Here, too, it is quite deep under-ground. There seems to be a small river bed buried here, and this forms the lead. At its upper end, when first found, it is, say 30 feet under ground. Thence it slopes gradually to the south-west, while the surface of the ground *rises;* so that the shafts grow constantly deeper, till the lead runs under Table Mountain.—The last shaft which has struck it is about 120 feet deep. As near as I could judge, the bed of this stream was not broken, as it seemed to preserve its regular grade, but was rather *buried.*

The surface soil in the garden is the common red clay about Sonora. At a depth of about 10 to 15 feet, you strike a thick stratum of white clay, of which I enclose specimens. Below this (which varies in its thickness) is gravel mixed with boulders (mostly of white limestone, I think) and below this, buried in with it, is the gold. I was told that the banks of the river were distinctly traceable, and that the dirt paid handsomly clear to the bank.

These trees were found in this gravel. Some were standing upright ; some presented the appearance of the stumps of burnt trees ; some were fallen logs.—There were layers of leaves on the ground, very perfect, when first brought up the shaft, but which I could not preserve I enclose one or two fragments where they have been preserved on the clay.

There were much finer pieces of wood than I have, but I obtained the best I could.

It may be interesting to state that these claims are paying as high as $600 to $800 per day.

JULY 2, 1855.

Dr. Randall in the Chair.

Mr. Tennent exhibited a very beautiful series of specimens of Algæ, Sertulariæ, &c., prepared by himself, from specimens collected in this vicinity.

A letter was read from the Boston Society of Natural History, acknowledging the receipt of the Proceedings of this Academy.

Proceedings of the Bost. Soc. Nat. Hist., vol. 5, pp. 176–192, were received from the Society.

Two numbers of the Monterey Sentinel, from the publishers.

The thanks of the Academy were voted for the donations.

Dr. Kellogg presented specimens of a shrubby *Polygala* from Placerville, accompanied by a drawing. This is the only species we have seen on the Pacific, and is one of scientific interest. There were reasons, of a negative character, for suspecting the

Spanish botanist, Mocino, had given a wrong locality to *P. Nutkana*, "as no species of the genus had been found by other observers on the Pacific coast of N. America." More recently, however, Nuttall found a specimen of the P. N. in California, which he described under the name of *P. Californica.*

P. CORNUTA.—Kellogg, or Horned Milkwort.

Stem perennial, branching, bright green, glabrous, somewhat glaucous, warted, erect.

Upper leaves oblong-lanceolate, mostly obtuse, approximate, mucronate, margins pellucid very entire, alike green and glabrous on both sides; lower leaves obovate emarginate; on short petioles, alternate veins scarcely visible.

Flowers in a loose spike, 6 to 8 or more, fertile on the topmost attenuated branchlets, pale yellow with greenisn tinge, often shaded with pale lilac; rachis, pedicels, calyx and petals, puberulent; bracts subulate, $\frac{1}{8}$ of an inch long, or as long as the pedicels, the small posterior upper division of the calyx ovate, acute, sub-gibbous by the somewhat produced common claw; glandless, the 2-lower 1-10 of an inch in advance of the upper, ovate, sub-acute; 2-lateral calycine wings, obovate-oblong obtuse, oblique; $\frac{3}{8}$ of an inch long, the proper petal wings linear obtuse about the same length.

Keel $\frac{1}{4}$ longer, abruptly bent downwards, large, rounded obtuse, crested with a little horn-like process, hooked, or curved upwards, filaments and claws united into a broad cleft tube; upper edge of the filamentous ridge very pubescent (pale lilac?) free portion hirsute, 1-10 of an inch long, anthers 8, white, finally opening at the side along an obscure septal line, pistil 4 or 5 times the length of the capsule, incurved stigma enlarged, unequally 2-lobed.

Capsule, glabrous, entire, flat, orbicular-2-celled, one seed in each cell.

Seed oblong, glabrous, caruncle about $\frac{1}{3}$ the length of the seed, glabrous?

Dr. Kellogg presented specimens of a new and singular Pentstemon, with a drawing.

P carinatus, Kellogg. Keeled Bearded-tongue.

Stem glabrous, erect, terete, one to one and a-half feet high.

Leaves opposite linear-lanceolate 3-nerved at the base, and somewhat extra triplinerved above, remotely dentate, teeth minute acute, glabrous, petioles very short, a clasping base; upper, narrow, sessile, entire, recurved.

Flowers in a terminal panicle of opposite and decussate branchlets, each forming rather close paniculate corymbs of 6 to 9 flowers.

Calyx, 5 distinct imbricated sepals, lanceolate, long subulate acuminate points, glabrous, obscurely 3-nerved, slightly ciliate.

Tube of the corolla very short, not inflated, 2-lipped ringent, upper lip narrow, arched, 2-toothed, hispid on the back, slightly keeled, a strong reddish ridge along the back, arising from a horn-shaped process at the notch of the apex; lower lip 3-parted segments equal, long linear, striated with 2 or 3 pink lines, three or four times as long as the tube, didynamous fertile filaments declined at base, ascending occupying the vaulted upper lip, anthers pubescent below; abortive 5th stamen, naked, sub-equal, recurved closely to the lower lip; style about as long as the stamens, stigma simple, capsule 2-celled, seeds numerous, wingless.

Flowers creamy yellowish, streaked with red.

Dr. K. also presented specimens of a *Lonicera*, from the interior, accompanied by a drawing.

L. PILOSA—Kellogg.

Stem twining, perennial, very hirsute.

Leaves pubescent above (dull green, not shining), soft villous and glaucous beneath, lower large stem leaves cordate-ovate obtuse, about two inches long by one and a-half wide, upper leaves of the slender branches, oblong, sub-acute, all on petioles $\frac{1}{8}$ to $\frac{1}{4}$ the length of the lamina, only the uppermost pair connate-perfoliate, lamina coriaceous margin ciliate, somewhat revolute, petioles, in short, all parts very pilose; stipules reniform clasping, connecting the bases of the opposite leaves.

Flowers hirsute externally, tube slender not gibbous, lower linear division about one-third larger than the tube, upper phlange with the four very short teeth in whorls of 6, internodes of spike short, color of the flowers pale pink blush; calyx minute; exsert filaments, and capitate pistil, hirsute at the base; tube very hirsute within throughout; whorls with very minute, ovate, acute scales but no foliaceous bractlets.

Fruit sub-glabrous.

The specimens from which the description is taken is fifteen feet in length.

Dr. K. also presented a specimen and drawing of *Erythrea* or Canchelagua, a beautiful plant belonging to the Gentianworts. It has a pure and rather pleasant bitter, is tonic and stomachic, and in the fresh state an excellent remedy for agues; its medical properties are said to be entirely lost by drying. The general appearance of this plant is very much like our Atlantic *Sabbatia angularis.*

Dr. W. O. Ayres presented a specimen of a new Scomberoid fish, with the following description:

CARANX SYMMETRICUS—Ayres.

Form elongated, compressed, (the thickness being rather more than half the depth,) dorsal and abdominal outlines evenly arched; depth one-fifth the total length; length of head a little greater than the depth of the body.

Mouth oblique; lower jaw the longer; a vertical line from the tip of the superior maxillary, passing just in advance of the eye. *Teeth* extremely minute in both jaws, on the palatine bones, the anterior portion of the vomer, and along the middle line of the same bone and on the tongue; those on the tongue and anterior part of the vomer are crowded; the remainder are in each instance arranged in nearly a single row.

Scales thin, elliptical, with very numerous concentric striæ; covering the entire body and head, except the throat, lower jaw, and space anterior to the eyes. Those on the lower parts of the body are the largest; those on the head very small. The *lateral line* passes directly backward until about even with the origin of the second dorsal fin, curves there quite suddenly downward, and follows thence the middle line of the body to the caudal fi . The scales marking the line are elongated vertically, with a median process directed backward; near the head this process is very slight; it becomes more developed, until posterior to the curved portion of the line it is a horny ridge, with an acute tip, the whole constituting the sharp, angular carina along the caudal region of the body found in the fishes of this genus; the number of these carinated scales is forty-four to forty-six.

Opercular apparatus destitute of points or processes. Space immediately anterior to the eye, hyaline, with the nostrils situated above it, of which the anterior aperture is the larger. Eye large, its diameter contained about four and a half times in the length of the head.

The *first dorsal* fin arising at a point slightly in advance of the commencement of the second third of the entire length, is triangular in form, its length and height equal, being half the length of the head. The height of the last ray is but about one-sixth of that of the third, which is the highest.

The *second dorsal* arising a little behind the termination of the first, extends nearly to the caudal, leaving there a free space equal to the diameter of the eye. Its height at about the third or fourth ray equals two-thirds of that of the first dorsal; it decreases thence posteriorly, the last rays being not quite a third as high. Immediately at its termination is a finlet, entirely distinct, and yet almost connected with the fin. Both the dorsal fins are received into a deep groove, which completely conceals them when closed.

The *anal* fin arises a little posterior to the origin of the second dorsal, with which fin it is coterminal, being also similar to it in form and height, and in the presence of a finlet posteriorly It is preceded by two strong spines, about half equalling the greatest height of the fin. It is received into a groove, scarcely so deep as that on the back.

Pectorals high and pointed; their height a little less than the length of the head, reaching to the plane of the origin of the second dorsal.

Ventrals a little posterior to the pectorals, which they nearly half equal in length.

Caudal deeply concave, very strong, rays much branched, accessory rays much developed.

D. 8—about 40? (mutilated); A. 2—1.28; P. 1.22; V. 1 5; C 6.1.9.8.1.6.

Color greenish brown above, lighter on the sides, silvery beneath. Irides silvery. A brownish-black blotch at the superior angle of the operculum. Dorsals somewhat clouded; other fins nearly colorless.

We have in the present species the first representative of the *Mackerel* tribe of fishes yet described as occurring on our coast. It is somewhat singular that of the extensive family of Scombridæ, whose species and genera abound in almost every sea, we had hitherto found none along the shores of California. We have often heard, it is true, of the capture of Albicores and Bonitos down the coast, and were assured last summer that the harbor of San Diego was "full of Mackerel." But names of fishes are used in California with so little precision, that no dependence can be placed on such evidence. He who should infer that anything resembling Pike or Perch was taken in the Sacramento River or the San Joaquin, would (so far as we now know) be much deceived; yet fishes bearing those names are constantly brought from these rivers to our markets, and sold in abundance. The specimen herewith presented possesses, therefore, more than its own share of interest.

C. symmetricus is quite distinct from all the previously known species of the genus. It is more closely allied to *C. punctatus*, Cuv., than to any other, but is quite readily separated from it by the curve of its lateral line, the number of the carinated scales, and the position of the dorsal and anal finlets, without reference to other characters. With other forms it need scarcely be compared.

C. symmetricus is apparently by no means common on our coast, but will probably be found more abundant further south. The specimen described, the only one yet seen, was taken in the Bay of San Francisco; it was seventeen inches in length. None of the fishermen were acquainted with the species.

San Francisco, July 9th, 1855.

Dr. L. Lanszweert in the Chair.

Mr. James O'Meara, of Calaveras county, was elected a corresponding member.

Dr. Lanszweert presented a fœtus of the *Spermophilus Douglassii*, R., commonly called here Ground Squirrel, from Santa Clara; also two young mice.

July 16, 1855.

Dr. L. Lanszweert in the Chair.

Donations to the Cabinet.

From Augustin Ainsa, Spanish State Translator, specimens of Lead and Silver Ore, from Sonora, containing thirty per cent. of lead, and silver in the gro portion of $25 to a hundred pounds of ore; the thanks of the Academy were voted for the donation.

From Dr. Lanszweert, a Humming Bird, from Santa Clara, *O. Rivoli*, new to the Californian Fauna; also several nests of common species of birds.

A letter was read containing an offer from Colonel Henley, Indian Agent for California, to procure collections for the Cabinet of the Academy in various parts of the State. On motion, the thanks of the Academy were tendered to Col. Henley, for his liberal offer, and the Corresponding Secretary was requested to attend to the measures requisite.

Dr. Kellogg exhibited a drawing of a new and interesting variety of the Peach. This fruit is remarkable for its fine size, and when we consider that it has been now about two weeks ripe, (the specimen is the second week in our possession, and we therefore speak from our own actual knowledge,) it bids fair, we think, to prove a very valuable acquisition. This new variety has been produced by the combined careful culture and genial climate of the Rev. A H. Myers' nursery, Alameda. A gentleman from Los Angeles informs us they can boast of none so early. If this be so, it may prove immensely valuable. We are not authorized to designate it by any name, but think that Myers' Rareripe would be sufficiently distinctive and appropriate.

Dr. Kellogg also exhibited a complete drawing of a species of wild Black Mountain Currant, together with specimens of the bush and ripe fruit. The fruit is very sweet and pulpy, and by a little culture would undoubtedly improve in every respect. The fruit is large, black, covered with a dense bloom, and the bush appears to yield bountifully.

Ribes Navadaensis.—Kellogg.

Stem and branches glabrous, the membranous purple bark of the older branches flakes and warps off like the nine-bark bush, or *Spirea opulifolia*.—Leaves about as long as the racemes, cordate, 3 to 5 lobed, doubly serrate, pubescent above and below; (neither glandular nor viscid,) petioles puberulent and sparsely glandular, base somewhat expanded, ciliate; racemes from the same buds as the leaves, minutely puberulent and glandular, bracts red, like

the flowers, lanceolate acute, numerous, calyx globose campanulate, border expanding, petals roundish shorter than segments of the calyx or sub-equal, pedicels very short.

Fruit globose, glands few, black, with a dense bloom, pulpy and very sweet.

The Academy and the public are indebted to the generosity of the Pacific Express Company for these valuable acquisitions. Will our friends please remember and send as above.

Dr. W. O. Ayres presented a specimen of a new species of Whiting, with the following description:

MERLANGUS PRODUCTUS—Ayres.

Form elongated, subcompressed; greatest depth just posterior to the head, tapering thence very gradually to the caudal fin. Depth contained about seven and a-half times in the total length. Head somewhat pointed anteriorly, its length about one fourth of the length of the fish, nearly flat on the dorsal surface.

Mouth large, lower jaw the larger, a vertical line from the extremity of the superior maxillary intersecting the middle of the pupil.

Teeth slender, sharp, uneven (larger and smaller intermixed) in both jaws, and on the vomer; arranged in a crowded, irregular single row in each case; none on the palatines or the tongue.

Lateral line very conspicuous, darker in color than the parts adjacent, curving a little downward until opposite about the middle of the second dorsal fin, and running thence straight to the caudal.

Scales relatively rather large, irregularly oval, concentric striae numerous; about a hundred and forty scales along the lateral line. Scales covering the whole body, top of the head, operculum and top of preoperculum, and upper part of the cheeks, but not the interoperculum, lower part of preoperculum, sub-orbital and ante-orbital space, nor the lower jaw. Scales ascending on the caudal fin, and on the base of the pectorals, but very slightly on the dorsals or anals

Eyes large, nearly circular, their diameter contained not quite five times in the length of the head; distant a little less than two diameters from the tip of the lower jaw; interval between the eyes a little greater than one diameter.

The opercular angle, formed by both operculum and suboperculum, is somewhat acute, not spinous.

Nostrils immediately anterior to the eyes; posterior aperture the larger.

The *first dorsal* fin arising a little posterior to the opercular angle is triangular in form, its length being about twice the diameter of the eye; the first ray is about half the height of the second, third, and fourth, which are longest, their height being greater than the length of the fin.

The *second dorsal*, separated from the first by an interval equal to one third of the length of that fin, has a length equal to the length of the head. Its greatest height, at the sixth or seventh ray, is half the height of the first dorsal.

The *third dorsal*, continuous from the termination of the second, has a height anteriorly nearly equal to the height of the first, tapering thence quite rapidly to the last rays. It is separated from the caudal fin by an interval a little greater than half the diameter of the eye.

The *caudal* fin, dilated at base by the numerous accessory rays, slightly concave posteriorly, has a height equal to that of the first dorsal.

The *first anal*, arising on nearly the same plane with the second dorsal, is very similar to that fin in form, being a little greater in both height and length.

The *second anal*, continuous from the termination of the first, is similar to the third dorsal in form and height, extending a little nearer to the caudal.

The *pectorals* are high, somewhat rounded, their height being about three times that of the second dorsal. When closed, they reach as far as the fourth or fifth ray of the second dorsal.

The *ventrals*, anterior to the pectorals, have half their height; rays not filiform at tip. D., 11. 22. 18. A, 21. 19.; P, 2. 14; V, 1. 7.; C., 9. 1. 10. 9. 1. 7.

Color grayish brown above, lighter on the sides, abdomen whitish; margins of scales darker, giving the appearance of waving dark lines. Fins somewhat clouded.

M. productus is not very closely allied to any of the previously known species of the genus. It is very readily separated by the form and size and position of the fins, the size of the scales, the form of the head, &c. It has, indeed, in form and general aspect more resemblance to *Merlucius albidus* than to any other American species, but from that it is generically distinct. It may be very appropriately called Californian Whiting.

The species appear to be by no means common along this coast. Only a few specimens, all taken at the same time, have been brought to the markets.—It is said to be found more abundantly further north, along the coast of Oregon and Washington.

The specimens observed were from eighteen to twenty-four inches in length.

It is somewhat remarkable that before the discovery of this species, the little Californian Tomcod (*Gadus proximus*, Gir.) was the only representative in our waters of the extensive family of the Gadidæ, so abundant in other seas. All the larger types were wanting, and *Merlangus productus* is not without additional interest on that account.

SAN FRANCISCO, July 23, 1855.

Dr. Behr in the Chair.

Donations to the Cabinet.

From J. G. Swan, of Shoalwater Bay, W. T., specimens of *Gunnellus ornatus*, Gir; of *Leptogunnellus gracilis*, Ayres; of a species of the Embiotocoidae, one of Squilla, and one of Anatifa, apparently undescribed.

From Capt. Hanson, of Shoalwater Bay, a fine specimen of fossilized pine wood, and a fragment of a fossil bone, probably from the humerus of an elk.

From Dr. A. B. Stout, a specimen of Jasper, from Angel Island.

From Dr. J. N. Hume, a specimen of conglomerate containing marine shells, from the vicinity of Beal's Bar, North Fork of the American River, 300 feet above the stream.

Dr. Behr presented a drawing of *Chloropyron palustre*, Behr. In many specimens the leaves were found to be entire; bracts trifid; the minor stamens often with a rudiment of a second loculus, forming semi-sagittate antheræ.

Dr. Kellogg presented specimens of the *Calycanthus*, or Sweet Shrub, also commonly known as Carolina Allspice, accompanied by a drawing.

C. occidentalis? In all the specimens we have

examined the leaves are acute, not "acuminate," neither are the peduncles "elongated." Petals lance-spatulate.

Flowers terminal.

These shrubs, natives of N. America and Japan, exhale a spicy camphorated odor, and this species, like most of the genus, has pale purple flowers, with an exquisite fragrance of ripe fruit. We think it equally worthy of culture in our flower gardens, as the *C. Floridus* so common in the South Atlantic States.

A very interesting species with *white* flowers is found in the interior. Will our friends please forward us specimens for examination, by the Pacific Express Co.

The Academy tender their thanks to Mr. A. Peabody, who furnished the above from Russian River, in the vicinity of the Geysers.

Dr. Kellogg presented a flowering specimen of a remarkable species of *Malvastrum*, accompanied by a drawing.

M. SPLENDIDUM. Kellogg.

This malvaceous tree is 15 to 20 feet high. body one foot in circumference, the top widely spreading, covered with splendid waving spikes of bright red or flame colored flowers, 2 or 3 feet in length, The picturesque beauty of this tree is unsurpassed by any native shrub of N. America known to us. For rural retreats and ornamental planting, this shrub is entitled to the attention of our enterprising nurserymen. Although the depressed state of business is felt in every field, yet when our gilded prospects from abroad fail, let us cherish our homes and add every new beauty to those already around us, corresponding to a happy heart within, truly contented with its lot. The public are under obligations to Mr. Wm. A. Wallace, of Los Angeles, for this valuable contribution. It is to be regretted, however, that from some inadvertence Mr. W. forgot to leave us, as promised, a larger specimen, from which a more complete drawing, including the fruit, could have been made.

Branches hoary, with a stellate pubescence, leaves somewhat cordate, 5-lobed, lobes acute, middle lobe longest, equally serrate, teeth obtuse or rounded, mucronate; petioles short, all parts stellate pubescent, more hoary beneath; peduncles axillary, raceme several flowered, short, pedicels very short, a minute acute bract at the base, and often on the common peduncle; involucels 3, subulate; divisions of the calyx ovate, acute, mucronate, 3 to 5-nerved, more conspicuously stellate along the nerves on a light creamy ground of short pubesence, petals obovate, border slightly open emarginate, villous at the junction of the claws with the column, stamens separately branching from the top of the column;—stigmas capitate. Flowers an inch or more in diameter, brilliant pink, arranged in long compound spikes at the extremity of the branches.

Dr. K. also presented flowering specimens of the *Quercus chrysophyllus?* or Golden Leafed Oak, which was figured in fruit about a year since.

This timber tree is very highly esteemed for its strength. It is also a tree of much symmetry and beauty; but above all it deserves the highest encomiums for its remarkable fragrance. It remains in bloom much longer than other oaks. The catkins are very numerous, white woolly and long like the chestnut. Those familiar with the fragrance of the River Grape (or *V. riparia*) of the Mississippi and other streams, or the wild Crab Apple, can properly appreciate the exquisite fragrance of these oak blossoms; the foliage also exhales the refreshing fragrance of good tea. The acorn has a mossy cup, &c. It is not, however, our intention to describe it, but simply to invite attention to its desirableness for culture or transplanting.

These specimens were brought by the Pacific Express Co. from Marysville. It is also found at Bolinas Bay in this vicinity.

Dr. K. also exhibited a more complete figure of *Ceanothus diversifolius*, Kellogg. A specimen in fruit from Placerville, was shown. To the former description should be added, "margin of the leaves waved, interspersed stellate pubescent; capsule 3-winged.

Also a specimen and drawing of an *Hypericum*, or St. John's Wort.

Plants of this genus appear to be somewhat rare on the Pacific; the plant before us is from Marysville, sent by Mr. E. W. Garvitt, and forwarded by the generous favor of the Pacific Express Co., to whom we owe many obligations for similar favors.

H. BRACTEATUM. Kellogg.

Herbaceous stem, erect, 8 to 10 inches high, subterete, glaucous, scarcely swelled at the joints, colored below (red). Leaves opposite, decussate, somewhat fascicled by a few smaller leaves in the axils, approximate, sub-sessile, 3-nerved? narrowly oblong, obtuse, mucronate sub-serrulate, glaucous above and below, punctate with black and translucent specks,

Flowers in a dichotomous open corymb, bracts sessile, near the base of the calyx, ovate-lanceolate, acute sub-mucronate, margin dotted, or somewhat glandularly serrulate, strongly 5-nerved. Calyx leaves 5, broadly ovate, subulate-acute, strongly about 12-nerved, serrulate, black specks near the margin; bracts and sepals greenish yellow. Corolla persistent, petals convolute ovate? nerved, serrulate, with minute black glands longer than the sepals, stamens in 3-parcels, styles 3, stigmas black, exsert.

Dr. Kellegg also exhibited a drawing and specimen of an *Asclepias*, from Marysville. [N. B.—The plant formerly described as *Asclepias acornuta*, should have been *Acerates atropurpurea*.]

A. LONGICORNIS—Kellogg.

Stem erect, woolly, 1 to 2 feet high; leaves oblong ovate, sub-acute, mucronate cordate at base, on short petioles, (¼ of an inch in length) velvety pubescent above, woolly beneath; umbels lateral, solitary at each of the 3 or 4 upper joints, peduncles erect, ½ the length of the leaves, (1 to 1½ inches long) 12 to 14 flowered, pedicels very woolly, about an inch in length, a linear lanceolate persistent involucel at the base of each; calyx segments, ovate, acute, glabrous within, woolly without, reflexed; ? petals lanceolate, acute, pale purple and flesh-colored at the base, streaked with red lines, 3 times as long as the calyx; crown purple above, white on the top, leaves of the crown with an elongated horn-like, sub-compressed incurved apex, also a long subulate acute horn from the base of the hollow centre, incurved; pollen grains smooth and varnished.

The white gummy concrete exudation found on the leaves of this species, has somewhat similar properties to the common India rubber.

The thanks of the Academy are due to Dr. J. N.

Hume, for this and several other plants from the interior.

July 30, 1855.

Col. Ransom in the Chair.

Dr. J. A. Veatch, of Red Bluffs, Dr. Henry Bates, of Shasta City, Dr. J. N. Hume, of Humboldt Bay, were elected Corresponding members.

Donations to the Cabinet.

From Dr. Lanszweert, two specimens of *Pituophis catenifer*, from the Mission Dolores.

From Dr. Behr, a species of Phelipæa.

From Dr. Kellogg, a species of Clematis, sent from Placerville by Mr. Garvitt.

From Mr. Wm. A. Wallace, specimens of bark, &c. obtained from Los Angeles, at 38 feet below the surface, by artesian boring.

From Col. Ransom, a collection of plants from Mariposa county.

Dr. J. B. Pigne Dupuytren presented for the Library, 25 Nos. of "La Science," for which the thanks of the Academy were voted.

Very beautiful drawings of plants, from the interior of the State, embracing apparently several new species, were exhibited; the drawings were made by Miss M. M. Kroh.

Dr. Behr stated that his observations demonstrated that *Eutainia ordinoides*, B. & G., is truly a viviparous species. The remark was confirmed by Dr. Lanszweert.

August 6, 1855.

Dr. L. Lanszweert in the Chair.

Dr. J. Eckel was elected a resident member of the Academy: Mr. D. E. Hough, of Alameda Co., and Mr. Broome Smith, of Clear Lake, were elected Corresponding Members.

Donations to the Cabinet.

From Dr. Lanszweert, specimens of *Bascanion flaviventris*, B. & G. and of *Pituophis catenifer*, B. & G., with descriptions, showing in what points these individuals differ from those first described.

From Mr. T. J. Nevins, a specimen of the Barn Owl, from Alameda.

From Dr. J. A. Veatch, of Red Bluffs, a box of specimens of mineral waters and deposites, which were referred for examination to Dr. Lanszweert.

From Dr. Kellogg, a specimen of *Pogogenia* with a drawing, Dr. K. called the attention of the Academy to Torrey's *Chamæbatia foliosa*, as being identical with his drawing made last year.

From Mr. Ainsa, specimens of silver and lead from Sonora, Mexico.

The thanks of tne Academy were voted for the donation.

From Mr. C. H. Raymond, a specimen of gold from Australia.

The thanks of the Academy were voted for the donation.

From Dr. John Torrey were received for the Library, Plantæ Fremontianæ, Observations on the Batis maritima, and a Report on the Darlingtonia Californica.

The thanks of the Academy were voted for the donation.

Dr. Ayres presented the following description of a fish representing a type, entirely new to our waters.

Saurus lucioceps —Ayres.

Form elongated, nearly circular in outline anteriorly, becoming somewhat compressed posteriorly. Greatest depth, which is at the commencement of the first dorsal fin, contained about nine times in the total length. *Head* flattened above, pointed anteriorly; its length equal to twice the depth of the body.

Mouth very large, a line vertical to the extremity of the superior intermaxillary passing behind the orbit of the eye. Lower jaw the longer. Entire border of the upper jaw formed by the intermaxillaries, to which the very small maxillaries seem but as appendages on their superior posterior border.

Teeth numerous, sharp, very uneven (large and small intermixed), in both jaws, on the tongue, palatines, and inferior pharyngeals; those on the tongue and pharyngeals are less uneven than the others.

Eyes large, elliptical, their longitudinal diameter equal to one fourth the length of the head. Distance between the eyes, equal to their own length.

Border of the operculum very evenly arched. Opercular apparatus entirely smooth.

Nostrils on the upper surface of the head, nearer to the eye than to the snout; posterior aperture the larger.

Scales rather large, quite conspicuous, with their sides nearly parallel to each other, and the free border of each obtusely angular. The border of insertion is deeply scolloped; the concentric lines very fine and numerous. The scales cover the entire body, gill-covers, and cheeks; the top of the head, lower jaw, and throat are naked; as are also the fins. About seventy-five scales occupy the length of the lateral line, with eleven above it in an oblique line at the origin of the first dorsal. The *lateral line*, curving at first very slightly downward, runs thence nearly straight to the caudal fin.

The *first dorsal* fin arises at a point distant from the tip of the snout, by twice the length of the head. Its length equals half the length of the head. It is trapezoidal in form, highest anteriorly, the length of the third ray being a little more than one eighth of the length of the fish.

The *adipose dorsal*, whose height only equals half the length of the eye, is separated from the caudal fin by a little more than the length of the first dorsal.

The *anal* fin is longer and lower than the first dorsal; its length being equal to the distance from the snout to the posterior border of the eye, and its greatest height only one third the length of the head. It is a little higher anteriorly than posteriorly. It terminates a little posterior to the plane of the adipose fin.

The *pectorals*, rounded, have a height a little greater than the length of the anal; their length is contained in their height about three times and a half.

The *ventrals* are situated rather nearer to the plane of origin of the first dorsal than to that of the pectorals. They are larger than the pectorals, their height being about one half greater. They have the form quite characteristic of this group of fishes, the rays increasing in length, from without inward, so that the greatest height of the fin is at its inner bor-

der. Their tips extend nearly to the termination of the first dorsal.

The *caudal* is concave, its height externally being about equal to that of the pectorals.

D. 11; A. 15; P. 15; V. 9; C. 9. 1. 8. 7. 1. 8.

Color apparently a light greenish olive above and on the sides, with the borders of the scales darker; lighter beneath; fins unicolor; branchial membrane greenish yellow. As the specimen, however, had been some time dried the colors may vary somewhat from these.

S. lucioceps must be rare on this coast. Only a single specimen, six inches in length, has yet been observed. It was brought to the market in company with the Tomcod (*Gadus proximus*, G) and other small fishes, not having been distinguished from them by the fishermen. It was therefore probably taken in the Bay of San Francisco.

The objectionable character of Cuvier's name, *Saurus*, as applied to a genus of fishes, is apparent, and the name *Laurida*, suggested by Swainson, would have much the preference, were it not excluded by the rules of priority; according to his system our species would be *Laurida lucioceps*. The specific name is given to indicate the very close resemblance which the head bears in form to that of a small Pike. *S. lucioceps* is more closely allied to Le Sueurs *Salmo minutus* than to any other known type.

It may be here remarked, that a species of *Saurus* exists on our Atlantic coast, which is yet undescribed. A specimen which I obtained about ten years since in the Hudson River, near the residence of Mr. Audubon, was mislaid before a description could be prepared, and since that time no observer seems to have met with the species. It is closely allied to *lucioceps*.

August 13, 1855.

Col. L. Ransom in the Chair.

Donations to the Cabinet.

From Mr. T. J. Nevins, specimens of the following reptiles, from Alameda, *Pituophis catenifer*, B. & G.; *Ophibolus Boylii* B. & G.: *Wenona isabella*, B. & G.; and *Sceloporus graciosus*, B. & G.

From Dr. Lanszweert, the skull and feet of a Giant Fulmar (*Procellaria gigantea*, L.); a specimen of a singular variety of *Eutainia ordinoides*, B. & G., and specimens of Gilia.

From Col. Ransom, a very valuable series of geological specimens from the Upper Mariposa and Bear Creek Valleys.

Mr. Geo. Thurber presented for the Library a copy of Plantae Thurburianæ.

The thanks of the Academy were voted for the donation.

Dr. Kellogg presented the mature fruit of the *Ribes subvestitum*, (Gooseberry). Thus completing the former figure, and adding the following to the received description:

Fruit roundish, about ¾ of an inch in length, ⅝ in breadth, light greenish ground, with an orange reddish blush; glandular, interspersed with a few slender spines; fragrant and well flavored, but the skin thick and tough.

Dr. K. presented specimens in fruit, with a drawing, of a *Rubus*, or Raspberry, probably new.

R. glaucifolius.—Kellogg.

Stem perennial, procumbent? armed, as well as peduncles, petioles and mid-ribs with a few short, straight or rarely recurved prickles, softly pubescent.

Leaves pinnately 3-foliolate, lateral leaflets rhombic-ovate acute, entire towards the base; on the upper stem narrower sub-acuminate, and somewhat cuneate; seldom lobed, coarsely, incisely and doubly serrate, teeth mucronate, sub-sessile; the terminal one distant, ovate or obovate sub-cordate at base, glaucous beneath, pubescent on both surfaces, stipules setaceous, persistent. Peduncles, one to many flowered, commonly in axillary and terminal dense leafy racemes, somewhat corymbose at the summit. Calyx unarmed, glandularly pubescent without, short villous within, sepales 5 or 6, ovate, acute, mucronate, petals small, nearly the same length as the calyx, oblong acute, claw ½ the length, white. Fruit small, round, red, ripens in Aug., composed of few grains, acinæ canescently villous, receptacle protuberant, clavate, pleasant acid flavor.

The Pacific Express Co. generously forwarded the above specimen from Placerville, from our correspondent, Mr. E. W. Garvitt. By sending as above, our friends will oblige us.

Dr. K. also presented a drawing of a species of oak brought by Col. L. Ransom, of U. S. Survey, from Mariposa.

Quercus fulvescens.—Kellogg.

Leaves evergreen, coriaceous, oblong-ovate, acute and sub-acuminate mucronate, entire, (or very rarely acute mucronate dentate) margin sub-revolute, obtuse at the base (seldom sub-cordate) fulvous beneath.

Fruit sessile, clustered; cup flat, saucer form, turbinate, in general outline wheel-shaped, nearly overcupping the broad wheel-shaped gland, very densely and thickly fulvous without, and silky villous within.

Branchlets fuscous, the foliage dense; a medium sized tree of symmetrical form; quality of timber not known.

San Francisco, Aug. 20, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Dr. Lanszweert, a species of Scolopendra, from the vicinity of the Presidio; and a singular tuberculated mass of recent sand conglomerate from the southwestern part of the city.

From Dr. Henry Bates, a valuable series of geological specimens, mostly Ammonites, from the vicinity of Shasta City.

From Col. Ransom, an interesting suite of specimens of fossils, &c., including some fine examples of the teeth and vertebrae of the Squalidæ, from the Colorado Desert, and from the vicinity of the Kern Lake.

From Dr. Trask, specimens of Arbor Vitæ, from Scott Mountains, Siskiyou county, accompanying which were drawings of the same by Dr. Kellogg.

Dr. Behr exhibited species of Chrysomela, brought from the vicinity of New Almaden, by Mr. Froebel. It is very destructive to Indian corn and many garden vegetables.

From Dr. H. Sartwell was received a series of me-

teorological observations for 1854, made at Penn Yan, N. Y.

Dr. Ayres presented the following communication:

The Echinodermata of the coast of California have hitherto received but a small share of study, and in asking the attention of the Academy this evening, to some remarks concerning them, we are soliciting notice to a field almost entirely untrodden.

In numbers both of species and individuals, they appear scarcely to equal those of the corresponding latitudes of the Atlantic. It is but just to observe that my own researches have already been sufficient to furnish data that warrant this conclusion, though undoubtedly many species yet remain to be detected. We know that in the South Pacific, as well as on the Asiatic coasts of our own latitude, they are exceedingly abundant.

The present indication, in relation to structure and specific characters, is that they very closely resemble those of certain Atlantic types. That any species will be found identical with those of the Atlantic can perhaps scarcely be expected, but in some cases quite accurate examination will be needed to separate them. This is strikingly true in regard to the one this evening exhibited and described. It belongs to the genus *Pentacta*, (*Cucumaria* of Blainville, Forbes and others) and so nearly represents *P. frondosa*, Jaeg. in its general form and external characters, that it is at once taken for that species. Dissection and the micro-cope show, however, a structure which in certain points distinguishes it. That this close representation should exist, is in itself a matter of no small interest, as bearing on the question of geographical distribution, since *P. frondosa* inhabits both sides of the Atlantic, being found not only in the seas of western and northern Europe, but also along the coasts of N. America, as far south at least as Cape Cod, being very abundant about the entrance of the Bay of Fundy.

I first obtained it several years since, my specimens having been taken on Georges Bank. I had at that time no European specimens of Holothuridae with which to compare it, and was compelled to trust entirely to descriptions and figures, the most complete and apparently reliable being those by Duben and Koren. Nothing could be found in these which indicated the type in question, either specifically or generically, and accordingly in a series of articles on the Holothuridae then in course of publication, I included a notice of it under the generic name *Botryodactyla*, calling the species *B. grandis* (Proc. Bost. S. N. H., April 16, 1851.)

Subsequently specimens received from the distinguished naturalist Sars, of Norway, with his own labels attached, furnished material for direct comparison with true and authenticated European forms, and it became at once evident that *Botryodactyla* was entirely iden ical with that which bore M. Sars' label of *Pentacta*. But with these specimens before me, it seemed much less remarkable that I should have fallen into my previous error, than that such characters should have been attributed to the genus, especially those given by Duben and Koren. An expression like this, "annulus calcareus oris gracilis (nec sursum nec deorsum in longiores processus productus)," could in no way be applied to the Norwegian types which were labelled *Pentacta*. Still, M. Sars' judgment in regard to the verification is an authority which cannot be questioned, and as between the European and American forms no difference can be traced, even on microscopic points of structure, the name *Botryodactyla* must be abandoned, as being merely an additional synonym of *Pentacta;* and *B. grandis* is simply *P. frondosa.*

Of the Pacific form, representing this, we have as yet seen only small specimens, none of them extending much over an inch in length These, however, are manifestly immature, and as externally they simulate in every respect specimens of the Atlantic *P. frondosa*, of the same size, it is reasonable to infer that when full grown, they attain corresponding dimensions with the Eastern type. They differ from the latter, in having the *respiratory trees* not so largely developed, though entirely the same in form and structure, the *alimentary canal* much shorter (otherwise identical), and the perforated calcareous *plates* of the skin and of the suckers very much more numerous, but retaining the characteristic appearance. It is thus manifest that the specimens found on this coast, vary from those of the Atlantic, not in any definite characters, but merely in the extent of those which are common to both. The form and arrangement of the *suckers*, the *tentacula*, the *oral circle*, and the entire organs of respiration, digestion, and reproduction are absolutely the same in the two. It is deemed, therefore, for the present, more prudent to attempt no separation of the species. Adult specimens may at some future time show that the Californian type is distinct, but we will not now incur the risk of adding to the already overburdened list of synonyms of *P. frondosa.* And we do this, notwithstanding the very great improbability that any species of the Echinodermata possesses so wide a range as this claims for the *Sea Pumpkin*, as the Massachusetts fishermen call it. In a subsequent paper, when speaking of the Star Fishes of this coast, we may have occasion to recur to this remark.

The whole series of the Holothuridæ needs a thorough revision, especially in regard to generic divisions. Many of the names now in use are but synonyms, and some which are perhaps good and true genera, are so imperfectly defined as to be of little practical value. Some of those which have been proposed by myself, I am now fully satisfied cannot be maintained. SCLERODACTYLA (Proc. Bost. Soc. Nat. Hist., vol. 4, p. 6) is anticipated by Troschel's imperfectly characterized genus ANAPERUS, *S. briareus* being only *A. carolinus.* BOTRYODACTYLA has been already mentioned. Mr. Stimpson, in a paper published in the Smithsonian Contributions, vol. 6, considers the genus DUASMODACTYLA proposed by me (loc. cit. vol. 4, p. 244), identical with *Thyonidium.* This scarcely appears to me possible. The disposition of the tentacula we may disregard without bringing the two in relation; but the structure of the tentacula, the calcareous deposites in the tentacula and the other parts of the surface, the genital tubes divided in the one and undivided in the other, certainly seem like characters of generic value. At all events, if any dependence can be placed on the description by Duben & Koren. *Duasmodactyla producta* is *not* "closely allied to *T. pellucidum.*" The genus comes much nearer to Troschel's division *Orcula*, but cannot be included in the latter without a modification of the limits given by its describer.

Species yet to be detected on this coast will, we hope, assist in giving us a better understanding of both specific and generic divisions.

Dr. Lanszweert was elected to fill the office of Curator of Geology.

SAN FRANCISCO, Aug. 27, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Dr. Behr, a specimen of the Cal. Silk Worm

(*Saturnia ecanothi.* Behr.)

From Dr. Lanszweert, a young specimen of *Sturnella ludoviciana.*

From Mr. Tallant, specimens of the formation at Point Bonita, some of them with the perforating shells inclosed, and sponges from the same locality.

Dr. Behr exhibited specimens of insects from Honolulu, remarking that half of them seemed to be American species, one quarter East Indian, and one quarter truly belonging to the Islands.

Dr. Kellogg exhibited a drawing of a species of *Juniperus*, brought by Col. L. Ransom, of U. S. Survey, from Mariposa. The specimens we have seen have neither fruit nor flowers, but are probably the *J. Virginiana* or Red Cedar, known also as Savin.

The leaves are merely minute scales in 4-rows; all parts of the tree and wood exhale a strong aromatic odor. The wood is one the most durable and valuable of any known in the U. S. It would be both useful and interesting if our friends in the mines would each furnish us with their observations of its localities, extent, &c.

Dr. Behr presented the following description, with drawings, of a plant brought by Mr. Froebel from the lower coast.

OXYBAPHUS FROEBELII, Behr.

Herba tota scabra. Folia cordata, quinquenervia, glauco-pruinosa. Involucrum quinquefidum, quinqueflorum. Perigonii tubus pro genere longissimus, fauce vix constrictus, ex involucro exsertus. Stamina quinque, inter se libera.

Herba, si excepcris inflorescentiam, Abroniam quandam simulat. Floribus pentandris, et staminibus basi in angulum haud concretis, ab omnibus speciebus Oxybaphi adhuc cognitis satis differt, ita ut divisionem generis constituere possit.

Flores majusculi, violacei, vespertini fugaces.—Planta elegans, in horto viri nobilis Belgi de Terloo culta e seminibus a J. Froebel prope *Warner's Ranch* lectis orta. Quapropter, quod speciem in honorem et memoriam viri illustrissimi aeque de scientia ac de patria bene meriti nominaverim, et justum et aequum esse putavi.

Dr. Lanszweert presented the following report upon the mineral waters, &c., sent from Red Bluffs, Shasta county, which had been referred to him at a former meeting for examination:

Without entering upon the subject of the medical qualities of these waters, I may state, as nearly every one is acquainted with those of the far-famed Blue Lick Springs of Kentucky, that these latter are surpassed in every respect by those of the Shasta Springs. Circumstances have not allowed me to make an analysis comparative with that of the Blue Lick waters, and the quantities sent by Dr. Veatch were not sufficient to afford a definite quantitative analysis, still I have ascertained that they surpass any known Sulphurous waters in the large proportion of soluble salts they contain; and their denomination should rather be *Mineral Saline Springs*, confirmed by the presence of Iodine, which, according to the known analysis, is found in none of the other sulphurous waters. The quantity of Iodine is larger or more sensible in those less impregnated with hydrosulphurous gas whose action decomposes the salts.

Strange to say, in none of the samples sent do we find a sulphuretted alkaline, or a hydrosulphate in solution; the sulphuretted hydrogen is free, the water losing this gas by exposure to the atmosphere, or by simple boiling.

Bottles labelled No. 1. and No. 4., contained gas from two springs; it was in both a mixture of hydrosulphuric acid and carburetted hydrogen.

No. 2.—This water as received was clear and transparent; smell and taste on opening the bottle exceedingly unpleasant, the nauseous odor being similar to that of putrefying eggs; chemical reactions denoting hydrosulphuric acid; after-taste very salt. The saline matters, according to my analysis, were—

Muriate, Carbonate, and Sulphate of Soda,
Carbonate of Magnesia,
Carbonate and Sulphate of Lime,

the *Muriate of Soda* surpassing the others in quantity. *Iodine* also was present.

It may not be out of place here to state the superior sensibility of pure Chloroform over that of a solution of starch, in the search for Iodine. To two and a-half drachms of any liquid, containing *one hundred thousandth part* of its weight of Iodine of Potassium, add two drops of Nitric Acid, and fifteen to twenty drops of Sulphuric Acid, shake, and add twenty drops of Chloroform; on agitation the Chloroform will have a very apparent *violet* color. We have thus a ready method of determining the quantity of Iodine in the different kinds of Cod Liver oil.

By the following mode we may detect the adulteration of Chloroform by Ether. Pure Chloroform in dissolving a small quantity of Iodine, takes a beautiful *violet* tint, entirely similar to that of the vapor of Iodine; but if the Chloroform contains sulphuric ether we find a *red claret wine* color, and sometimes a *red caramel* (burnt sugar) color.

No. 3.—Water clear, yellow tinted, with the same smell and taste as No. 2., with which it is identical in chemical composition. Deposite of Sulphur on the bottom of the bottle, proceeding from the decomposition of the Hydrosulphuric gas.

Dr. Veatch states that from this spring the largest quantity of gas issues.

No. 5.—The top of the water of this bottle was covered with a pellicle of sulphur. Smell and taste not so strong of hydrasulphuric gas as in Nos. 2 and 3. Water clear and transparent. In its natural state, and when concentrated, it did not appear to my taste more bitter than Nos. 2 and 3. Chemical composition the same as that of No. 2, excepting that it contains a remarkably large proportion of Sulphuric acid. Iodine was present, as well as sulphur.

It may be remarked that the *Nitro-prussiate* of Soda readily detects Sulphur, a drop of it communicating a beautiful purple color to the liquid which contains the sulphur. The presence of the latter may be thus demonstrated in the hair, horn, albumen, &c.

No. 6.—From a spring of salt water. Clear, transparent; odor slightly nauseous; hydrosulphuretted reaction; taste saltish; chemical composition identical with that of No. 2; appearance of a larger proportion of Iodine.

No. 7.—Water from a well. Clear, transparent, inodorous, taste pleasant, rather sweet, no deposite. It contains—

Muriate, Carbonate, and Sulphate of Soda;
Carbonate, and Sulphate of Lime;
Carbonate of Magnesia;
Silicia;
No Iodine.

No. 8.—From a very gaseous spring. Water transparent; free from bitterness; smell and taste less nauseous than in Nos. 2 and 3. Chemical composi-

tion identical with that of No. 2, including the presence of Iodine.

No. 9—From a salt spring. Clear, transparent, inodorous; predominant taste saltish, slightly bitter. Chemical composition as in No. 2, but with a greater proportion of Lime and Magnesia. Iodine also present.

No. 13.—"A deposite in the bottom of the little fountain, from which bottles Nos. 3 and 4 were taken —remarkable for its gelatinous consistence." Odor acid, nauseous, from the presence of hydrosulphuric acid. The deposite has the appearance of a gelatinous, grey mud. Mixed with distilled water, boiled, and filtered, the solution contains in very small quantities—

Muriate, Carbonate, and Sulphate of Soda;
Carbonate of Magnesia;
Carbonate of Lime.

The residuum is composed of—

1.—The gelatinous substance. This is nothing else than an organic, azotized matter, found according to Longchamps, in nearly all thermal waters, and known under the names of *Baregine*, *Glairine*, *Plombierine*, *Zoogene*. It is insoluble in water; not sensibly soluble in nitric, muriatic or acetic acids; and very little in caustic potash.

2.—Some vegetable detritus.

3.—Silica.

No. 14.—Pebbles taken from the same place.—Their only peculiarity was a deposite of sulphur on some, the others appearing worn through the constant motion of the bubbling of the water.

No. 15.—"Efflorescent salts found in considerable abundance, on the damp mass of disintegrated rock in one of the ravines." An amorphous mass presenting the appearance of a white efflorescent salt, with small yellow stripes. No perceptible odor. Almost entirely soluble in cold water, giving by reaction—

Muriate, Carbonate, and Sulphate of Soda;
Carbonate of Lime;
Carbonate, and Sulphate of Magnesia, and
Carbonate of Iron.
No traces of Iodine, or of Potash.

This is the only sample in which the presence of Iron has been detected, as we have received none of the water from this ravine, in which Iron would certainly be contained, and which would thus make a valuable addition to these springs.

If a thorough analysis could be made of the waters of the springs above described, it would perhaps not be impossible to find Iodine there in sufficient quantity to be of commercial value.

Still again—could conveniences for the accommodation of invalids be provided at the springs, many such persons would probably resort to them from this and other States, as the locality is easily reached in two days from San Francisco, by steamer and stage, or by the former alone.

And lastly, if these waters could be carefully bottled at the springs, and thus forwarded, they would be of better and surer sale than that which is sent here in barrels as the Blue Lick water of Kentucky, which in a short time loses its gas, and the most valuable of its properties.

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SEPT. ,3 1855.

Mr. L. W. Sloat in the Chair

Mr. W. P. Blake was elected a Corresponding Member, and Mr. S. W. Parker a Resident Member of the Academy.

From W. B. Farwell, was received a fine specimen of the California Vulture.

The thanks of the Academy were voted for the donation.

Dr. Lanszweert exhibited the perfect insect and cocoons of the Cal. Silk Worm, together with a drawing of the *Bombyx quercı*, now introduced into France, having been brought from China. It appears that this silk, now at the Exhibition of Industry, in Paris, is reported by M. Guerin Méneville, of the Societé d'Acclimitation, to surpass that of the common Silk Worm. The differences between the Chinese and the Californian species appear to be slight, and ours, if properly cultivated, may be of great value.

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SEPT. 10, 1855.

Col. L. Ransom in the Chair.

Donations to the Cabinet.

From Dr. Lanszweert, the skull and foot of *Diomedea fusca*, from near Cape Horn.

From Mr. C. D. Gibbes, of Stockton, a very interesting series of botanical specimens, from the Merced River.

From Mr. J. E. Lawrence, samples of the water from the Aguas Calientes, on Warner's Ranch, San Diego Co.

The thanks of the Academy were voted for the donation.

Dr. Kellogg exhibited a drawing of an *Asclepias*, believed to be *A. parviflova*, from Alameda. The bark is fibrous and very tough, and it is one of the plants used by the Indians of California as a material for bowstrings, &c. It affords food for a butterfly common in this vicinity, *D. glaucopus*.

Dr. Ayres presented a drawing, with the following description, of a new species of *Cramp Fish*, illustrating the structure of the electrical organs by dissection of the specimen shown.

TORPEDO CALIFORNICA.—Ayres.

Disk broad and rounded, forming more than half the entire length; tail thick, conically tapering.—Length of the specimen described, forty-one inches; breadth, twenty-eight inches; length of the disk, twenty-three inches; breadth, at the commencement of the ventrals, ten and a half inches—at the termination of the same fins, three and a half inches.—None of the fins or parts of the body present anything angular in their outline; all are very much rounded, especially the dorsals and pectorals.

Eyes elliptical, small, their longitudinal diameter being about six-tenths of an inch. They are two and a half inches from the anterior border of the head, and not quite twice that distance from each other. Posterior to the eyes, and a little external to them, are the spiracles, placed obliquely, elliptical, more than an inch in length.

Mouth tolerably large, being three inches in width from one angle to the other. Teeth small, very sharp, arranged in decussating rows, each tooth placed on a dilated base. The patch of teeth in the upper jaw extends about an inch on each side of the median line, and is only about three-tenths of an inch in breadth; that in the lower jaw is of even less extent than this.

ventrals being half the breadth across the pectoral disk.

The *first dorsal*, which is two and three-fourth inches in length, is very nearly coterminal with the ventrals. Its height is one-half greater than its length.

The *second dorsal* is separated from the first by a space equal to the length of the latter fin. It is one and three-fourth inches in length, its height being one-half greater than its length.

The caudal is triangular, with its angles much rounded. Its height along the upper border is seven inches, which is twice that of the lower border.

The skin is everywhere entirely smooth, provided with an abundant mucous secretion.

In *color*, the fish is of a dark grayish brown above, thickly marked with small irregular black spots or blotches; beneath white.

The *electrical organs* occupy a space on each side, extending from near the head about twelve inches backward, with an average breadth of nearly four inches. They are narrow anteriorly, widening toward the middle of their length. They present nothing in their structure requiring special remark, as they agree so closely with the formation of these organs in the well-known *Torpedo narke*. The number of vertical cells or "piles" in the battery of each side is about six hundred; the length of these vertical columns is, in the thickest part, rather more than an inch and a half, though they become shorter toward the outer border; the number of transverse plates, where the columns are longest, is not less than one hundred and sixty in each, and they will probably average a hundred to a column throughout the organ; and as eight of these plates afford at least an inch of surface, it is readily seen that the number of square feet of surface exposed for action in the double organ of the fish, is sufficient to constitute a galvanic battery of no inconsiderable power. The origin and distribution of the nerves supplying these organs correspond with those points in *T. narke*; but the size of the nerves is even greater than in that species.

T. californica is more nearly allied to *T. occidentalis*, Storer, than to any other species of the genus. But a single specimen of it has yet been seen; this was taken in the Bay of San Francisco. It affords a very interesting addition to the fauna of California. The fishes possessing the remarkable property of giving electric shocks, to persons and animals coming in contact with them, have in all countries where they are found, very naturally attracted much attention, and by the ignorant have often been regarded with superstitious terror. The present is the only species, on our Pacific coast, with which we are yet acquainted, thus endowed. A single species, belonging to this same genus, is also found on the Atlantic coast of the United States, of which this is a close representative.

Letters were read from C. C. Parry, of Davenport, Iowa, and Prof. E. B. Andrews, of Marietta, Ohio, acknowledging their election as Corresponding Members; also from M. René Lenormand, of Vire, France, soliciting exchanges in Botany.

SEPT. 17, 1855.

Col. Ransom, Vice President in the Chair.

Donations to the Cabinet.

From Mr. A. C. Taylor, quills taken from a California Vulture (*Cathartes californianus*, Shaw) killed in the vicinity of the Red Woods of Contra Costa. The bird measured 13½ feet across the wings

The thanks of the Academy were voted for the donation.

From Dr. Trask, salts from an Artesian Well in Santa Clara Valley.

From Mr. E. J. Loomis, of Contra Costa, a specimen of crystallized Carbonate of Lime, found in the hills northeast of Alameda.

The thanks of the Academy were voted for these donations.

Dr. Kellogg presented a drawing of a species of *Castanea*, or California Evergreen Chestnut.

C. SEMPERVIRENS.

This species of chestnut is found pretty generally distributed throughout the State, mostly in elevated localities. It has been found 6000 feet above the level of the sea. It is only a small shrub, similar to the Chinquapin Chestnut, or *C. pumila*, L., of the South Atlantic States. The fruit is small, with a tough testa, somewhat triangular shaped, usually, if not always, one in each burr. The flavor of the fruit is pleasant. It is chiefly interesting, however, as an evergreen, and as correcting a current error which has denied to California any species of the Chestnut. The specimen was presented by Col. L. Ransom, of the U. S. Survey, from the vicinity of Mariposa.

Dr. K. also exhibited a drawing of a species of Oak, so far as we can learn, undescribed.

QUERCUS FULVESCENS—Kellogg.

Leaves oblong-ovate, acute, mucronate, coarsely mucronate-serrate teeth spread, callous at the points, obtuse or entire at the base or lower half.

Glaucous and somewhat fuscoid along the veins beneath; petioles fulvous.

Gland large, oblong, somewhat swelled, cupsaucer-shaped, velvety fuscous, enclosing about one-fifth of the gland, acorn 1½ inch long, about an inch in breadth, sessile.

The general appearance of the tree suggests its close affinity with several species of the Chestnut Oaks.

Dr. K. also presented a drawing of a species of Ribes in fruit, from Mariposa, furnished by Col. L. Ransom. This species appears to be the common *R. Menziesii*. The fruit was unusually large; it would be interesting to obtain specimens also in the flowering state.

SEPT. 24, 1855.

Dr. Randall in the chair.

Donations to the Cabinet.

From Mr. E. C. Gibbes, an animal from the vicinity of the "Great Trees," Calaveras county. It is a species of Marmot, perhaps undescribed, but the specimen is too imperfect for a close comparison.—Better specimens will probably soon reach us, as the species is quite common in that portion of the State. The miners call it *Mammoth Mole*.

From Col. Ransom, a remarkable specimen of slate from Mariposa county. The strata from which this was taken are nearly vertical, about four miles in thickness. Also, a specimen of Selenite, from the Monte Diabolo range, about thirty miles south-east of Pacheco's Pass.

From Dr. Lanszweert, a Flying Fish, *Exocetus fasciatus*, Le Sueur, from the Pacific Ocean, lat. 30°

06′ N., long. 113° 02′ W.; and the pectoral fins of *E. volitaus*, Bl., from the Atlantic.

Dr. Eckel presented, for the library, a copy of Knapp's Chemical Technology.

Oct. 1, 1855.

Col. Ransom in the chair.

Donations to the Cabinet.

From Mr. D. E. Hough, of Oakland, a specimen of the Barn Owl (*S. pratincola*), and one of the Gopher Snake (*Pituophis catenifer*).

From Col. L. Ransom, a series of specimens of Japanese manufacture.

From Dr. Lanszweert, a specimen belonging to the genus *Leucosticte*.

From Dr. H. Behr, insects of the genus *Myrmeleon*.

San Francisco, Oct. 8th, 1855.

Dr. Randall in the Chair.

Donations to the Cabinet.

From Mr. Hough, of Oakland, a specimen of Rattlesnake (*Crotalus*,) and one of *Eutainia ordinoides;* also, one of Nuttall's Whippoorwill (*C. Nuttallii Aud.*)

From Dr. Gibelin Du Py, two skulls of Albatrosses, *D. exulans*, *L.* and *D. chlororynchus*, *Gm.*, from the vicinity of Cape Horn; for which the thanks of the Academy were voted.

From Dr. Ayres, two skulls of the Violet Green Cormorant (*P. resplendens*, *Aud.*) and one of the Western Gull (*L. occidentalis*, *Aud.*) from the Farrallon Islands.

From Dr. Lansweert, specimens of *Diadophis amabilis*, *Ophibolus Boylii*, and *Pituophis catenifer*, from this vicinity.

Mr. J. B. Russell presented for the Library, Swainson's Natural History and Classification of Birds, two volumes. Mr. Russell also deposited a New Zealand Axe, made of an extremely hard serpentine rock.

Dr. Wm. O. Ayres exhibited a specimen of a Shark, of a new generic type, with the following description:

Notorynchus maculatus—Ayres.

Form much elongated, depressed anteriorly, then rounded, compressed posteriorly. Head broad, flattened above; snout widely rounded, yet having a somewhat salient projection in the median line with a shallow emargination on each side, corresponding to the situation of the nostrils. Greatest depth about one eighth the total length; depth of the head, at the eyes, a little more than half the greatest depth, which latter is equal to the breadth of the head at the line of the spiracles.

Branchial apertures *seven* on each side, quite large, the posterior one situated just anterior to the base of the pectoral fin. They are of such size as to be very manifest when the fish is viewed from either the dorsal or the ventral surface; the anterior ones equal about one-third the depth of the head at the eyes.

Spiracles small, nearly equi-distant from the eyes and the branchial apertures, being a little nearer the median line than the eyes are. Their diameter is not more than one-sixth of that of the eye.

Nostrils almost terminal. They are situated in the emargination of the anterior border of the snout, but placed so much beneath as not to be visible, viewing from above. Each nostril is double, as in ordinary osseous fishes, the two apertures being separated by a strong transverse septum. Each aperture is oval, somewhat larger than the spiracles; the anterior aperture has a slight lobule on its axtero-posterior border.

Mouth very large, occupying the entire breadth of the inferior surface of the head; its anterior border a little in advance of the anterior line of the eye, the distance when the jaws are closed being equal from this point to the tip of the snout and to the posterior angle of the mouth. *Teeth* of the lower jaw large, few, (about seven or eight on each side of the median line,) flat, arcuated and very coarsely serrated on the cutting edge, the serrations pointing outward. This row of teeth, behind which as usual lie other rows concealed, forms a line almost like the continuous edge of a knife. The teeth of the upper jaw are about equal in number to those of the lower, but of different form. Those of the centre are narrow, acute, without denticles at the base but with minute teeth anterior to them; those next exterior are a little broader at the base, with denticles, exterior to these they become broadly triangular, the inner border entirely smooth but with its line continued so as to form a very sharp point directed outward, below which are one or two other serrations on the outer border; the external teeth of all approach in form those of the lower jaw.

A *lateral line* can be traced with entire distinctness, extending from the head nearly to the tip of the tail, at first along the upper portion of the side, then becoming lower, until along the tail it is below the middle.

The *eyes* are on the side of the head, elliptical, distant from the tip of the snout, not quite three times their own longitudinal diameter.

The *dorsal fin* is *single*. It arises a little nearer to the snout than to the tip of the tail. It is rhomboidal, its height anteriorly (which is somewhat greater than its length) being about three fourths of the greatest depth of the fish. The posterior border is not closely applied to the back, as in many sharks, but rises obliquely as in most osseous fishes. The upper border is concave

The *pectoral fins* are rhomboidal, broad, their height anteriorly equal to the depth of the fish, and not quite equal to the distance of their origin from the tip of the snout.

The *ventral fins* terminate on the plane of the commencement of the dorsal, which fin they equal in length.

The *anal fin*, which is small, arises just anterior to the termination of the dorsal.

The *tail* is very long, more than one-third the length of the fish, slender, its separation from the back marked by a decided though not deep depression. The fin is almost wholly beneath, a very small continuation of it around the last vertebræ being discernible. It is highest in front, not quite equalling the height of the dorsal, becomes gradually lower, and a short distance anterior to its termination rises again, forming a distinct triangular lobe.

Color dark bluish gray above, with numerous, small, irregular black blotches; lighter beneath.

The Shark here described presents certainly a very singular grouping of characters. The only genus with which it can be compared is Cuvier's *Notidanus*, previously separated by Rafinesque under the name *Heptranchias*, both founded on Lacepede's *Squalus cinereus*. With this our type agrees in the remark-

able features of *a single dorsal fin*, and *seven* branchial apertures. But in *Notidanus* the teeth of both jaws are represented as similar in form, and the muzzle pointed, the existence of spiracles being asserted by the one author and denied by the other. We have also in our fish the tail almost as much elongated as in *Alopias*. It seems therefore to represent a new generic division, for which we propose the name

NOTORYNCHUS.—Ayres.

Dorsal fin single. Branchial apertures seven on each side. Spiracles two. Nostrils double, subterminal. Snout broad, depressed. Tail much elongated, with the fin beneath. Teeth in several rows; those of the lower jaw flattened, arched, serrated; those of the upper jaw of diverse forms, the middle ones slender, the outer ones approximating those of the lower jaw in form.

N. maculatus is apparently not uncommon in the Bay of San Francisco, at certain seasons of the year; we have not yet the means of ascertaining its migrations. It is taken, during the summer, by the Chinese fishermen, at their station below Rincon Point, in no small quantities. But as sharks rank high with them in the scale of edible fishes, we have never been able to obtain from them a complete specimen. We have repeatedly watched their nets as they brought them on shore, but unfortunately at those times none of these fishes were taken, though the remains on the beach showed that numbers had recently been caught. The specimen described is the only complete one yet seen. It was obtained through the kindness of Dr. Lanszweert. It is twenty-three inches in length; but the remains of those taken by the Chinamen indicate that the species attains a length of at least six or seven feet. The developement of the tail, as well as of the mouth and teeth, render it probable that this shark is one of great rapacity and quickness of motion.

N. B.—Since the above description was printed, the jaws of a specimen caught in Santa Barbara Channel, were received from Mr. J. M. Alden, of the U. S. schooner *Ewing*. The fish was 5 ft. in length.

SAN FRANCISCO, Oct. 15, 1855.

Col. L. Ransom in the chair.

Donations to the Cabinet.

From Dr. J. G. Cooper, specimens of recent lignite, and petrified wood, from the tertiary sandstone of the coast of Washington Territory; a cone of *Abies Menziesii*, "Black Spruce of Oregon; and specimens of the genera, *Patella*, *Helix*, *Melania*, *Littorina*, *Purpura*, *Venus*, *Cytherea*, *Cardium*, *Tellina*, *Mytilus*, and *Anatifa*, from Shoalwater Bay.

Dr. Cooper also exhibited a very interesting series of plants from W. T.

From Mr. J. Palache, the nest of a Tarantula, and two fossil teeth, from Murphy's, Calaveras Co.

From Lieut. W. P. Trowbridge, specimens of the genera *Sciurus*, *Neotoma*, *Mus*, & *Sorex*, and a species of Hawk, from Astoria, O. T.; he also exhibited a specimen of *Aplodontia leporina* from Astoria, one of *Phalacrocorax resplendens* from Cape Disappointment, and one of *Putorius ermineus* from Cape Flattery.

From Dr. J. N. Hume, a valuable suite of Mineralogical and Geological specimens from Wisconsin Hill, Placer Co., and Eureka, Sierra Co.

Dr. D. H. Storer, of Boston, presented a copy of his History of the Fishes of Massachusetts, so far as yet published.

SAN FRANCISCO, Oct. 22, 1855.

Dr. A. Randall, President, in the chair.

Mr James Palache, of Murphy's, Calaveras Co., Cal. and Dr. James G. Cooper of New York, were elected Corresponding Members.

Donations to the Cabinet.

From Col L. Ransom, a large number of Geological and Mineralogical specimens, found chiefly in the vicinity of Monte Diabolo.

From Dr. J. G. Cooper, a species of Helix from Washington Territory.

From Dr. Randall, a fine specimen of crystallized Sulphuret of Iron imbedded in Talcose Slate, from a ledge near Placerville, through which a quartz lead passes.

From Mr. J. F. Pinkham, specimens of crystallized hornblende, found near the highest summit of the Santa Cruz Mts; also Sulphuret of Lead from near Santa Cruz.

From Mr. McDonald, of the head of Napa Valley, specimens of Travertine and crystallized deposits from the "Geysers."

From Judge Bailey, a nest of *Hirundo americana* with eggs and young, found on a ledge upon the coast of San Francisco Bay.

From Dr. Lanszweert, a specimen of *Pyrocephalus rubineus*, Boddaert; also, of *Planorbis opercularis*, Gould, from San Mateo Creek; also, of *Pollicipes rubra*, Leach, from San Francisco Bay.

Dr. Lanszweert presented the following analysis of a deposit from an artesian well in Santa Clara valley, "resembling a white efflorescent salt":

No perceptible odor;

Taste saltish.

Mixed with distilled water, boiled and filtered, chemical reactions show the presence of

Carbonate of Magnesia	3.742	grains.
Muriate of Soda	37.240	"
Carbonate of Soda	12.364	"
Sulphate of Lime	7.129	"
Carbonate of Lime	4.123	"
Silicia	128.476	"
Organic detritus	58.026	"
Quantity used	250.000	grains.

SAN FRANCISCO, Oct. 29, 1855.

Col. L. Ransom in the chair.

Donations to the Cabinet.

From Capt. Worth, geological specimens from Matsmai, (Japan,) also specimens of Wild Cotton, and the prepared fibres of a species of grass, admirably adapted to the manufacture of cordage, from the Ladrone Islands. The thanks of the Academy were voted for the donation.

From Mr. Swan, specimens of shells, and the skull of a Phocaena, from Japan.

From Lieut. E. S. Stone, of the U. S. Coast Survey, specimens of shells from the Santa Barbara Channel.

From Col. Ransom, a large specimen of Crystallized Salt, found forty miles N. E. of the Tejon Pass; specimens of the rock formation of Point St. Quentin; rattles from species of *Crotalus*, killed near Kern River.

From Mr. D. E. Hough, of Oakland, a specimen of Cooper's Hawk.

From Mr. Isaac Lea, of Philadelphia, were received the following volumes of his works, for the Library: Contributions to Geology; Description of a new Mollusk from the Red Sandstone; Rectification of Conrad's Synopsis of the Naiades; Notice of the Death of R. C. Taylor; Fossil Footmarks in the Red Sandstone of Pottsville; Description of new species of Colimacea; Notice of an Oolitic Formation in America, with descriptions of its organic remains; On a Fossil Saurian of the New Red Sandstone of Pennsylvania, and an account of Fossil Mollusks in the Carboniferous Slates; Synopsis of the Family of the Naiades; Description of a new species of genus *Unio;* Description of new Fossil Shells, from the Tertiary of Petersburg, Va.; Observations on the genus *Unio.*

Dr. Ayres offered the following remarks concerning a collection of fishes made by Lieut W. P. Trowbridge, at or near Cape Flattery, W. T.

The species were gathered at random, and may therefore be considered as representing, in their degree, the entire series of species occurring at that locality. They are thus valuable illustrations of the geographical distributions of types on this coast.—The collection comprises the forms here mentioned: *Leptocottus armatus*, Gir. *Sebastes rosaceus*, Gir. var. *parvus*, Ayres. *Sebastes variabilis? Cuv. Ophiodon elongatus*, Gir. *Gasterosteus plebeius*, Gir *Salmo rivularis*, Ayres. *Clupea mirabilis*, Gir. *Gadus proximus*, Gir. and *Chimaera Colliaei*, Gray. Every one of these species is identical with those occurring in our own immediate vicinity. The only additional type in the collection is an *Ammodytes*. Of this we have not as yet found any representative in California. The species is so closely allied to the European *A. tobianus*, that it is difficult to detect any features which may separate it. The points, in consideration of which *A. Americanus* was removed from *tobianus*, are here, in the Pacific type, completely restored to their European form; and though their wide removal from each other in habitat is of course a strong argument against their specific identity, it is not of itself conclusive.

It may be stated in this connection, that a species of *Pelamys* has recently been brought to our markets, which is without question the *P. sarda*. The closest examination fails to distinguish it from the Atlantic form. Previous to this time we had no positive knowledge of any fish in the low latitudes which inhabits our waters and those of the Atlantic.

San Francisco, Nov 5, 1855

Col. Ransom in the Chair.

Mr. Wm. Stimpson of Boston, Mass., Mr. Norris W. Palmer of Alameda, and M. René Lenormand of Vire, France, were elected corresponding members

Mr. D. E. Hough of Oakland, presented a specimen of Cooper's Hawk.

Dr. Ruschenberger presented, for the Library, a catalogue of Medical and Surgical Works, published by Blanchard & Lea.

Letters were read from Mr. Isaac Lea, Dr. Wm. Darlington, and Mr. Joseph Delafield, acknowledging their election as Honorary Members of the Academy.

Nov. 12, 1855.

Dr. Randall in the Chair.

Donations to the Cabinet.

From Dr. Randall, Geological specimens illustrating the infusorial beds near Monterey.

From Maj. H. P. Heitzelmann, specimens of Chestnuts from Cape Mendocino, the fruit of a tree sixty to eighty feet high, and one to two feet in diameter.

Dr. Lanszweert presented the following communication:

An article which appeared in the *Evening Bulletin* of Nov. 10, on the means of preventing smut in wheat, seems to render appropriate the publication of the following recipes, which have been used for that purpose with entire success for nearly a century. Having been first employed by one of my ancestors, they have since been introduced in various parts of France and Germany, and are now constantly used there.

No. 1.

Take of arsenic, and lime in powder, each two pounds; boil with sufficient water to make a thin paste; when cold, macerate in this the seed wheat about twelve hours, and then dry it as usual. The quantity given is sufficient for five bushels of wheat.

No. 2

Take one pound of the arsenic and lime, as mixed in No. 1, add one pound of green vitriol or blue stone; mix and boil: use as above.

No. 3.

Dissolve of nitrate of silver 72 grains, of common salt and cream of tartar each 154 grains; use as above for one bushel of wheat.

No 4.

Take of lime in powder, and sulphate of iron, each one pound; mix and use as in No. 1.

Nov. 19, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Mr. Joshua E. Clayton of Mariposa, a number of specimens of seeds, gathered near the head waters of the Mariposa, Fresno and Merced Rivers, one species being known in that vicinity as the Fresno Wheat. Also a suite of specimens of the granite rocks of the Yo Hamite Valley.

From Mr. H. G. Bloomer, a cone of the *Taxodium giganteum.*

Mr. Bloomer was appointed a Committee to furnish to H. P. Partwell, of Penn Yan, N. Y., a suite of the seeds of grasses and other plants from our Cabinet.

SAN FRANCISCO, Nov. 26, 1855.

Col. L. Ransom in the Chair.

Mr. Joshua E. Clayton was elected a corresponding Member of the Academy.

Donations to the Cabinet.

From Mr. Clayton, two specimens of Volcanic Glass from Clear Lake, and leaves of the Long Leaf Pine.

From Mr. Bloomer, several hundred specimens of California plants.

Lieut. M. F. Maury presented for the Library, Lynch's Expedition to the Dead Sea, and one volume of Washington Astronomical Observations.

Letters were read from M. F. Maury, of Washington, D. C., and James Palache, of Calaveras Co., California.

DEC. 3, 1855.

Dr. Lanszweert in the Chair.

Donations to the Cabinet.

From Mr. N. W. Palmer, of Alameda, a specimen of *Buteo borealis*, and one of *Strix pratincola.*

From Mr. W. D. Sleeper, of Columbia, Cal., a specimen of the substance mined at Table Mountain, Tuolumne Co., known by the miners there as "soap."—It was referred to Dr. Lanszweert for examination.

From Mr. A. G. Branda, a specimen of *Orthagoriscus*, from the Santa Barbara channel. It is undoubtedly of a new species.

Donations to the Library.

From Dr. J. C. Warren, of Boston, Mass., a copy of his work on the Mastodon.

From the Pottsville Scientific Association, a copy of their Bulletin for Jan. and Feb., 1855.

The thanks of the Academy were voted for the donations recorded above.

A letter was read from Mr. Charles Girard, of the Smithsonian Institution, acknowledging the notice of his election as an Honorary Member of the Academy.

Mr. Bloomer and Dr. Lanszweert were appointed a Committee to furnish specimens to Dr. Sartwell, of Penn Yan, N. Y., and M. René Lenormand, of Vire, France.

SAN FRANCISCO, Dec. 10, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Dr. Badarous, a beautiful specimen of Cotton, from Lower California; also, a specimen of *Hippocampus*, from Rio Janeiro.

From Mr. Rudolfson, of Sonora, specimens of petrified wood, shells, clay, &c., from Table Mountain.

From Dr. J. T. Hyde, a specimen of *Tetraodon hispidus.*

The thanks of the Academy were voted for the above donations.

From Col. Ransom, a group of fossil shells from the hills east of San Jose Mission; also, a fossil *Ostrea*, from the mountain range east of San Luis Obispo, 2000 feet above the sea. This shell is 12 inches long, 6 inches wide, and 4½ inches in thickness, and said to be much smaller that many which have been found in the same range.

From Dr. Newberry, two very important groups of fossil shells. They were obtained by him near Point Pinole, San Pablo Bay. They were taken from two separate strata in the sandstone, which is identical with that of this city, and are of especial value, since they determine beyond question the Tertiary character of the extensive group known as San Francisco Sandstone. The shells are species of Pecten and Ostraea.

The December number of the Pioneer was received for the Library.

DEC. 17, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Col. Ransom, two nests of the Tarantula; also, alkaline incrustations from the plains near Kern Lake; also, volcanic deposites from near Yreka.

From Dr. Eckel, a very curious capsule, with the seeds, from Nicaragua.

From Mr. W. H. Brooks, a specimen of Lactophrys, from the Sandwich Islands.

DEC. 24, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Mr. Wm. Burling, specimens from the vicinity of Sitka, comprising fossil shells, the skin of a seal, skeletons of *Cygnus buccinator, Lutra canadensis, Phalaropus, Sciurus, Putorius ermineus*, with the skull of a Polar Bear, and a specimen of *Diomedea exulans.* The skeletons were prepared by the Indians, and are in most admirable condition.

From Mr. C. Leonard, an abnormal specimen of the Lizard so common in this vicinity, *Sceloporus graciosus.*

From Dr. J. G. Cooper was received a copy of Gray's Botany of the Northern United States.

Letters were received from R. D. Cutts, Esq., Washington, D. C., and Dr. Charles Pickering, of Boston.

A communication was read from W. P. Blake, of Washington, D. C., giving an abstract of his paper read before the Am. Association for the Advancement of Science, at its last meeting, on the age of the San Francisco Sandstone, also observations on the pine sugar or mannite of California.

Dr. Ayres presented the following communication:

In the early part of August, 1854, descriptions were read by me before the Academy, of two species of fish, which were arranged with hesitation under the genus *Hemilepidotus*, but those descriptions were never published, as the Academy had not then commenced issuing its proceedings. Shortly afterward, Mr. Girard presented to the Philadelphia Academy of Natural Sciences, a paper in which was contained a description of one of these species; he called it *Scor-*

pænichthys lateralis. But inasmuch as it appears of quite distinct generic form from the species which is the type of his genus *Scorpænichthys* (*S. marmoratus*, very common in our markets), and since the second of my species has not been published at all, it is judged best in this communication to attempt a correct exposition of the two.

They are manifestly very closely allied to *Hemilepidotus*, with which genus one of them might in fact be classed without any great violence, though to include both, the generic characters as given by Cuvier must be much modified. With *Scorpænichthys* their affinity seems less intimate, and a generic identity not admissible. In Mr. Girard's description of that genus, as published in the proceedings of the Phil. Acad. Nat. Sci., (vol. 7, p 131,) the character is given, "Skin smooth, without either scales or plates" though in a copy of his paper sent to the Cal. Academy a manuscript alteration has been made. so as to read "Skin either smooth, or provided with scales." But even allowing this, we find the jaws not equal, the gill-openings continuous in one and not in the other, the dorsals distinct in the one and much less so in the other, and the spinous dorsal lower than the soft in both.

The character, however, which appears of greatest value, is derived from the *scales*. These are very peculiar, having an *hour-glass* form, doubly concave, with a depth (corresponding to the thickness of ordinary scales) nearly equal to their transverse diameter. The external concavity is free, looking upward and backward, its border being strongly ciliated. They are of the same structure in both species, and their remarkable formation argues strongly in favor of generic identity. We have no means of knowing the character of the "scales" in the Kamschatkan species on which Cuvier founded his genus *Hemilepidotus*, but it is perhaps scarcely possible that an observer so accurate as the distinguished French naturalist should have overlooked a structure so singular. Should it however be shown that in *H. tilesii* we have the same feature, it would then be necessary to modify the characters of *Hemilepidotus* so far as to include our Californian types.

Until this can be done we may place them as the representatives of a new generic group, with the following definition.

CALYCILEPIDOTUS.

Head with bony plates; somewhat spinous, especially on the gill-covers. Teeth fine and crowded, in the jaws and on the vomer, palatines, and pharyngeals. Spinous and soft dorsal more or less completely separated. Breadth of the head greater than its height. Sides of the body, and sometimes the head, with patches of doubly concave, ciliate scales, alternating with spaces of smooth skin. Loose membranous flaps on various parts of the head.

Of this genus we know at present two species.

1. CALYCILEPIDOTUS SPINOSUS.—Ayres.

Head large; body tapering, rounded anteriorly, becoming compressed posteriorly. Length of the head a little less than one-third of the entire length, being equal to twice the depth of the head.

Eyes large, nearly circular, their diameter contained about four times in the length of the side of the head; the distance between them less than half their own diameter; orbits elevated, leaving a deep depression in the interocular space.

Nasal spines strong and prominent. Various elevations, scarcely to be called spines, on the top of the head back of the orbits. On the border of the preoperculum commonly three strong spines directed backward (the upper two being each about equal in length to the interocular breadth) and one at the inferior angle looking downward and forward. A concealed spine at the superior and the inferior angle of the operculum. A humeral and a scapular spine may also be traced, though not well marked.

A membranous flap, with a height as great as that of the nasal spines, on the superior posterior border of the orbit; another on the preoperculum; another, not so large, at the tip of the superior maxillary; a pair also at the symphysis of the lower jaw. In addition to these, many of the tubes forming the lateral line, as well as others on the head, are prolonged by a free membranous extremity.

Scales arranged in three longitudinal bands on each side. The *first* runs nearly parallel with the base of the dorsal fin, being separated from it by a stripe of smooth skin. It is connected with its fellow of the opposite side by a broad band in front of the dorsal fin; and has a breadth of five or six rows of scales anteriorly, becoming narrower posteriorly. The *second* is very narrow, and indicates the course of the lateral line, which it follows in its entire length. It curves at first gently downward, and then runs nearly straight. Anteriorly it has but a single row of scales, in the middle it has two or perhaps three, and posteriorly again becomes narrower. The space of smooth skin between it and the first band is broadest at about the middle of the body, where it equals in width the upper band. The *third* is separated from the second by a very narrow stripe indeed. Its greatest breadth, near the middle of the length, is about equal to that of the first band. All of the bands extend to the caudal fin; the head is entirely destitute of scales.

Lower jaws shorter than the upper; gape of the mouth of such extent that a line vertical to the angle of the maxillary passes near the posterior border of the pupil.

Gill openings not continuous.

Dorsal fin single, a depression separating the spinous from the soft portion, but not so as to form two fins. The spinous portion, arising a short distance from the back of the head, is in length about equal to the distance from the tip of the snout to the border of the preoperculum, being about two thirds of the length of the soft portion. It is highest at the fourth and fifth spines, the height thence diminishing so that the last ray only about half equals the highest. The soft rays rise at once to a height rather than that of any of the spinous rays. The soft portion of the fin extends almost to the base of the caudal, increasing somewhat in height as it advances, and again decreasing; its height is thus about half greater than that of the spinous part, being a little less than one-seventh of the length of the fish.

The *anal*, very similar to the soft dorsal in form and height, is shorter, arising opposite its fourth or fifth ray, and terminating as many rays in advance of the other.

The *pectorals*, of cottoid form, with the lower rays free at their tips, have a height nearly equalling one-fourth the length of the fish; their length is about half their height.

The *ventrals* are opposite the middle of the base of the pectorals, which they nearly equal in height.

The *caudal* is slightly rounded, its height equalling that of the ventrals.

D. 11-19; A. 16; P. 17; V. 1-4; C. 4.1.3 4.1.4.

In color this species is commonly of a dark reddish brown, with darker irregular bands and blotches, the bands assuming something more of regularity on the soft dorsal, pectoral, and caudal fins.

C. spinosus occurs in the Bay of San Francisco, but it is not common. Specimens are occasionally brought in by the fishermen with the other sculpins. They seldom exceed seven inches in length.

2. CALYCILEPIDOTUS LATERALIS.

(Syn. *Scorpænichthys lateralis*, Gir.)

As this species has been already described by Mr. Girard (*loc. cit.*) a detailed account of it here is not needed. It has the *scales* in a single band on each side, corresponding in some degree with the first band of the *spinosus*, but less regular, and not connected in the same manner in front of the dorsal fin; small, scattered scales are found also on the head. The head is less spinous, though the upper spine of the preoperculum is stronger and branched. The division of the spinous and soft dorsal is so complete, that they may be called two fins, though contiguous.—The membranous flaps of the head are extremely small; one at the superior posterior border of the orbit, and one at the extremity of the maxillary, both very difficult to detect in alcoholic specimens; none at the symphysis of the lower jaw. The eye is decidedly smaller than in *spinosus*. The gill-openings are continuous.

C. lateralis is perhaps a little more common in the Bay of San Francisco than *C. spinosus*, which it about equals in size. Mr. Girard's specimens were collected at Monterey and San Luis Obispo.

SAN FRANCISCO, Dec. 31, 1855.

Col. Ransom in the Chair.

Donations to the Cabinet.

From Mr. Burton Fales, of Springfield, Tuolumne Co., a fossil jaw of a young Mastodon, with fragments of other bones apparently from an an adult specimen of the same species.

From M. Chevalier, two specimens of the Marsh Hawk, (*Circus cyaneus*) from the Mission Dolores.

From Dr. Holden, of Stockton, a fine specimen of the Paysano (*Geococcyx viaticus*). The thanks of the Academy were voted for the above donations.

From Mr. C. D. Gibbs, two specimens of *Dipodomys* or Kangaroo Rat, and one of *Spermophilus lineatus* or Ground Squirrel, from Tulare Co.

Two fossil Mastodon teeth were received on loan from Mr. Nathaniel Fales, of Springfield, Tuolumne Co., that casts of them might be made for the Cabinet of the Academy.

Donations to the Library.

From Prof. A. D. Bache, the Coast Survey Report for 1853.

From Mr. C. Girard, a copy of his descriptions of many new Fishes from the Pacific Coast.

From Mr. William Schmolz, Optician, of this city, was received a set a of Meteorological Instruments, consisting of Bunten's Syphon Barometer, Thermometrograph, Wet Bulb Hygrometer, and Rain Gauge. The thanks of the Academy were voted to Mr. S. for his very valuable donation.

END OF PART FIRST.

Presented
25 MAY 1886
BRITISH MUSEUM
NATURAL HISTORY.

BRITISH MUSEUM NATURAL HISTORY

PROCEEDINGS

OF THE

CALIFORNIA ACADEMY OF NATURAL SCIENCES.

VOL. 1.—PART 2D. SAN FRANCISCO. 1856.

SAN FRANCISCO, Jan. 7, 1856.

Col. L. Ransom in the Chair.

The reports of the Curators, Librarian and Treasurer were accepted, and placed on file.

Donations to the Cabinet.

From Capt. J. W. Russell, specimens of Mollusca and Echinodermata, from Nootka Sound. Articles of Indian manufacture, from the Makaar tribe, at Cape Flattery, were deposited.

From Dr. Behr, two specimens of *Wenona isabella*, from Contra Costa.

From Col. Ransom, a species of Cytheraea.

The following officers were elected for the year 1856:

Col. L. Ransom,	President,	Trustees.
Dr. A. Kellogg,	1st Vice President,	
Dr. J. N. Eckel,	2d " "	
Edward Bosqui,	Treasurer,	
Dr. W. O. Ayres,	Cor. Secretary,	
M. George Read	Rec. "	
T. J. Nevins,	Librarian,	
Dr. J. B. Trask,	Curator of Geology and Mineralogy,	
H. G. Bloomer,	Curator of Botany,	
L. W. Sloat,	Curator of Conchology,	
Dr. L. Lanszweert,	Curator of Zoology.	

The following amendments to the Constitution were adopted:

Section 4th of article 2d so as to read as follows—

SEC. 4. The membership fee to be paid by an applicant for resident membership shall be ten dollars, and every such member shall also pay one dollar monthly in advance. The payment or donation of one hundred dollars shall constitute the contributor, or the person on whose behalf such contribution shall be made, a member for life, on being duly elected by the Academy; and such member for life shall possess all the rights and immunities of a resident member, and shall be exempt from the payment of monthly dues.

To section 1st of article 2d, add the following:

Provided, that no person thus elected shall be regarded or recognized as such member until he shall have signified his acceptance, and complied with the prescribed conditions.

SAN FRANCISCO, Jan. 14, 1856.

President in the Chair.

Donations to the Cabinet.

From J. T. Hall, Esq., a group of Eocene fossils in sandstone, from near Negro Bar, American River.

The thanks of the Academy were voted for the donation.

From Dr. J. B. Trask, two specimens of Goosander, from the plains of the Sacramento.

From Dr. R. K. Reid, of Stockton, a very valuable collection of Californian birds, comprising fourteen species.

Donations to the Library.

From the Smithsonian Institution, seven volumes of the Smithsonian Contributions to Knowledge.

From the Societé Royale of Stockholm, Sweden, two volumes, 1853 and 1854, Kongl. Vetenskaps—Academiens Handlingar.

From Dr. J. N. Eckel, six French and German works on Botany, Entomology, &c.

From the Lyceum of Nat. History, Williams College, Mass., an address delivered before them, 1856, by Prof. W. B. Rogers.

Elections were made, viz.:

W. O. Ayres, M. D., T. J. Nevins, L. Ransom.	Publication Committee.
T. J. Nevins, J. N. Eckel, M. D., J. B. Trask, M. D.	Library Committee.
T. J. Nevins, A. Kellogg, M. D., W. Heffley.	Finance Committee

The following paper on earthquakes in California, from 1812to 1855, was presented by J. B. Trask :

In preparing this paper I have endeavored to obtain, as far as possible, the most correct information of the history of these phenomena in former years, and to correct some of the misapprehensions and statements which have appeared from time to time relating to the severity of earthquake shocks in this country during the earlier periods of its history.

From careful inquiry of the older residents, I can learn of but one shock that has proved in the slightest degree serious, causing the destruction of either life or property to any extent. This was the earthquake of September, 1812, which destroyed the Missions San Jaun Capistrano, in Los Angeles county, and that of Viejo, in the valley of San Inez, in the county of Santa Barbara.

The following is the history of that event as I have obtained it from the native inhabitants, and older foreign residents on this coast:

The day was clear and uncommonly warm ; it being Sunday the people had assembled at San Juan Capistrano for evening service. About half an hour after the opening of service, an unusual loud, but distant rushing sound was heard in the atmosphere to the east and over the water, which resembled the sound of strong wind, but as the sound approached no perceptible breeze accompanied it. *The sea was smooth and the air calm.* So distant and loud was this atmospheric sound that several left the building attracted by its noise.

Immediately following the sound, the first and heaviest shock of the earthquake occurred, which was sufficiently severe to prostrate the Mission church almost in a body, burying in its ruins the most of those who remained behind, when the first indication of its approach was heard.

The shock was very sudden and almost without warning, save from the rushing sound above noted, and to its occurrence at that moment is to be attributed the loss of life that followed.

The number reported to have been killed outright, is variously estimated from thirty to forty-five, (the largest number of persons agree on the smallest number of deaths given), but in the absence of records such statements should be received with many grains of allowance, where memory alone is the only means left, and the term of forty-three years has elapsed to the period at which this account was placed on paper. A considerable number are reported to have been badly injured.

There is a universal agreement on this point, viz : *that the first shock threw down the entire building, and that a large number of persons were in it at that moment*, and under the circumstances it would be most singular if no deaths were caused by such an event.

The motion of the earth is described as having *lifted vertically*, attended by a *vortical* movement. No *undulatory* motion is described by any one. Dizziness and *naseau* seized almost every person in the vicinity.

A heavy, loud, deep rumbling, accompanied the successive shocks that followed, and which were five in number, all having the motion above described, though comparatively light in their effects to the first. The sounds attending the phenomena came apparently from the South and East.

In the valley of San Inez, to the south and west of Santa Barbara, the ruins now known as the "Mission Viejo," was also completely destroyed ; the distance between Capistrano and San Inez being about 170 miles. The shock which destroyed this building occurred about one hour after the former, and the inhabitants had left the building but a few minutes before it fell, service having closed. The first shock felt here prostrated the building, as in the preceding case.

A Spanish ship which lay at anchor off San Buenaventura, 38 miles from Santa Barbara, was much injured by the shock, and leaked to that extent, that it became necessary to beach her, and remove the most of her cargo.

It is an interesting fact, and at the same time somewhat remarkable, that the time which elapsed between the advent of the shocks at Capistrano and San Inez is widely variant from what we should look for, when the distance apart and velocity of motion in earthquakes are taken into consideration.

The effect of this earthquake on the sea, in the bay of Santa Barbara, is described as follows: " The sea was observed to recede from the shore during the continuance of the shocks, and left the latter dry for a considerable distance, when it returned in five or six heavy rollers, which overflowed the plain on which Santa Barbara is built. The inhabitants saw the recession of the sea, and being aware of the danger on its return, fled to the adjoining hills near the town to escape the probable deluge.

The sea on its return flowed inland little more than half a mile, and reached the lower part of the town, doing but trifling damage, destroying three small adobe buildings.

Very little damage was done to the houses in town from the effects of the shocks, while the Mission at the San Inez was prostrated almost instantly. There is no evidence that I can find, that this earthquake was felt in San Luis Obispo, though such has been the report.

Prior to 1812 I have not been able to learn of the occurrence of this phenomena, that appear to have been particularly severe or destructive, and that they have not been so, is evidenced in the fact that from the foundation of the first Mission at San Diego in 1769, a period of eighty-six years has passed, during which time, but one, and that the above, finds a place either in their history or the memory of those now living, traditionary or otherwise.

From the date of the above to the year 1850, we have no record of the occurrence of these phenomena, other than the fact that light and repeated shocks were common in the country.

During 1850 the following shocks were recorded, but it is probable that several were not noted, as we find their frequency bears no relation to those which have occurred during subsequent years.

1850.

March 12.—A light shock was felt in San Jose.

May 13 —A light shock in San Francisco. An eruption of Manua Loa, S. I., and shock same day.

June 28.—A light shock in San Francisco

August 4.—A smart shock was felt in Stockton and Sacramento.

Sept. 14.—Smart shock at San Francisco and San Jose. Total number recorded in 1850, five.

1851.

May 15 —Three severe shocks in San Francisco During this earthquake windows were broken and buildings severely shaken. A large amount of merchandize was thrown down in a store on California street. The shipping in the harbor rolled heavily.—An eruption of Manua Loa and shock in the S. I. same day.

May 17.—A light shock in San Francisco.

May 28.—A light shock on the Salinas.

June 13.—A smart shock in San Francisco, which was felt at San Louis Obispo and San Fernando.

Dec. 2.—A shock at Downieville.

Dec. 31.—A smart shock at Downieville. Total number recorded in 1851 is six.

1852.

From the beginning of this year, until past its third quarter, no disturbances were noted, until the month of November.

Nov. 26.—The number of shocks noticed on this day at San Simeon was *eleven*, and at Los Angeles and San Gabriel the same number. The same number, or nearly so, was observed by parties having in charge a government train in transit from Camp Yuma to San Diego. This earthquake was felt over the entire country east and south of San Luis Obispo, to San Diego and the Colorado river, covering a line of about 300 miles square. Subsequent accounts prove that it affected the country south of the Colorado as far Guyamas in the province of Sonora.

For the term of six days subsequent to the 26th, the entire south part of the State was convulsed, with slight intermissions. During their continuance a *mud volcano* broke out upon the Colorado Desert, and another south of the Colorado, one of which was visited by a portion of the U. S. command under Maj Heintzleman.

Dec. 17.—Two smart shocks occurred in San Luis Obispo, which fractured the walls of two adobe buildings, and threw down part of the wall of the house belonging to, and occupied by Don Jesus Pico and family.

During the month of December the southern and middle portions of California were much disturbed, and the effects were felt as far north as the 37th parallel.

The shocks continued into the month of January, and were noticed until the 5th of this month on the San Joaquin.

The period of time inclusive between the 16th November (the date of the sad earthquake of Banda Neira, in the Mollucas) and the 26th January, 1853, cannot but be regarded as one of the most remarkable periods of modern date. During this period a greater proportion of the earth's surface was convulsed by subteranean forces, than has been known for many years, in the same length of time.

The area most severely affected by these phenomena is included in the parallels of 40° south and 37° north latitude inclusive, making 76 degrees of latitude, and extending from 120° east to 45° west longitude, making 210 degrees of longitude, or nearly equal to three fifths of the equatorial circumference of the earth.

At this time the coast of eastern Asia, the Islands of the South Indian Ocean, Singapore, the Molluccas, the east coast of China, the north, east, and south of Australia, the coast of California, Mexico, and South America, with portions of the Atlantic coast, south of the 34th parallel shared in the general disturbance that prevailed upon our own shores during the period above named.

With the 26th of January ceased the vibrations on this coast at that time, (that were perceptible without the use of instruments), but it appears that they continued much later on the east coast of China and Australia, extending into the month of February.

1853.

Jan. 2.—A smart shock felt in Mariposa, and at the same time in San Francisco, Shasta City, and Bodega.

Jan. 5.—A shock at Corte Maderia.

Feb. 14.—A light shock at San Luis Obispo.

March 1.—A Smart shock at San Francisco, felt at San Luis Obispo and Santa Barbara.

April 24.—A light shock at Humboldt Bay.

April 26.—Three shocks at Weaverville.

June 2.—Two smart shocks on the plains of the San Joaquin.

July 12.—A light shock in Yreka, Siskiyou Co.

Sept. 3.—Four shocks on the San Joaquin and Salinas Plains.

Oct. 23.—Three heavy shocks at Humboldt Bay.

Oct. 25.—A light shock at Humboldt Bay.

Nov. 16.—A light shock at San Jose.

Nov. 21.—A shock at San Francisco.

Dec. 11.—A light shock at San Francisco and Mission Dolores.

Dec. 23.—A light shock at Shasta City.

Total number recorded in 1853 is 15

1854.

Jan. 3.—Two smart shocks in Mariposa, and felt at the same time in Shasta.

March 2.—A light shock in San Francisco.

March 20.—A shock in Stockton.

April 29.—A light shock at Santa Barbara.

May 23.—A shock at Crescent City.

May 31.—An earthquake at Santa Barbara, at 10 minutes before 5 o'clock in the morning. There were three vibrations, the first of which was accompanied with a deep rumbling; the second was preceded by a loud rushing sound, like the approach of a strong wind. About four or five seconds elapsed between each shock. The sea was much disturbed, and a heavy surf swell came in soon after the second shock was felt, which passed some thirty feet beyond the old wreck near the embarcadero. The inhabitants left their beds in their night attire, and sought the street. But little damage was done.

June 26.—Two light shocks in Placer county.

July 10.—One shock at Georgetown.

July 14.—One shock at Georgetown.

Sept. 14.—A light shock at Nevada.

Oct. 21.—A light shock at Monterey

Oct. 26.—A smart shock at San Francisco, felt also at Benicia. Vessels lying at the wharves worked heavily on their hawsers.

Total number of earthquakes in 1854 is 12.

EARTHQUAKES DURING THE YEAR 1855.

The following is the record of the number of earthquakes that have occurred during 1855 in the State of California, with the date and hour of the day at which they were observed.

Jan. 13, 6½ P. M.—A smart shock occurred at San Benito and San Miguel, and was felt also, though light, at San Luis Obispo.

Jan. 24, 10 P. M.—A heavy shock of an earthquake was felt at Downieville, continuing seven or eight seconds. This shock was felt severely at Gibsonville on the north, at Forest City, Minesota, Orleans Flat, Eureka, Georgetown, and Nashville, on the Cosumnes, south, and at the Keystone Ranch (Yuba Co.) on the west. The entire distance in a north and south direction affected, was ninety-four miles, and in a westerly line thirty miles. It was preceded by a profound rumbling, accompanied by a rushing sound like the approach of a strong wind in the distance. This shock shook buildings severely. A large pinnacle of rock, about 100 feet in height, was precipitated from the top of the Downieville Butte down to the south fork of the Yuba at its base.

Feb. 5, 10 A. M.—A light shock was felt at Wolf

Creek and the northeast part of Nevada county.

April 7, 6 P. M.—A light shock was felt at Gibb's Ferry, Trinity county, and was experienced as far north as Callahan's Ranch, at the head of Scott's Valley, Siskiyou county.

June 25, 2 P. M.—A smart shock was felt at Santa Barbara, and extended northward as far as the valley of Santa Maria. This shock was cotemporaneous with one that occurred in Switzerland.

July 10, 9½ A. M.—A light shock was felt in Georgetown, El Dorado county, which lasted about four seconds. On the same day a very severe shock was felt in the city of Los Angeles, which done considerable damage. There were four distinct shocks during the earthquake, with a period of about two or three seconds, elapsing between each vibration.—During their continuance, the ground opened in several places, in fissures of one or two inches, the marks of which remained for several days afterwards.—There were some twenty-six buildings in the city more or less injured, which I personally examined, and among them the church, the west wall of which was split from top to bottom in two places, the fissures being from one to two and a half inches in breadth, running entirely through. The east wall split at a slight angle from the perpendicular, and had but one fissure. The walls of the Star Hotel were split in several places, and on the west side there appears to have been a decided horizontal motion, as the wall was displaced on that side horizontally to the depth of about one inch, and some eight or nine feet in length. The amount of displacement decreased from the west end of the building towards the centre. It is a fact worthy of note, that none of the *thin* adobe walls of the buildings suffered injury, while most of the *thick* walled buildings were injured to a grtater or less extent.

During the earthquake, many articles were thrown down, those that were standing on shelves against the east end of the buildings were thrown westward on to the floor, and those on the opposite end of the buildings were thrown back in an inclined position against the walls. These features were noticed in the drug stores of Doctors Winston and Hope, situated on the main street, and a short distance west of the church.

The meteorological condition of the atmosphere was rather unusual, and is described as follows:—The day was unusually warm and sultry, attended with little thunder and some rain, (the latter very unusual) and a very sudden change of temperature to unpleasant coldness. At Point San Juan there was observed considerable commotion in the water, attended with a strong rushing sound, and two unusually heavy surf swells immediately *following the last shock*.

This shock was felt distinctly at the saw-mill some eight miles east of San Bernardino, about seventy miles east of Los Angeles, and at Santa Barbara, about one hundred miles in a westerly direction. At Los Angeles the shock occurred at fifteen minutes after eight in the evening.

Aug. 12, 9½ A. M.—A light shock of an earthquake was felt at Georgetown, which lasted about three seconds. The vibration apparently came from the north. Between this date and the 10th July there were four other light shocks, the dates of which are not recorded.

Oct. 21, 7¼ P. M.—A smart shock of an earthquake was felt in San Francisco. The buildings situated over the water were violently shaken. There was much commotion in the water of the harbor a few minutes preceding the shock, which caused several vessels to heave heavily at their hawsers and cables.

Oct. 27, 3 P. M.—A light shock was felt in the valley of Clear Lake. On the same day a shock was felt in Downieville, which lasted about five seconds. At Goodyear's Bar it was more severe than at the preceding locality.

Dec. 5, 11.20 A. M.—The shock of an earthquake was felt at Humboldt Bay, which lasted about three seconds. There were two vibrations, the last being the most severe.

Dec. 11, 4 A. M.—A shock was felt in San Francisco and at the Mission Dolores; at the latter place it is represented as having been quite severe.

Jan. 2*d*, 1856, 10 A. M.—A light shock in San Francisco, which lasted about three seconds. The shock came from the north and was undulatory.

The whole number of which I have a record for 1855, amounts to twelve only; but there may be others which have escaped my notice on account of absence from the city.

The following table will show the number of shocks for each year, and each month of the year, for six years from 1850 to 1855 inclusive:

	1850	1851	1852	1853	1854	1855	No. for each month in six years.
January,				2	1	2	5
February,				1		1	2
March,	1			1	2		4
April,				2	1	1	4
May,	1	3			2		6
June,	1	1		1	1	1	5
July,				1	2	1	3
August,	1					1	2
September,	1			1	1		3
October,				2	2	2	6
November,			11	2			13
December,		2	1	2		2	8
Total each year....	5	6	12	14	12	11=59	59

From the above it will be seen that of the total number of shocks in six years in this state, forty-eight have occurred during the spring, summer and autumn months, and eleven during the winter months.

Of the total number noted, twenty-seven have occured from San Luis Obispo south, and of the thirty-two remaining, nine have been felt in San Francisco at the same time they were observed at San Luis Obispo, while the remaining twenty-three were felt at San Francisco and north of that point.

Notwithstanding we have had, what may, perhaps, be considered a frequency in the recurrence of these phenomena, still there are but a *very few* of the total number that would merit a moment's consideration south of the twenty fifth parallel ofs north latitude, for there they would be regarded a minor affairs entirely.

From all the facts in our possession relating to the phenomena on our coast, it appears that the greatest preponderance in action, and severity of effects, is exerted for the most part, south of Point Conception, for, from this place, east, south and north, to near the Colorado, the most conclusive evidences exist of very recent volcanic action having been exerted on rather an extensive scale, and is also still persistent in several localities within the area named, though in a minor degree.

It would be interesting to examine the changes of level that have evidently taken place in this State within the last five years; but, as more extended observations would greatly assist us in forming conclusions on this subject, I will defer that portion until a future day.

San Francisco, Jan. 21, 1856.

President in the Chair.

Donations to the Cabinet.

From C. D. Gibbs, specimens, of Clay containing impressions of leaves, from Table Mountain; also a specimen of Lignite, with Sulphuret of Iron.

From Col. Ransom, silicified wood, from Kern River.

From S. W. Higgins, a fossil multilocular shell, apparently of new generic form, from Coose Bay.

From W. B. Little, a calcareous concretion, from Thompson's ranch, Santa Clara Co.

From Dr. J. B. Trask, specimens of Arbor Vitæ, in blossom; they were referred for investigation to Dr. Behr and Dr. Kellogg.

From M. G. Read, Sulphuret of Iron, from Mexico; also a Roman coin, from Herculaneum,

From Capt. J. W. Russell, specimens of shells, &c., from the island of San Miguel, Cal.

Deposited for the Cabinet.

By Dr. A. B. Stout, an Indian Mummy, from Shoalwater Bay, showing the result of their method of preserving their dead.

By Capt. J. W. Russell, a blanket made by the Indians at Cape Flattery, from the hair of a peculiar race of dogs.

Donations to the Library.

Proceedings of the Boston Society of Natural History, vol. 5, pp. 241—256, from the Society.

Report of the Coast Survey for 1854, from R. D. Cutts, Esq., from Washington, D. C.

Plants of Cincinnati and Vicinity, by Thomas G. Lea, from Jacob Resor, Esq.

San Francisco, Jan. 26, 1856.

President in the Chair.

S. W. Higgins and F. Rohrer were elected Corresponding Members.

Donations to the Cabinet.

From Mr. W. T. Rumble, of Columbia, a series of specimens collected chiefly in Utah Territory.—Among them was a pebble of Jasper cut so as to constitute a seal; this was found amid fragments of ancient pottery.

From Mr. C. K. Lambert, of Columbia, specimens from Table Mountain and vicinity.

From Henry Hancock, U. S. Deputy Sorveyor, specimens of shrubs, and the wood and leaves of Palmetto, found N. E. of Los Angeles.

From B. M. Henry, U. S. Deputy Surveyor, a specimen of Tertiary Coal, from the Coast Range, fifteen miles southwest of Stockton.

From Dr. C. H. Raymond, a specimen of paper manufactured from wood shavings.

The thanks of the Academy were voted for the above donations.

From Dr. Lanszweert, a Capsule from Central America. Referred to Dr. Kellogg and Mr. Bloomer.

From Mr. S. W. Higgins, Tertiary fossils from Coose Bay, O. T.

San Francisco, Feb. 4, 1856.

Dr. A. Kellogg in the Chair.

Donations to the Cabinet.

From Mrs. Herrick, a specimen of *Acrostichum alcicorne*, or Elk Horn Fern.

From Mrs. Miller, a specimen of *Fucus* from the Gulf Stream.

The thanks of the Academy were voted for the above donations.

From Dr. Eckel, a part of the jaw of a Mastodon, from Columbia, Tuolumne Co.; the same species as the teeth previously received from Murphy's, Calaveras Co.

From Dr. Lanszweert, Iron from Santa Clara, made from ore found in that county, containing forty per cent.

From Capt. Russell, shells and Indian relics from San Miguel, with others from Cape Flattery.

From Dr. Randall, specimens of Tertiary Fossils from Chico Creek, Butte Co., containing a small Ammonite, and a Baculnite. Dr. Randall also presented a specimen of *Planorbis* from the same county, with Indian relics from Marin county.

From Dr. R. Reid, of Stockton, plants collected near the Cosumnes and Mokelumne rivers.

Donations to the Library.

From Jacob Resor, of Cincinnati, a Catalogue of the Flowering Plants and Ferns observed in the vicinity of Cincinnati, by Joseph Clark.

From Dr. Eckel, Liebig's complete works on Chemistry.

From subscription of the members, the Botany of Capt. Beechey's Voyage, and Part 1 of the Botany of the Voyage of H. M. Ship Herald.

Dr. Kellogg exhibited drawings of ten species of Conifers, four species of the Silver Fir, and four species of Spruce Fir; two of the latter are rare, and may prove to be new. Also two species of Pines, one of which is evidently new. The Society are under obligations to Dr. J. C. Newberry, of Col. Richardson's Survey, for the use of the specimens from which the sketches were made. A full description will appear in his report. As the Society have no specimens of many of these species, our friends would greatly oblige us by sending any specimens from their respective vicinities.

Feb. 11, 1856.

President in the Chair.

Mr. J. C. Palmer was elected a Life Member of the Academy.

Donations to the Cabinet.

From Capt. Kentzel, a living specimen of the Whistler, *Aryctomys pruinosus*, Penn., from Cook's Inlet, Russian Possessions. This donation is of more than ordinary interest, as the species is represented

in but very few collections. Its Indian name is stated to be *Gighan*.

From Mr. W. E. Cormack, a specimen of *Planorbis* from Australia; one of Kauri (a resinous product, from which a varnish often substitnted for Copal is made in England) from New Zealand; and one of Protoxide of Iron from Staffordshire, England.

From Mr. Boch, Lava from Mauna Loa.

From Mr. E. A. Rowe, of Weaverville, specimens of Iridium.

From Mr. Camman, geological specimens from near Randolph City, Coose Bay.

The thanks of the Academy were voted for the above donations.

From Col. L. Ransom, a fragment of a fossil tree twelve inches in diameter, found about fifty miles north-east of Los Angeles.

From Dr. J. B. Trask, specimens of fishes and reptiles from Sacramento.

From Dr. A. Randall, specimens of *Astacus*, from Alviso.

Donations to the Library.

From Mr. W. E. Cormack, the Botanical and the Ichthyological Appendix to Franklin's Voyage, by John Richardson, for which the thanks of the Academy were tendered.

San Francisco, Feb. 18, 1856.

President in the Chair.

P. M. Randall, and S. Pinkham were elected Resident Members of the Academy. Capt. Kentrel was elected a Corresponding Member. Charles H. Cook was elected a Life Member.

Donations to the Cabinet.

From Col. L. Ransom, Lignite from Table Mountain, Butte Co.; Copper Ore, Hornblende Granite, and Iron Ore, from near Lake Elizabeth, and a specimen of Mygale.

From Mr. McCormick, limestone and Spar from Bone Cave, Bristol England; *Astacus Bartoni*, from Miramichi River, Nova Scotia; a parasitic plant from the Stanislaus River; and a "vegetable caterpillar" from New Zealand.

From Mr. G. W. Leihi, a specimen of Dendritic Gold, from Wall's Diggings, Sacramento Co.

From Mr. W. H. Hill, Fossilized Wood from Monte Christo.

From Mr. J. Brittan, a specimen of *Solecurtus*, from Monte Diabolo.

Donations to the Library.

From the Essex Institute, Salem, Mass., a Descriptive Catalogue, with a list of its officers and members.

The thanks of the Academy were voted for the above donations.

From Dr. J. B. Trask, American Journal of Science, Nos. 58 to 61.

San Francisco, Feb. 25th, 1856.

President in the Chair.

Donations to the Cabinet.

From Mr. E. J. Loomis, of Alameda, a Sparrow Hawk (*Tinnunculus Sparverins*). The thanks of the Academy were voted for the donation.

From Dr. R. K. Reid, of Stockton, a specimen of *Plonorbis* from Tulare Lake.

From Col. L. Ranson, Granite, and Translucent Quartz and Sand, from Folsom, Sacramento Co.

From Dr. A. Randall, Red Coral, and a Chiton covered with Corallines, from Monterey; two specimens of *Helix*, from Cypress Point; specimens, also, of *Cuphressus Macrocarpa* from Cypress Point.

From Dr. Veatch, of Red Bluffs, minerals and fossils from Lick Springs, Shasta Co.; also, a specimen of *Tritillaria* from the same locality.

Donations to the Library.

From the Boston Society of Natural History, one number of their proceedings, pp. 257 to 272, December, 1855.

From Mr. W. Heffley, Kane's Chemistry, by Draper.

Mr. T. J. Nevins presented an account of a very beautiful Lunar Rainbow, seen by him, at Alameda, Feb. 20, at 7 P. M. It was accompanied by a secondary bow, the arch being distinct and complete in both.

March 3, 1856.

President in the Chair.

Dr. B. F. Shumard, State Geologist of Missouri, was elected a Corresponding member.

Donations to the Cabinet.

From Mr. Lewis, a specimen of *Octopus*. The thanks of the Academy were voted for the donation.

From Col. Ranson, specimens of Cannel Coal, from England; also, an Indian pipe from San Bernardino.

Donations to the Library.

From W. P. Blake, Descriptions of Fossils and Shells, collected in California.

From Dr. Eckel, Foot-Prints of the Creator, by Hugh Miller.

March 10, 1856.

President in the Chair.

J. M. Alden, of the U. S. Coast Survey, was elected a Corresponding Member.

A. H. Jones and C. D. Shuepel, were elected Resident Members.

Donations to the Cabinet.

From N. A. Covarrubias, specimens of California Pearls,

From Mr. Peabody, seeds of Calacanthus, from the Geysers.

The thanks of the Academy were voted for the above donations.

From Mr. Tallant, specimens of *Ambystoma*, insects, and the ovum of a Shark.

From Col. Ransom, specimens of Sand-stone, Serpentine, and Chromic Iron.

A unanimous vote of thanks was tendered to Mr. Frank Baker, for a donation of carpets for the rooms of the Academy.

San Francisco, March 17, 1856.

President in the chair.

Donations to the Cabinet.

From Mrs. T. J. Nevins, specimens of flowers from Alameda.

From Mr. G. S. Morgan, Fossil Shells from Shoal-water Bay. The thanks of the Academy were ordered for the above donations.

From Mr. Tallant, specimens of *Nassa*, *Asteorcanthion*, *Grapsus*, &c., from North Beach.

From Dr. Lanszweert, specimens of *Notophithalmus tarodus*, Esch., from Mission Dolores.

Donations to the Library.

From Prof. J. D. Dana, "Science and the Bible—a Review of Prof. Lewis' 'Six Days of the Creation.'"

From the Boston Society Natural History, their Proceedings, pp. 283 to 278.

A communication was received from Mr. T. J. Nevius, giving an account of a thunder shower observed at Alameda.

Description of a new species of Ammonite and Baculite, from the Tertiary rocks of Chico Creek. By Dr. John B. Trask.

It is not without some hesitency that the announcement, of these genera is made at this time, as occuring in a more recent group than that assigned them by paleontologists of the present day. This is done, knowing well that the period at which they became extinct, is *placed* far below that of the lowest of the Tertiary groups. Still, it appears to me impossible to place the rocks containing these fossils, in any other than the period here given them, and as late at least as the superior portions of the upper Eocene. The associated fossils are for the most part of the present existing genera and species upon the coast, and if the per centage of existing genera is admitted as a rule to fix the relative age of rocks of this character, then it will be necessary to carry these beds into the Miocene periods.

The rocks are composed of about twenty genera, not more than two of which, do not exist upon the coast at the present time, and it may be doubted that those will yet be found. Eleven of those most easily made out, and which belong to the cabinet specimens, are figured in outline on the plate, (see plate 11,) together with accurate drawings of the jects of this paper, numbered 1 and 1. A, 2 and 2. A. plate 11; and will serve to convey a correct idea of the fossils of the group.

The figures in outline consist of cardium, tellina, mactra, natica, buccinnum, fusus, purpura, cerithium, turritella, &c. The bivalves not figured, consist of veneres, cytherea, lutraria, and several other genera. Had there been but a single specimen of the baculite and ammonite, their appearance in these rocks might have been considered purely an accidental circumstance, and occuring as a transported fragment from the districts to the north, and one hundred miles distant, where those genera abound. But as they are not found in the rocks of the same character or age, they cannot be attributed to that cause.

When we consider their number, and the relation they hold numerically to the associated fossils of the group, and promiscuous distribution, we cannot do otherwise than assign to them an age cotemporaneous throughout, and that they lived and died in those beds in which theirremains are now found.

My attention was called to these fossils by Dr. A. Randall, by whom they were found on Chico Creek during the past winter, and by him placed in the cabinet of the Academy. I have seen but one ammonite from this locality, but he has knowledge of three or more from the same place.

After examining the Baculite presented by him, I became convinced that the small cylindrical fossils, so frequent in those rocks belonged to this genus, and on inspecting the specimens in the cabinet, not less than nine different specimens were counted. Prior to this time, I had regarded those shells as dentalia, for which they would easiiy be mistaken, from their small size and the character of the fossils with which they are associated.

If an erroneons diagnosis has not been made in relation to the age of these rocks, (and of this fact I entertain no fear) they become a matter of much scientific interest, as they prove that the period at which these animals existed, descends to a later day than that now by general consent assigned them, and these rocks will demonstrate that fact most incontestibly,

The only question that can arise in this case is, whether we shall conform to the strict scholastic rule laid down, for the clasification of geological periods, and carry so extensive a group of decidedly tertiary deposits down to the cretaceous, with their present existing genera with them; or carry two genera higher up in those periods, and give them what they most unmistakably tell us, viz., a later animate existence than before known.

If the former case be applied, then it will become necessary to modify our opinions relating to tertiary rocks, particularly in this State, for most certain it is that the fossiliferous beds of Chico Creek are *more* recent than those of Ocoya (Pose Creek) Creek of Tulare county, the fossils of which have recently been examined by Mr. Conrad of Philadelphia, and by him pronounced to be of miocene date.

Ammonite (Lam) Chicoensis. Trask.

Plate II. *Fig.* 1 and 1. A.

Shell small; with two and one-half whorls; twenty-three tertuous angulate costae, each second or third rib terminating at the ventral edge of the outer whorl, the others pass beyond; two rows of small tubercles on the last whorl, the outer row and largest, situated on the dorsal edge, the inner row situated about one-fourth of the depth of the whorl from the dorsal edge, and becoming obsolete at the eighteenth rib; tubercles on the outer edge correspond to the number of costae on the whorl, siphuncle visible the entire length of the dorsum. Length, eleven-twentieths; depth, nine-twentieths; width, four-twentieths of an inch. Locality, Chico Creek, Cal.

Baculite (Lam) Chicoensis. Trask.

Plate II. *Fig.* 2 and 2. A.

Shells small; thin; compressed; smooth; latero-

dorsally sub compressed, latero-ventrally somewhat obtusely rounded. Section of the shell obovate. The above figures of natural size. Locality, Chico Creek, Cal.

Description of three new species of the Genus Plagiostoma, from the Cretaceous rocks of Los Angeles. By Dr. John B. Trask.

Up to the present time, no mention has been made of the occurrence of the Cretaceous rocks in this State. The researches of F. Roemer, in Western Texas and New Mexico, demonstrated their existence to the middle and southern portions of this territory, at which point he left them.

A late traveller, Julius Froebel, extended his observations over the ground of Roemer in part, and continued the same into California. In a conversation with the former gentleman, in 1854, upon the fossils of New Mexico and westward of that country, he intimated the probable existence of the Cretaceous rocks west of the Colorado. The fossils collected by him west of that point, were not sufficiently well defined, however, to base a positive conclusion upon, and place the matter beyond a doubt. I feel satisfied at the present time that most of those fossils are referable to that period, and that the opinion he then advanced was well grounded.

Since that time I have been fortunate enough to discover fossils, of as much antiquity at least as those of Western Texas, and probably still lower in the series, the rocks containing them forming the coast of the Pacific Ocean in this State. There can be no doubt therefore at present, that the Cretaceous rocks extend from the Atlantic to the Pacific.

The rocks in which these fossils are found, occur at San Pedro, in the county of Los Angeles, immediately upon the coast, and underlying the superficial tertiary beds (lately denominated recent formations by Mr. T. Conrad) of this locality. I have some hesitancy in placing these rocks so high up in the geological series, as the position here assigned them, but as the associated fossils are as yet somewhat obscure and ill defined, it is thought best to place them here for the present, or until farther examination of their fossils shall classify them otherwise.

The tertiary deposits at this place are about thirty feet in depth, and have a low northerly dip; about twenty feet of this deposit is made up of beds of fossil diatomacea, the upper stratum of which is white, and similar in appearance to that found at Monterey, but much less dense, the forms differ but little from hat deposit.

Beneath the tertiary beds, a dark, soft, marly deposit crops out but a few feet above tide water, having a northerly dip of about fifty degrees, and extending along the beach for three-fourths of a mile.—They contain the fossils described and figured below, associated with small crustaceans and coralines, the latter too fragile to admit of demonstration. Conformable to these beds, along the shore to the west and north, are beds of a yellowish and buff-colored limestone, resembling a coarse variety of lithographic stone, containing fossil crustaceans of small size, none of which have yet been found sufficiently perfect to admit of a description.

The fossils here described and figured, are all from very perfect casts; the fine striae and small fold upon the auricles, are as perfect as they possibly could have been upon the shell originally.

The fossils I have refered to the genus Plagiostoma of Sowerby, but having the figures of but two species of that genus, and no description whatever, I am compelled to omit reference to those heretofore described, that may simulate these in form or otherwise.

PLAGIOSTOMA (SOW) PEDRONA. Trask.

Plate III. *Fig.* 1.

Shell compressed; sub-triangular, with eight or nine flatly rounded concentric annulations, which are nearly as distinctly marked on the interior of the valve for about half the height from the ventral margin; (see fig. 1. A.) beaks acute at the apex, and as high as the line of the auricles; anterior auricle rounded in front, and has a small, thin fold extending from the umbone to the centre of its anterior margin, and is covered with about thirteen small, rounded, radiating striae, which converge at the beak; beaks at the anterior third; sub-acute; anterior margin rounded, and somewhat produced; ventral margin smoothly arched; posterior margin rounded, becoming slightly arcuate toward the dorsam of the shell; posterior auricle angulate, and obtusely truncate posteriorly. Length one and eight-twentieths of an inch; height one and four-twentieths of an inch. Locality, San Pedro, Cal.

P. ANNULATUS. Trask.

Plate III. *Fig.* 2.

Shell compressed; obliquely rounded; five to seven broad concentric annulations; anterior margin obtusely rounded; ventral margin rounded; posterior margin somewhat produced; ventrally, and becoming slightly arched toward the dorsum; beak at the anterior half, and slightly raised above the line of the auricles; anterior auricle angular, with about twelve fine striae divergent from the umbones; posterior auricle subangulate, and truncate posteriorly. Length, one and five-twentieths of an inch; height, one and three-twentieths of an inch. Locality, San Pedro, Cal. Found with the preceding, There were three specimens of this species found—the left valve was used for the figure from its being the most perfect.

P. TRUNCATA. Trask.

Plate III. *Fig* 3.

Shell compressed; rotund-quadrate; about eight flattened, slightly rounded, concentric annulations; anterior margin rounded, and somewhat obtuse below the middle; ventral margin orbicular; posterior margin bluntly rounded; posterior dorsal margin subangulate; beaks acute above the line of the auricles; anterior auricle rounded in front, striate, and has a small fold extending from the umbones to its anterior margin above its middle, posterior auricle angulate and obtuse posteriorly; beaks anterior to the middle. Length, one and one-tenth inches;—height, one inch. Locality, San Pedro, Cal. Found with the preceding species.

SAN FRANCISCO, March 24, 1856.

President in the chair.

Donations to the Cabinet.

From Dr. J. A. Veatch, plants from the vicinity of Lick Springs, Shasta county.

From Mr. J. P. Haven, a large collection of marine shells, from the Islands of the South Pacific; the skull of a Barbaroussa; specimens of Corals; a Flying Fish, and articles manufactured by the natives of the Pacific Islands; also, a large Mahogany Bookcase.

From Capt. Maltby, specimens of gold-bearing quartz from Kern River.

From Mr. D. S. Marvin, specimens of *Scolopenda*, from Forest City.

From Mr. J. P. Buckley, a collection of Insects. The thanks of the Academy were voted for the above donations; also, to the Pacific Express Co. for the gratuitous carriage of specimens.

Donations to the Library.

From the Linnean Society, of London, the second volume of their Proceedings.

San Francisco, March 31, 1856.

President in the Chair.

Donations to the Cabinet.

From the Arizona Mining Company, Red Oxide of Copper, containing eighty per cent, of the metal; Grey Sulphuret of Copper; Malachite, and Black Oxide of Copper from Arizona.

From Mr. George Black, specimens from the cretaceous rocks of Vancouver's Island, consisting of Inoceramus, Ammonites, Baculites, &c. The thanks of the Academy were voted for the above donations.

From Dr. Eckel, a specimen of *Gordius*, from Grass Valley.

From Dr. Lanszweert, two larvae of *Dyticus* and three specimens of *Collambites*. Dr. L. mentioned that the *Saturnia Californica*, our native Silk Worm, had made its appearance at the same time as the blossoming of the Ceanothus.

Dr. Kellogg exhibited a drawing of the *Balsamorhiza deltoidea*, or Balsam Root Sunflower. The roots are baked in the earth and eaten by the Indians. This specimen was brought from Red Bluffs, Shasta county, by Dr. J. A. Veatch; a specimen from Placerville, has no serratures at the base of the leaf (?) like the present one.

Donations to the Library.

From Mr. W. P. Blake, a pamphlet containing papers read by him at the meeting of the Association for the Advancement of Science, at Providence, R. I.

The American Journal of Science and Arts, Vol. 21 No. 62, was received.

San Francisco, April 7, 1856.

Dr. Trask in the chair.

Donations to the Cabinet.

From Dr. Lanszweert, a species of Planorbis, believed to be new.

From Dr. Trask, a specimen of Graphite from Mt. Washington Mine, Shasta Co., from a bed seventeen feet thick; also, two specimens of fine Limestone from near Vaca Valley, Solano Co.—it receives a high polish and would answer for ornamental purposes—it is abundant; also, three specimens of *Lutraria* from Tomales Bay.

San Francisco, April 14, 1856.

Mr. F. Marriot and Mr. Thos. Rollandson were elected Resident Members. Dr. Henry Wheatland, of Salem, Mass., was elected a Corresponding Member.

Donations to the Cabinet.

From Mr. J. C. Brown, three specimens of Sulphur, one of Alum, one of Selenite, four of Copper, one of Scoria, one of Efflorescent Sulphur, one of Limestone and one Cactus, from Tres Virgenes.

From Mr. Bloomer was received a donation of Plates of Numbers for Cases.

San Francisco, April 21. 1856.

Dr. Kellogg in the chair.

From Dr. Lanszwert, were received specimens of Coleopterous and Dipterous insects.

From the Boston Society of Natural History was received a copy of their Proceedings, Vol. 5, pp. 289, 304.

Dr. Kellogg's Paper.

Dr. Kellogg exhibited a drawing and specimen of an *Ephedra* or Joint Fir:—

A low shrub, known among southern miners, as Tea Twigs, from its general use as tea. Many prefer it to the China tea, but we think nothing known is likely to equal, much less supercede, the latter; although, from actual experience, we feel confident our species must prove one of the very best substitutes—it is scarcely to be compared with many herbs we hear so often extolled in this respect. The tea is a tonic astringent, with the odor of cinchona, and evidently a restorative stomachic. It leaves a rich, mellow, persistent, somewhat aromatic flavor upon the palate, similar to the best black tea; and we think must prove salutary in relaxations, chronic diarrhœas, etc.; in fact, one species of this family, found in Asia, was formerly kept in the shops and used by physicians.

Capt. Maltby, of Kern River, has the thanks of the Academy for these specimens. We are greatly in want of the fruit and flowers, and hope soon to receive them. This is probably the *E. Americana*. It differs from the species found at Salt Lake. The green branches are clustered and opposite, without leaves, in place of which are two opposite, very minute membranous-like scales, of a brown madder color, without points, the twigs striated, somewhat seven sided, jointed like an Equisetum or Scouring Rush—they readily separate and fall apart at these joints, hence the origin of the common name *Joint Firs*.

San Francisco, April 28, 1856.

President in the Chair.

M. A. Le Plongeon was elected a Resident Member.

From Mr. Tallant were received numerous specimens of Algæ, Sertulariæ, &c.

The following paper, "On some Californian Crustacea," was received from Mr. Wm. Stimpson, Zoologist to the U. S. Expedition to the North Pacific.

The Californian coast is apparently not as rich in marine invertebrata, especially of the lower orders, as the generality of coasts in the same latitude; which may be owing to the want of variety in station, and the paucity of inlets, bays, and islands, which afford shelter to such animals. The Crustacea, however, although they cannot be said to be numerous, can scarcely be included in this remark, as a respec-

table number of all orders, and even a considerable one of Macroura, are now known to exist on these shores. Scarce any of these were described by the earlier authors, and I am not aware that any species is mentioned as inhabiting Upper California by Herbst, Latreille, Lamarck, or even by Milne Edwards. Most of those already known have been brought into notice since 1840, and have been described, or remarked upon, by Owen, (*Zool. of Beechey's Voy., Crust.,*) Randall, (*Jour. Acad. Nat. Sci.*, Philad., vol. viii.,) Gibbes, (*Proc. Am. Assoc.*, Charleston, 1850, vol. iii.,) and Dana, (*Crustacea of the U. S. Exploring Expedition*).

The following paper contains notes on such species as were collected during a short stay in California during the winter of 1855–6.

Cancer magister, Dana, (*Proc. Am. Acad. Nat. Sci.*, May, 1851, p. 73), the common large crab, is very abundant about the wharves of San Francisco. It is of a light reddish brown color, darkest anteriorly; often light orange below; the inner sides of the anterior feet crimson.

Cancer antennaria, *St., n. s.* Carapax convex, much undulated, minutely granulated, its width to its length as 38 to 25. External antennæ very large, hairy, of a length equalling two-fifths that of the carapax. Antero-lateral margins with nine sharp teeth; the posterior are most prominent in young individuals, but drawn considerably inward, and belonging rather to the postero-lateral margin. In the angles between the teeth the edges are strongly denticulated. Third article of external maxillipeds with long hairs on the terminal edge. Carpus and hand in the adult smoothly rounded, and minutely granulated; in the young partially covered above with small spiniform tubercles, and the outer surface of the hand costate. The posterior four pairs of feet, and the margin of parts generally on the inferior surface very hairy. Tarsi with thick brushes. Color dark purplish-brown. Width of a large specimen four inches. Found on rocky bottoms in two or three fathoms, about the mouth of the bay of San Francisco.

Cancer gracilis, Dana. (*l. c.*, May, 1851, p. 73.) This species is said to occur in San Francisco Bay by its original describer. It must, however, be exceedingly rare here, as I have never met with it after repeated search. It would seem to be more common further down the coast, towards San Diego, from which locality I have received a specimen from Dr. Ayres.

Another large crab is common in the bay, which may prove, upon comparison, to be the *Platycarcinus productus* of Randall, (*Jour. Acad. Nat. Sci.*, Philad., viii., 115.) I would apply to it, provisionally, the name of Cancer perlatus. Carapax of great width in proportion to its length, *i. e.*, as 5 to 3; rather broadly concave near the margins, convex about the middle and posteriorly; its surface but little undulated, smooth and ungranulated; antero-lateral margins with nine teeth, blunt and not very prominent; the anterior are least projecting, and of greatest width; frontal margin between the exterior antennæ trilobate, lobes not prominent; superior edge of postero-lateral margins granulated. External maxillipeds smooth in the male, the third article slightly pubescent on the edges in the female; in both this article is deeply sinuated for the insertion of the fourth, its interior apex being considerably produced. Hand and carpus somewhat irregularly nodulose above, the nodules forming two irregular rows along the superior edge of the hand, which is obsoletely 4-costate on the outer surface. Posterior feet rather compressed, second articles hairy along the superior crest; penultimate article of second pair with a tuft near its extremity inferiorly; tarsi with three longitudinal brushes of short thick hair along the angles, the superior and anterior one of which is obsolete in the fifth pair of feet, and the superior and posterior one almost wanting in the others. This species is of a dark red or madder-color above, feet mottled; below dirty white. Length of carapax three and three-fifth inches; width six inches. Found in company with *C. magister*, and commonly seen with it in the markets.

Pseudograpsus Oregonensis, Dana, (*l. c.*, 1851, p. 248,) is found in the coves of San Francisco Bay, living generally among pebbles and boulders on muddy shores, from half-tide to low water mark. It is bluish-gray above, darkened anteriorly with clouds of dark-red dots; the feet, with the exception of the light-colored anterior pair, are sparsely dotted with red.

Pseudograpsus nudus, Dana, (*l. c.*, 1851, p. 249,) is found among the rocks, in the clearer water, near the open sea. It is of a dark olive, sometimes of a dark mahogany color; and is easily distinguished from the preceding species by the glossy smoothness of its posterior feet.

Echidnocerus setimanus. *Ctenorhinus setimanus*, Gibbons. (*Proc. Cal. Nat. Sci.*, I. 48.) This fine species is perhaps identical with that of Oregon, (*E. cibarius*, White). It differs frnm the Sitka species only in the shorter and blunter spines of the antero-lateral margins and of the feet. The genus *Echidnocerus* will probably be found synonymous with some one of the subdivisions of the *Lithodina* recently established by Brandt (*vid. Bulletin, Scient. de l'Acad. imp. de St. Petersb., cl. phys. mathem.*, T. vii., p. 174, 175.)

The "lobster" of the San Francisco market is probably the *Palinurus interruptus* of Randall. It belongs to the genus *Panulirus* of Gray. It is brought from the coast to the southward, and Dr. Trask informs me that it is very common on a rocky ledge in ten or twelve fathoms off Santa Barbara.

Callianassa occidentalis, St. Eyes subtriangular, closely approximated at their bases, but diverging and curving a little upward at their pointed tips. Length of the external antennæ two-thirds that of the body. The larger of the anterior feet smooth and glossy on the sides; the second article denticulated along the inferior edge. Hánd scarcely longer, and perceptibly of less height than the carpus; slightly ciliate on the edges, and especially toward the extremities. A considerable hiatus intervenes between the fingers when closed, and between their bases arises a small but prominent tooth, which curves upward. Moveable finger nearly half as long as the hand, rather slender, with hooked extremity; its tooth little projecting, formed by a swelling out of the inferior edge, which is minutely denticulated. Thumb regularly but very slightly curved, Color a delicate orange; anterior feet rose-colored. Length four inches. This species lives in the holes which are seen in such numbers at low water on the smooth sandy beaches near the entrance of San Francisco Bay. In *C. gigas*, as described by Dana, the carpus is proportionally very much shorter than in this species.

Gebia Californica, St Stomachal region of carapax hirsute only on the anterior two-thirds, and marked with three longitudinal furrows, the median of which is much shorter than the two lateral

or marginal ones. Anterior feet very hairy on the edges; carpus with two or three sharp spines at the inner angle; fingers both toothed near their inner bases; the lower or immovable one rather slender and curved. Terminal segment of abdomen large, transverse, and projecting a little beyond the margin of the lateral plates. Length 1¾ inches. From the coast near Monterey. *G. Pugettensis* differs from this species in that its carapax is covered with pubesence anteriorly as far as the transverse dorsal suture; and in wanting teeth on the fingers.

Crangon Franciscorum, St. More slender and less depressed than is usual in the genus. Rostrum small, subtriangular, rounded in front. Spines of thorax nearly as in *C. vulgaris*. Palm of hand very oblique, inclining to longitudinal, occupying nearly one-third of the length of its inner side; the thumb-like process long and spiniform. Sternal spine long, and followed by two or three sharp tubercles on the succeeding segments. A small sharp spine on each side of the abdomen at the supero-lateral angle of the antepenultimate segment. Terminal segment very long, slender, and pointed, smoothly rounded above. Color light and dark yellowish-gray, mottled. Eyes salmon colored in life. Length three inches. This is the common market shrimp of San Francisco, and is found abundantly in the sandy coves around the bay.

Crangon nigricauda, St. This species resembles very closely the common shrimp of Europe and of the Northern United States, and is probably the species mentioned by Owen as occurring at Monterey, which he considers identical with *C. vulgaris*. (*vid. Zool. of Beechey's Voy.*, p. 87.) It may, however, be distingnished from that species by its smaller and comparatively shorter hand, and by the narrower and more pointed terminal abdominal segment which has also a shallow longitudinal furrow on the upper surface. The flagella of the internal antennæ are unequal in length, the longest but little surpassing the extremities of the lamellæ of the external antennæ. Rostrum very small, nearly oblong, with its extremity rounded. Sternal spine single, directed obliquely forward. Color blackish above, darkest at the tail. Hands of a lilac tint. Length 2½ inches. Found in deeper water than the preceding species, from which this is easily distinguished by its shorter, broader, and more depressed form, and by its darker color.

Hippolyte palpator, Owen. (*l. c.*, Pl. xxviii. f. 3.) Color pale yellowish, with transverse streaks of crimson at the articulations of the segments and on the legs. It is not uncommon on the sandy bottom of the bay in from five to ten fathoms.

Hippolyte Brevirostris, Dana. (*l. c.*, Tau., 1852, p. 24.) Of a uniform pale lake-color. A larger species than the preceding. Taken in the Bay of San Francisco.

Idotæa consolidata, St. Body convex, broadest at the fourth thoracic segment; first four segments of thorax larger in every dimension than the last three, convex, and with an umbo near the lateral margins, which are turned up a little. No distinct epimera. Abdomen convex, formed of a single piece, with a slight transverse depressed line indicating the partial separation of an anterior segment; narrowed toward the posterior extremity, which is terminated by a little concavity. Eyes strongly convex. Exterior antennæ half as long as the body; flagella with nine elongated articles. Internal antennæ superior, without flagella, and reaching to the fourth article of the external ones. Feet with long terminal articles or fingers. Color reddish or brownish, mottled.—Length, 0.4 inch; breadth, 0.18 in. Taken in ten fathoms sand, near the entrance of the Bay of San Francisco.

Philoscia tuberculata, St. Body somewhat loosely articulated anteriorly, covered above with granulations, or more properly minute tubercles, which are somewhat variable in size, but generally as large anteriorly as posteriorly, and show a tendency to arrangement in transverse rows; two or three to each segment. Antennæ inserted in the cavities between the middle and the side lobes of the head, which are very prominent; they are composed of seven articles, the last two forming the flagellum.—Caudal segment small, narrow, with a rounded obtuse point. Terminal article of external ramus of caudal appendage styliform, tapering to an obtuse point, and reaching beyond the extremity of the abdomen to a distance equalling half its length. Color dark gray, almost black; below greenish white.—Length 0.33 inch. Found under dead leaves, sticks, etc., in damp places, and along the margins of brooks.

Caprella Californica, St. Antennæ exceedingly variable in their proportions; flagella of superior ones 10—15-articulate; inferior ones sub-pediform. A more or less developed spine, which curves forward, and is sometimes of considerable length, is placed upon the back at the anterior extremity of the first thoracic segment. Hand of second pair of feet generally three-toothed, teeth (in full-grown specimens) about equal in size, and placed mostly toward the outer extremity of the hand. Two or three sharp tubercles along the sides of the branchiferous segment; and a short dorsal spine on each of the posterior segments. Hands of posterior feet slender. Color variable. Length one inch. Found on seaweeds, etc., below low water mark in San Francisco Bay.

Corophium spinicorne, St. Inferior antennæ half as long as the body, without flagella, and with a large, curved, sharp-pointed spine at the inferior extremity of the very thick third article. Superior antennæ nearly as long as the inferior ones. Feet with plumose hairs; those of the first pair with minute subcheliform hands, palm transverse, third and fourth articles with long setæ along the inferior edge. Feet of the second pair simple, but with the third and fourth articles conjoined laterally, as if forming a hand; the fourth article being placed inferiorly and fringed with long hairs. Caudal stylets as in *C. longicorne*, except that the external ramus in the second pair is not cultriform. Color brownish, darkest at the head, with transverse bands of light yellow corresponding to the articulations.—Antennæ brownish. Length 0.4 inch. Found among confervæ, etc., in the salt marshes on the shores of San Francisco Bay.

Erichthonius rapax, St. Small epimera on the first thoracic segment, larger ones on the second, both narrow, not touching each other. Antennæ subequal, one-third as long as the body; superior ones with 6-articulate flagella; inferior ones strongly toothed at the inferior angle of their basal segment, and with 10-articulate flagella. Mandibular palpi reaching beyond the middle of basal article of the superior antennæ. Eyes on lobes which protrude forward between the bases of the antennæ. Hands of the first pair small, subcheliform; those of the second pair of great size, with a bi-articulate finger, and a thumb one-third as long as the finger, with a strong tooth at the middle of its inner side. Color brown-

ish. Length one-fourth of an inch. Dredged in two fathoms sand, in San Francisco Bay.

ORCHESTIA TRASKIANA, St. *Male*, with the flagella of the inferior antennæ forming more than half their length, and consisting of fourteen articles; superior antennæ reaching to the extremity of the second article of the inferior ones; feet of the first pair with a small, somewhat trilobate hand and minute finger, as in *O. littorea*, *pollicifera*, etc.; feet of the second pair with an ovate hand, with no teeth on the oblique, convex, spinous palm (which terminates posteriorly in a slight notch) nor on the finger, which is less than half as long as the hand. In the *female* the first pair of hands resembles those of the male, except in being smaller, having less produced lobes and a comparatively longer finger; those of the second pair with a small elongated hand, with a rounded extremity and a rudimentary finger applied at about the middle of one edge, somewhat as in *O. insculpta*, Dana. In *both* the feet of the sixth and seventh pairs are of about equal length. Eyes rounded, black. Color light-grey, sometimes greenish or brownish, always very pale. Length three-fifths inch. Very common among the rejectimenta along high-water mark on the shores of San Francisco Bay.

ALLORCHESTES SEMINUDA, St. Body compressed; eye broad, suboval, the posterior side straight, the anterior slightly concave; superior antennæ with 13-articulate flagella, and three-fifths as long as the inferior ones, which are one-third as long as the body, and have 14-articulate flagella. Setæ on both pairs of antennæ few, very short and almost obsolete. Hand of 1st pair of feet short, palm oblique, finger of moderate size; carpus with a rather long projection of its antero-inferior angle; hand of the 2nd pair short, ovate, deeply excavated below for the reception of the point of the finger, which article is more than half as long as the hand. Color pale green; antennæ red. Length half an inch. Found on sea-weed, and among barnacles, on piles, stones, etc., at half tide in San Francisco harbor.

MARA CONFERVICOLA, St. Fourth, fifth, and sixth articles of abdomen angular and setose on the dorsal surface. Eye broad, subreniform. Superior antennæ less than half as long as the body, with a thickened basal article, a very slender 24-articulate flagellum twice as long as its peduncle, and a 5-articulate appendiculum. Inferior antennæ as long as the superior ones, with a 12-articulate flagellum of about equal length with its peduncle. Hands four, rather small, of similar size and shape, truncate, palm slightly concave, with blunt spinules; finger short, stout, curved, with an almost obsolete tooth at the middle of its inner side. Feet of the fifth pair scarcely more than half as long as those of the sixth and seventh, which are about equal in length.—Rami of the posterior pair of caudal stylets unequal; external ones long, considerably flattened, setose along their jagged edges; inner rami very small.—Color dark brownish, rarely blackish. Length 0.4 inch. Found among confervæ, etc., in salt marshes on the shores of San Francisco Bay.

PHOXUS GRANDIS, St. Large; body thick, robust, broad; rostrum lamelliform, expanded over the bases of the superior antennæ, with broadly rounded extremity. Superior antennæ bi-flagellate, the inner flagella very little smaller than the outer ones; both 12-articulate; penultimate article of peduncle entirely concealed beneath the rostrum. Inferior antennæ a little longer than the superior ones; terminal article of peduncle broad at its extremity, where its outer angle is rounded and a little produced;—its inner angle bearing the 15-articulate flagellum. Eye transversely oblong. Feet covered with simple hairs. Those of the first and second pairs with small subcheliform hands; those of the third and fourth pairs with the third and fourth articles dilated, the fifth slender and the sixth minute. Feet of the posterior three pairs very much expanded, those of the sixth pair longest. Caudal stylets of the first and second pairs with short, styliform rami, the inner ones being a little shorter than the outer ones; those of the third pair with long, flattened, equal rami, the outer ones spinulose along the outer edges, both fringed with long hair on the inner edges. Terminal spines of considerable length.—Color yellowish-white. Length, 0.5 inch. Dredged in ten fathoms, on a sandy bottom, in the channel near the entrance of San Francisco Bay.

SAN FRANCISCO, May 5, 1856.

President in the chair.

Donations to the Cabinet.

From Mr. Thomas Marston, two specimens of Lignite, from Douglass Flat.

From Rev. Mr. Blakeslee, specimens of Tufa, Tremolite, Sulphuret of Iron and Iron Ochre, from Iowa Hill.

From Mr. James L. Hawks, a root used by the inhabitants of Western Mexico as a cure for the bite of venomous reptiles; its native name is Huaco. The thanks of the Academy were voted for the above donations.

From Dr. Trask, a valuable series of specimens from the gold mines of California, together with specimens of volcanic rocks from Sonoma and Placer counties.

From Capt. C. J. W. Russell, a specimen of Octopus, from San Francisco Bay; also, a Scorpion from Sinaloa, Mexico.

From Mr. Sloat, a Tarantula from the Warm Springs, near San Jose.

SAN FRANCISCO, May 12, 1856.

President in the chair.

Sir Wm. J. Hooker, Director of the Royal Gardens at Kew, was elected an Honorary Member of the Academy.

Mr. Andrew Garrett, of Hilo, Hawaii, was elected a Corresponding Member.

Donations to the Cabinet.

From Mr. G. B. Williams, a Mastodon Tooth from Kincaid's Flat.

From Mr. Smith, a specimen of Selenite from La Paz, Mexico.

From Dr. Trask, two specimens of *Callianassa occidentalis*, Stimpson, from the Bay of San Francisco; also, numerous specimens of minerals, shells, etc.

From Col. Ransom, a specimen of *Ostraea*, from the mountains sixty miles east of San Louis Obispo; it is 13¼ inches in length, and 7½ inches in depth, and weighs 18 pounds.

From Capt. Russell, four packages of seeds from Mexico.

From Dr. Eckel, specimens of Copper; also, of petrified wood, from Arizona.

San Francisco, May 19, 1856.

President in the chair.

Donations to the Cabinet.

From Dr. Stillman, specimens of Bulimus, from Los Moras, Texas.

From Mr. Sherman Day, specimens of Trachyte and Volcanic Tufa, from near Carson's Pass.

Several specimens of Geodes, from near Volcano, Amador county, were deposited by Mr. H. Camp.

A very large Patella, from La Paz, was deposited by Capt Russell.

San Francisco, May 26, 1856.

President in the chair.

Donations to the Cabinet.

From Mr. S. W. Levy, specimens of Phrynosoma, from Knight's Ferry.

From Mr. E. Mangan, a specimen of Chromic Iron from the foot hills west of Tulare Lake.

From Mr. Joseph Briton, specimens of fossils from Monte Diabolo. The thanks of the Academy were voted for the above donations.

San Francisco, June 2, 1856.

President in the chair.

Donations to the Cabinet,

From Mr. A. Frieck, specimens of fruits, lava, etc., from the Sandwich Islands.

From Mr. Joshua E. Clayton, specimens of ores, etc., from Mariposa county.

From Mrs. T. J. Nevins, a collection of flowers from Alameda. The thanks of the Academy were voted for the above donations.

From the Boston Society of Natural History, was received a copy of their proceedings, Vol. 5, pp. 305, 320.

San Francisco, June 16, 1856.

President in the chair.

Mr. Moss was elected a Resident Member of the Academy.

Donations to the Cabinet.

From Capt. T. D. Johns, fossil cetaceau vertebral, from Coose Bay.

From Mr. Jerome Brown, Shaw's Flat, Tuolumne county, Mastodon teeth, from Stone Gulch.

The thanks of the Academy were voted for the above donations.

From Dr. Trask, 126 species of Achatiaella, from the Hawaiian Islands.

Donations to the Library.

From Mr. Nevins, Patent Office Report for 1853, and the Ninth Annual Report of the Smithsonian Institution.

San Francisco, July 7, 1856.

President in the chair.

Donations to the Cabinet.

From Mr. F. Bonard, specimens of Lava from Mauna Loa

From Mr. McMullen, specimens of birds, from the Cosumnes river.

The thanks of the Academy were voted for the above donations.

From Col. Ransom, a specimen of foliated Graphite, found fifty miles east of San Bernardino.

Donations to the Library.

From Dr. Eckel, Bibliotheca Historico-Geographica, 2 vols., and Bibliotheca Historico-Naturalis, 2 vols.

Proceedings of the Elliott Society of Natural History, Charleston, S. C., from the Society.

Reports of explorations for a Pacific Railroad.

San Francisco, July 21, 1856.

President in the chair.

Donations to the Cabinet.

From Dr. Stillman, Crustacea and Echinodermata from Panama Bay.

From Mr. T. J. Barnes, silicified wood from Arkansas Diggings, Amador county.

From Miss K. Palmer, the nest of a humming bird, from Alameda

From Mr. Hough, of Oakland, the fruit of *Ribes aureum* and a specimen of *Sarcodes sanguinea.*

The thanks of the Academy were voted for the above donations.

From Dr. Trask, specimens of coal with fossil Equisetaceae, from Scotland; also, several specimens of *Eutainia.*

From Mr. Isaac Lee, was received a pamphlet, containing several papers published by him.

Letters were read from the Royal Society of London, Prof J. Henry and Lieut. M. F. Maury.

San Francisco, July 28, 1856.

President in the Chair.

The following amendments to the By-Laws were unanimously adopted:

"From and after this date, no matters for exhibition presented by any resident member, shall be entered on the minutes of the association."

"The publication of any paper in the departments of Zoology and Botany, must be accompanied by the specimens described or drawings of the same, in fit condition for preservation, which shall become the property of the association."

Mr. A. F. Beardslee deposited for the Library, Michaux & Nuttall's North American Sylva; also a pamphlet containing descriptions of new coniferous trees of California.

B. B. Redding & Co. presented one volume of the *Democratic State Journal.*

AUGUST 25, 1856.

Vice-President in the Chair.

Mr. A. F. Beardslee was elected a Corresponding member.

Donations to the Cabinet.

From Mr. D. E. Hough—a specimen of *Salmo rivularis*, Ayres, from Temascal Creek.

From Mr. Bloomer—a specimen of Limestone from Suisun Valley.

From Dr. Lanszwert—specimens of *Eutainia dorsalis*, *Pituophis catenifer* and *Apodichthys flavidus*.

From Dr. Eckel—two specimens of *Tænia solium*.

Donations to the Library.

From Prof. J. D. Dana—"Science and the Bible," part 2d.

From Mr. Schmolz—"Atomycwichts tablen zur berechnung, von R. Weber."

American Journal of Science, vol. 22, No. 64, was received.

OCTOBER 20, 1856.

President in the Chair.

Donations to the Cabinet.

From Mr. Charles Earl—specimens of insects and reptiles, from Chihuahua, Mexico.

From Dr. Holman—specimens of *Platichthys* from the Rio Grande, near Panama

From Dr. Veatch—specimens of Sulphur, Travertine, Gelatinous Silex, and Chalcedony, from the Geysers; also a specimen of Limonite from near McDonald's Ranch, Berryessa Valley.

From Mr. J. M. Alden—a specimen of *Scomber Diego*, from the Santa Barbara Channel.

From Col. Ransom—specimens of minerals from the Great Basin, consisting of Obsidian, Pumice, Travertine, and Copper ore; also a package of bulbous roots called by the Indians of the Basin, "Taboos," much used by them as food.

From Dr. Stillman—specimens of *Asteracanthion*, *Cidaris*, *Hemiramphus* and *Chaetodon*, from Panama.

Dr. W. O. Ayres presented the following description of a new species of mackerel:

SCOMBER DIEGO, Ayres.

Body elongated, compressed, the thickness being contained nearly twice in the length. (The specimens described were taken while the fish were not in full condition, still the *Scomber Diego* is at all times doubtless less rounded than *Scomber scomber* or *Scomber vernalis*.) Length of the head contained four times in the entire length; depth of the body equalling three-fourths the length of the head.

Eyes large, rounded, separated from each other by a space equal to their own diameter, which is contained four times in the length of the head. Muzzle pointed, jaws equal; gape of the mouth moderate, a line vertical to the tip of the maxillary crossing the anterior part of the eye. Maxillary entirely and intermaxillary in large part received under a sheath formed by the anterior suborbital.

Teeth numerous, very fine and even, in both jaws, and on the palatines, and a few on the vomer.—Pharyngeals densely crowded. Anterior nostril the smaller, circular.

Scales numerous, rather small, soft, covering the body, the bases of the second dorsal, and caudal, and the upper portion of the operculum and preoperculum; remainder of the head naked, very smooth.

Lateral line very nearly straight. The first dorsal fin, which is thin and delicate, arising at about one third of the distance from the tip of the snout to the extremity of the tail, is triangular in form, the second ray equalling nearly the length of the fin or half the length of the head. The fin when depressed is entirely received in a groove.

The distance between the two dorsals is equal to the length of the first. The second is low, highest in front, tapering posteriorly, its greatest height being less than half the height of the first dorsal, and its length equal to twice its height. The space between the second dorsal and the caudal is occupied by five finlets at about equal distances, the last having nearly twice the height of the others.

The anal fin, arising a little further back than the second dorsal, is entirely similar to that fin in form and size. Between it and the caudal are five finlets, corresponding to those of the back.

Pectoral fins somewhat pointed, their length contained a little more than twice in their height, which latter is not quite equal to that of the first dorsal.

Ventrals a little posterior to the pectorals, which they scarcely equal in height.

Caudal fin very deeply forked, the height of the central rays being only one fourth of that of the longest, which latter equal one-seventh of the length of the fish. Depth of the body at the origin of the caudal fin only one-half of the diameter of the eye

D. 9 12; A. 1 12; P. 19; V. 1 5; C. 8.1.6.5.1.7.

Color, dark bluish green, with darker waving lines above; head greenish brown above; cheeks, sides and abdomen bright silvery. Tongue and membrane of the mouth and throat clouded, sometimes almost black. Fins agreeing in color with the part of the body to which they are attached.

No specimens have yet been seen measuring more than eleven inches in length, though it is stated that they sometimes exceed that size by two or three inches.

This fish is the only Mackerel known to inhabit the coast of California. It occurs from Monterey to San Diego, and probably extends its range much further in both directions. We hear, in fact, of Mackerel along our northern shores, but have seen no specimens, and of course cannot decide upon the species. None were contained in the collections made in Washington and Oregon by Dr. Cooper and Lieut. Trowbridge.

S. Diego is allied very closely indeed to *S. vernalis*, the mackerel of our New England coast. It differs however in the form and proportions of the head, in the contour of the body, in the eyes, the lateral line and the fins.

We are not sufficiently acquainted with its history to speak with confidence in regard to its migrations. Most of the specimens received have been taken in the Santa Barbara Channel, in the months of August and September. It is quite abundant, though never coming in such great numbers as the Atlantic species. No attempts have yet been made to render its capture a source of profit.

SAN FARNCISCO, Jan. 12, 1857.

President in the Chair.

Dr. Trask read the following paper:

At the close of 1855, I presented to the Association a statement of the occurrence of earthquakes in this State for that year and a term of years preceding.

During the year just passed, I have kept a careful record of these phenomena, that have been noticed in this city, and other parts of the State, and which will be found below, with their date, and the hour of the day on which they took place, and they comprise all that have occurred, with perhaps two exceptions, the date for which were so obscure as to render it impossible to determine with accuracy the precise period of their occurrence. So far as I am informed, those shocks which have taken place in this State during the past year have not been marked with more severity than has been usual in years preceding, frequently amounting to a slight tremor, and at other times to more distinct movements; three only have possessed sufficient intensity as to command general attention during the busy hours of day.

Very few have been noticed by persons who were standing upon the earth at the period of their occurrence. By far the greater proportion were observed in high situations from the ground, and in the more retired parts of the city, or on the alluvial covering of the country to the west and south.

The total number for the past year is sixteen, and of this number thirteen were observed between sunset and sunsise, a fact sufficient in itself to show the lightness of their character; for, did they possess that severity so often attributed to them, the attention of the populace would much more often be directed to their observance. Yet we find such is not the fact, their first knowledge of such an occurrence being usually its announcement by the daily press.

By reference to the statistics below, it will be seen that even in the mountain districts, where during the day there is much less of turmoil and noise arising from business than in the populous city, that of all those noticed, none have been of sufficient intensity to attract the attention of the inhabitants during the hours of daylight. These facts, though few in themselves, are of importance, to disabuse the public mind in relation to the danger to be apprehended from the occurrence of these phenomena. The character which we sustain both at home and abroad, as being in constant danger of being swallowed up by these occurrences, and that our country is but a bed of latent volcanoes, ready to burst forth at any moment, spreading devastation over the land, is one of the greatest fallacies that ever obtained possession of the human brain. Our State is as primitive as Massachusetts or New Hampshire, and the dangers that attend us from the sources above spoken of, are equally great as in the States just named.

We should remember that when speaking of California as a State, that we include a line of territory equalling that of the seaboard lying between Cape Hatteras on the south and the British Possessions on the north, and including eleven of the seaboard States of the Union; and when we place our comparative estimates on this basis in matters of this character, it will become at once evident that the danger of annihilation from the causes under consideration, are not of that magnitude that at first sight would appear.

Along the coast of Mexico and Central America, to the south of California from all the records that are obtainable here, there appears to have been a much greater exemption from those phenomena than has been usual in former years; this seems to have been the fact, also, throughout the Pacific, Oceanic and most of the Continental islands along the coast of China, while to the north and north-west, beyond the fifty-fifth parallel, both volcanic and earthquake phenomena appear to have been greater than usual. This has been observable, for the most part, in the neighborhood of the Aleutian Archipelago, along the north east coast of Japan, and in the British and Russian Possessions of North America on the Pacific, and islands of the Ochotsk Sea.

It would be interesting to know more of the predominance of these phenomena in those regions, and such information could be easily obtained from the commanders of the whaling fleet, if the proper measures were adopted to secure it.

Below will be found some interesting matter upon this subject, which took place during the past year near the Straits of Ourinach. The earthquakes which have occurred in this State during 1856, and the period of their occurrence, is as follows:

Jan. 2*d*.—At a quarter before ten this morning, a smart shock of an earthquake was felt in San Francisco. The motion of the earth was undulatory, and came apparently from the northward. A pendulum indicated a motion of about five and a half inches.

Jan. 28*th*.—At the town of Petaluma, Sonoma county, a shock of an earthquake occurred at a few minutes past three o'clock in the morning.—It was sufficiently heavy to awake persons from their sleep.

Jan. 29*th*.—At a quarter before one o'clock this morning, a slight shock was felt in San Francisco.—It was observed also at the Mission Dolores. There were three distinct tremors, with short intervals elapsing between. The motion was apparently from the westward.

Jan. 21*st*.—Quite a smart shock occurred at four o'clock this evening; it was quite sharp in the southwest part of the city.

Feb. 15*th*.—At five o'clock twenty-five minutes a severe shock of an earthquake was felt in San Francisco, the duration of which was about eight seconds. Persons sleeping were aroused, and many persons left their beds and sought the street. There were two distinct shocks, the second very light and scarcely perceptible. The motion was *undulatory* and *vortical*, and at the end of the first shock a very strong, profound jar, with which it ceased.

The upper part of a building on Battery street, for seventy feet in length, was thrown down, the whole of which was above the cornice, very thin, and the mortar with which it was constructed had not become hardened, being easily removed by the fingers—it more resembled wet sand than a firm mortar.—

There appears but little difference in the sensations of persons situated either in upper or basement stories.

It was preceeded by a deep, heavy rumbling, and the motion apparently came from the northwest. A distinct shock was felt at eight minutes past two o'clock the same morning, by persons who were awake and up at the time.

The vortical movement was shown in the fact that small square bottles and boxes that stood upon a line, were moved from their position horizontally, describing an arc of thirty degrees and upwards, as shown by the dust upon the shelves on which they stood.

The first wave came with a force sufficient to project small articles three or four feet on the floor, from shelves on which they were placed; they were apparently all thrown in the same direction. Seve-

ral clocks were stopped at precisely 5 hours 25 minutes.

All the cracks in walls and ceilings had a direction nearly northwest and southeast, and most of them had the appearance of having been produced at the moment of elevation.

The earthquake was felt heavily at Monterey, at 5 hours 20 minutes; it was also felt at Bodega, but no time is given,

The vessels on the coast, and ranging from San Pedro on the south to Southern Oregon, and at distances varying from eight to one hundred miles from land, did not experience any shock. They were 22 in number.

Up to the present date the most northern point of which we have any record of its having been felt, is at Santa Rosa, which is 53 miles north of San Francisco, and at Monterey, 90 miles south of the latter place; to the east of this city we have no record beyond Stockton. This would give for its length 143 miles, and its breadth 66 miles.

Inquiry was made through the State line Telegraph at El Dorado, Nevada, Downieville, Placerville, Marysville, Sacramento Stockton, and San Jose; it was not felt in any of the localities named, excepting the two last, and at Stockton it was quite light.

If the time as given at Monterey was the same as at this city, (San Francisco) the velocity of the earthwave must have been much slower than that of the great earthquake at Simoda.

March 24.—A slight shock was felt at Canal Gulch, Siskiyou county, also at Yreka, at twenty minutes before 10 o'clock, P. M. The motion is described as being horizontal.

March 31.—A light shock was felt in San Francisco at twenty-five minutes past 1 o'clock, A. M. It consisted of three light but distinct tremors.

April 6.—11½ P. M. A smart shock was felt at Los Angeles and the Monte. People were aroused from their beds.

May 10.—A light shock was felt in San Francisco at 10 minutes after 9 o'clock, P. M. The shock was accompanied by a loud report, like the discharge of a cannon; people mistook it for the signal gun of the mail steamer. This was felt at Monterey, Contra Costa county.

May 2.—A severe shock was felt at Los Angeles a few minutes past 12 o'clock, P. M. It caused much trembling among the buildings, and considerable alarm among the people, many leaving their beds The shock was preceded by two loud reports like the blasting of rock; it apparently came from the northwest; no damage was done.

August 2.—A light shock was felt in San Francisco at 20 minutes after 5 o'clock, A. M. It was sufficiently strong to awaken persons in bed; it was evidently more severe in Stockton.

August 27.—An earthquake was felt at Mission San Juan, Monterey county, at 15 minutes before 9 o'clock, P. M. There were two distinct shocks with short intervals elapsing, the second being the heaviest. The motion is described as undulatory and coming from the west. It was felt at Monterey and at Santa Cruz.

Sept. 6.—A smart shock felt at Santa Cruz, at 3 o'clock, A. M. It created considerable consternation and many persons left their beds.

Sept. 20.—A very severe shock was felt in different parts of San Diego county, and at that town at 11½ o'clock, P. M. At Santa Isabel the ceilings of the dwellings was shaken down; the cattle stampeded and ran bellowing in all directions, and the Indians seemed equally terrified. The walls of the adobe buildings were many of them cracked. The motion is described as oscillatory. A light shock occurred on the following Monday evening.

Nov. 12.—A smart shock occurred at Humboldt Bay at 4 o'clock, A. M. Another shock was reported but no date given.

From the records before us it will be seen that fourteen being the total number of earthquakes recorded during 1856, seven have been felt in San Francisco in common with other parts of the State; seven have occurred south of this locality that were not observed here, and four north of it. Of the seven shocks noticed here, five only were not observed in any adjacent district, and may be considered as strictly local. The periods of the year at which the shocks have occurred, is as follows: During the winter months, five; during the autumn, three; during the spring and summer, six. Nine have taken place between the vernal and autumnal equinoxes.

We have records of considerable and violent volcanic phenomena throughout the northern seas, and islands both to the east and west of Alaska. The Russian frigate *Dwina*, while lying at Shuam Shu, brings intelligence of the outburst of a volcano in that vicinity about the 22nd of June, and on the 25th of the same month passed through fields of floating pumice; the latitude by observation being 50° 53′ and longitude 158° 32′ east per chronometer.

An interesting account of a submarine volcano was reported by the Captain of the bark *Alice Frazer*, in latitude 54° 36′— longitude 135° west, which is as follows: A portion of the whaling fleet, four in number, were running through the Straits of Ourinack, on the 26th of July last; while passing the straits a submarine volcano burst out, sending a column of water several hundred feet upward; immediately following this, immense masses of lava were projected into the air, and the sea for miles and for days afterward, was covered with floating fragments of pumice. The ships *Scotland* and *Enterprise* were nearer the volcano than the ships *Frazer* and *Wm. Thomson*; on the decks of the two former considerable pumice, lava, and ashes fell. There were seven vessels in the straits at the time of the occurrence, three of which the names I could not learn.

The outburst was accompanied with violent shocks of earthquake. It is the opinion of Captain Newell, of the *Alice Frazer*, that considerable shoaling has been the result of this submarine action.

Annual meeting by adjournment.

The Reports of the Treasurer, Curators, and Corresponding Secretary were received and placed on file.

The following officers were elected for the ensuing year:

President—Leander Ransom.

1*st Vice-President*—Theodore Moss.

2*d Vice-President*—J. A. Eckel, M. D.

Recording Secretary—M. G. Read.

Corresponding Secretary—W. O. Ayres, M. D.

Treasurer—F. Bosqui.

Curator of Zoology—L. Lanszweert, M. D.

Curator of Geology and Mineralogy—Dr. J. B. Trask.

Librarian—W. Heffley.

(Cal. Acad. Nat. Sci.)

On motion, it was voted that the election of Standing Committees be deferred to a future meeting.

From Dr. Stillman, of the steamer "John L Stephens," were received specimens of marine shells, Radiata, &c., from the Bay of Panama.

From the Curator of Geology, by exchange, tooth of a species of *Elephas*, from Oregon.

From the Boston Society of Natural History was received a sheet of their Proceedings, Vol. 6. pp. 1—32.

(Omitted Proceedings.)

SEPTEMBER 29, 1856.

President in the Chair.

Dr. Joseph Birnstill was elected a Corresponding member.

Donations to the Cabinet.

From Mr. J. Gallaway—specimens of Solar Salt and Sulphate of Lime, from San Quentin, Lower California

From Mr. Pollock—a specimen of *Asteracanthion*, from San Francisco Bay. The thanks of the Academy were voted for the above donations.

From Capt. Russell—a specimen of *Pituophis* and the skin of a fox, from San Clemente Island.

From Mr. Beardslee—specimens of cones and pines from Shasta and vicinity.

Letters were read from Mr. Binney, of Germantown, Pa., Dr B. F. Shumard, of Saint Louis, Boston Society of Natural History, and Western Academy of Natural Sciences.

Donations to the Library.

From Dr. B. F. Shumard—a paper on a new fossil genus, belonging to the family Blastoidea.

From the Boston Society of Natural History—Proceedings of the Society. pp. 353—368.

SAN FRANCISCO, Nov. 17, 1856.

President in the chair.

Donations to the Cabinet.

From Mr. Horace Davis—specimens of Limestone and Lignite, from Shaw's Flat.

From Mr. J. T. Cunningham—bones of Mastodon, from Shaw's Flat.

From Dr. Skinner, of Stockton—pharyngeal bones of *Mylopharadon robutus.*

From Mr. J. E. Clayton—cones of *Sequoia gigantea*, and bulbs of the Mountain Lily, from the Upper San Joaquin. The thanks of the Academy were voted for the donations above recorded

From Col. Ransom—scapula of a Whale

From Mr. Beardsley—specimens of Peroxide of Manganese, from near Oakland, and cones of Silver Fir. (*Abies nobilis*) from Scott Mountain.

From Dr. J. A. Veatch—skulls of *Ursus ferox* and *Canis ochropus* (?) Esch.

SAN FRANCISCO, Dec. 16, 1856.

Dr. Kellogg, Vice President, in the Chair.

Dr. Haggin, of San Francisco, was elected a Resident member.

Donations to the Cabinet.

From Mr. F. Rais—fossils of the marine Tertiary, from Monterey County, with minerals and recent shells.

From Dr. Badorous—specimens of silicified wood, from Mokelumne Hill.

From Captain J. D. Brown—specimens of Coleoptera, Coral and Sponges, from the Gulf of California.

From Mr. Bridges—specimens of *Sequoia gigantea, Sequoia semperoirens, Pinus Lambertiana* and *Pinus insignis.*

From Dr. J. A. Veatch—specimens of Travertine, Sulphur, Obsidian and silicified roots of the Tule, from near Clear Lake.

Donations to the Library.

Proceedings of the Boston Society of Natural History, vol 5. pp. 375—416, from the Society.

From Messrs. Vincent & Payot—Memories de la Societe des Sciences Naturelles, 1835, 1842, 1849.—The thanks of the Academy were voted for these donations.

SAN FRANCISCO, Jan. 25, 1857.

President in the chair.

Mr. Thomas G. Cary was elected a resident member.

Donations to the Cabinet.

From Dr. Stillman, specimens of Shells, &c., from the Bay of Panama.

From Dr. Trask, a fossil *Elephas* tooth, from Oregon.

From Mr. Theodore Moss, a specimen of *Diomedea exulans*, from near Cape Horn; also a specimen of Mineral Resin in Coal, from the Island of Borneo.

From Dr. Lanszweert, specimens of Malachite from Australia, and of Sulphuret of Copper from Nevada.

By purchase from the estate of Dr. A. Randall, an extensive collection of plants of California, wood of forest trees, Mosses of New Mexico and the Gila, Shells and Minerals.

Donations to the Library

Proceedings of the Boston Society of Natural History, Vol. 6, No 1, from the Society.

From Mr. Geo. Frauenfeld, Verhandlungen der Zoologisch—Botanischen, 1852, 1853, 1854 and 1855; also, Bericht uber die oster—Literatur der Zoologie, Botanick, Paleontologie, aus den jarhen 1850—'51—'52—'53—55. Also, Aufzahlung der Algen der Dalmatineschen Kusten; von Geo. Frauenfeld; also Metamorphism of Insects, by Geo. Frauenfeld; also Jahrbuch der Kaiserlich Koniglichen Geologischen Reichenstalt, 1850—1855.

From the Smithsonian Institution, the eighth vol. of the Smithsonian Contributions to Knowledge.

The thanks of the Academy were voted for the above donations.

From Mr. Wm. Stimpson, a copy of his work on the Testaceous Mollusks of New England.

From Dr. Lanszweert, a Catalogue of the Shells of Connecticut; also Conchology from the Encyclopædia Britannica, with plates of American Conchology.

The Committee on Publication were appointed a committee to draft a memorial to Congress in favor of the publication of the Scientific Reports of the U. S. Exploring Expedition under Commanders Ringold and Rogers.

Mr. Moss presented a prospectus of the Literary and Scientific Association of Valparaiso.

Mr. T. J. Nevins was elected a Life Member of the Academy.

Dr. Kellogg exhibited a drawing of a new species of Oak, to which was given the provisional name of

Quercus Vaccinifolia—Kellogg—or Huckleberry-leaf Oak—Leaves annual, coriaceous, small, oblong-ovate, acute, sub-mucronate, somewhat obtuse at base; glabrous above, reticulate; fuscous and stellate pubescent beneath; margin entire, petiole short. Fruit ovate, sub acute, mucronate, sub-sessile; cup shallow, margin thin, scales minute appressed, hoary-fuscous tipped with brown, stellate pubescent. Biennial?

This species of oak is abundant on the lofty mountains of California. The Trinity, Scott and Siskiyou mountains are clothed with extensive thickets of this shrub. It is rarely found over one inch in diameter, and 4 to 6 feet in height. The branches are smooth, round and slender, and together with the buds and foliage resemble the Whortleberry. The leaves are about one inch in length, dilated at the base on slender petioles two to three lines in length, lamina about twice that in width; the lower surface somewhat tan-colored.

The Academy are indebted to M. F. Beardsley for the specimen and fruit.

The following Standing Committees were elected for the ensuing year:

Publication—Dr. W. O. Ayres, Dr. J. B. Trask, Col. L. Ransom, Dr. J. N. Eckel.

Library—Mr. W. Heffley, Dr. J. B. Trask, Dr. Eckel.

Finance—Mr. T. F. Moss, Mr. W. Heffley, Dr. Kellogg.

February 23, 1857.

President in the chair.

Mr. James Hepburn, Mr. Joseph Briton and Mr. A. A Branda were elected Resident Members. Mr. Geo. Frauenfeld, of Vienna, was elected a Corresponding Member.

Donations to the Cabinet.

From Mr. Hearn, of Yreka, a Butterfly from Mt. Shasta, with plants and minerals from the same locality.

From Dr. Stillman, specimens of Zoophytes, Echinoderms, Mollusca, Crustacea and Fishes; also an Armadillo, from Panama and its vicinity.

From Mr. S. G. George, specimens of cordage made from the fibres of a species of Asclepias by the Indians of the Tulare Valley.

From Mr. Wm. R. Garrison, specimens of Coal with the accompanying rock, from Central America.

From Dr. J. M. Brown, specimens of Fish from the Santa Barbara Channel, and of Solen and Helix from the Island of San Clemente.

The thanks of the Academy were voted for the above donations.

From Mr. T. G. Cary, specimens of Pumice, from the surface of the ocean, June 25, 1856, in lat. 50° 53′ N., long. 158° 32′ W.

From Capt. L. J W. Russel, specimens of Annelida, Crustacea and Mollusca, from the Gulf of California; also, of Specular Iron, Seeds and Shells, from Manzanillo.

From Col. Ransom, various Fossil Bones, found 100 N. E. of Los Angeles.

From Dr. Eckel, specimens of Neritina, from Japan.

From Mr. T. F. Moss, a valve of *Ostraea*, from the Amoor river.

From Dr Lanszweert, Birds from New Caledonia.

Donations to the Library.

Proceedings of the Boston Society of Natural History, vol. 6, pp. 33–45, from the Society.

From Lieut. M. F. Maury, Washington Astronomical Observations, vol. 6, 1856.

From Dr. Eckel, Owens' Geological Survey.

From the Essex Institute, a copy of their Proceedings.

American Journal of Science, No. 67, from the Editors.

Report of the Commissioners of Common Schools, Canada

From Mr. Heffley, Ancient History of Astronomy, by Waltz.

From Mr. T. F. Moss, six Nos. of La Science.

Mr. T. J. Nevins deposited seventeen volumes of the Natural History of New York.

Mr. T. J. Cary deposited Embryology of the Salonidia, and Systeme Glaciaire, by Agassiz.

The following paper, by W. P. Blake, was read:

NOTE ON THE OCCURRENCE OF TELLURET OF SILVER IN CALIFORNIA: BY WILLIAM T. BLAKE.

A specimen obtained from Georgetown, California, resembling a fragment of tarnished lead or silver-glance, is found, on examination, to be chiefly composed of Silver and Tellurium. The mass is about one inch in length and breadth, and is entirely free from gangue, but incloses native gold, which appears at several points on its surface. An aggregation of cubical crystals, resembling galena, is implanted on one side, and the other is deeply indented with angular cavities—probably the prints of quartz crystals.

The massive part of the specimen is sectile and malleable, and does not show any traces of crystalization; it may be cut with a knife, like lead, and

gives a brilliant metallic surface. Hardness about 2 of Mohs' scale.

In the open tube, before the blowpipe flame, the mineral fuses quietly, coloring the glass a bright yellow under the assay; a white or gray sublimate is deposited at a short distance from, or directly over it, which, on being heated, fuses into transparent drops, resembling oil. On charcoal it fuses readily to a leaden-colored globule, which, on cooling, becomes covered with little points or dentrites This globule flattens under the hammer, but breaks on the edges. With the addition of a little carbonate of soda, a globule of silver is readily obtained. A fragment heated to redness in a closed tube or matrass, with dry carbonate of soda and charcoal dust gives, on the addition of a few drops of boiling water, the beautiful violet-red or purple solution described by Berzelius as characteristic of tellurium.—This solution loses its color after standing for some time, and a dark colored powder is deposited. The mineral dissolves in hot nitric acid, with the separation of tellurous acid in crystals.

It is probably the species *Hessite*, but the decision is reserved until further examinations are made. Its color is darker than the Hessite of Savodinsky, Siberia, and is not quite so hard

This very rare mineral has not hitherto been observed in America, and its occurrence is therefore of peculiar interest. I am indebted to P. C. Currier, Esq., of Georgetown, for the specimen It was obtained in that vicinity, and probably taken from the auriferous drift; but it cannot have been transported far from its original source

The crystals give reactions for lead and sulphur and a trace of selenium. They are probably galena, but may contain tellurium.

A specimen seen in California in 1854, weighing about two ounces, greatly resembled the massive part of the specimen above described. The small fragment of it which was then obtained, also gives the reactions for tellurium and silver. Its precise locality is not known.

The telluric silver of Siberia, according to Gustof Rose, is composed, in 100 parts, of:

Tellurium,	36 96
Silver,	62 42
Iron,	0.24

It is probable that tellurium combined with silver, lead or bismuth, will be found in the auriferous quartz of Grass Valley and other localities. A few specimens in my possession contain small brilliant grains resembling tetradymite, but their exact character is not yet determined.

January 1, 1857.

A letter was read from M. Boisduval, stating that *Saturnia Californica* had been previously described by him as S. *euryalus*.

The curators were authorized to send such duplicates of specimens as are available, to the Society of Natural History, at Stockton, Cal.

San Francisco, March 30, 1857.

President in the Chair.

Prof. Asa Gray, of Cambridge, Mass., and Dr. John Torry, of New York, were elected Honorary Members.

Dr. John Browne, of the U. S. steamer *Active*, Mr. Geo. Gibbs, of Port Townsend, M. Moreenhaut, of Monterey, Capt. Fauntleroy, Capt. Wilson and Dr. George Suckley, were elected Corresponding Members.

Donations to the Cabinet.

From Capt. J. D. Brown, of the schooner *Ada*, specimens of Reptiles, Fishes, Annelida and Crustacea, from the Gulf of California.

From Dr. Pigné Dupuytren, a fine collection of Marine Shells and a skull of *Belone*, from New Caledonia; also, a fabric made from the hair of the bat, by the natives of those islands.

From Dr. Welch, a skull of *Diomedea chlororynchos*, and a skull of a native of the Sandwich Islands.

From Dr. Czapkay, a large species of *Patella*.

From Mr. Parent, two specimens of *Chiton* and a *Cidaris*, from the Gallipagos Islands.

From Mr. H. P. Wakelee, a suite of specimens from Nicaragua, consisting of the capsule of Cocoa Bean, Scorpion, skin of a large serpent, (called by the natives Bo-bo,) and Coal; also, Copper smelted at the La Mina del Padre, (Colima,) and Copper Ore from La Mina Truxcanisco, (Colima); also, Solar Salt from near Los Angeles, Cal.; also Auriferous Quartz from Kern river, and a shell of *Echinus*.

From Mr. H. R. Bloomer, a specimen of *Eutainia dorsalis*, from San Francisco.

From Barry & Patten, a specimen of *Ornothorynchus*, from Australia.

The thanks of the Academy were voted for the donations above recorded.

From Dr. Lanszweert, Liguite, from Sonoma.

From Dr. Bennett, a specimen of Gypsum, and one of native Alum, from Guaymas.

From Capt. Russell, a fine specimen of *Yucca*, in full bloom, from the Southern Coast; also, two young specimens of the same for cultivation; also, several specimens of *Mesembryanthemum*.

From Dr. Kellogg, a specimen of *Scolopendra*, from Monte Diablo; also, a box of seeds.

From Dr. Ayres, a specimen of *Anarrhicthys ocellatus*, and one of *Cebidichthys crista-galli*, from San Francisco Bay.

From Mr. W. H. Pease, of Honolulu, a fine suite of specimens from the Sandwich Islands, consisting of Crustacea, Land and Marine Shells, Echinoderms and Corals.

From Mr. Hepburn, Calcareous Travertine, from the Geysers.

From Mr. Beardslee, a specimen of *Trillium*.

From Dr. George Suckley, specimens of *Mytilus*, from the Straits of Fuca.

From Dr. Trask, a specimen of Nereis, thirty-three inches in length, from San Francisco Bay; also, a fish allied to Gunnellus, of apparently a new generic type; also, a quantity of the ripe fruit of the Coffee Tree, from the Sandwich Islands. The curators were requested to distribute these seeds throughout the State, for the purpose of inducing their cultivation.

Capt. Russell deposited a Water Bottle and Beads, with a Mortar, which were made by the Indian woman Maria, on the Island of San Nicolas, during her solitary residence there of eighteen years.

ON THE DIRECTION AND VELOCITY OF THE EARTHQUAKE IN CALIFORNIA, JANUARY 9, 1857—BY DR. JOHN B. TRASK.

The earthquake which occurred in various parts of this State, on the morning of the 9th January last, excited at the time considerable attention.—This arose from two causes First, from the varied reports that appeared on the following day through the press of this city, detailing its occurrence in remote mountain towns, and for which there was no foundation. Secondly, from the great extent over which the commotion was felt, as was subsequently proved.

Immediately following the occurrence of the phenomenon, letters were addressed to all the principal towns between Mariposa and Downieville, east of the valleys, for the purpose of learning how far the shocks may have extended eastward of this city.—These letters were forwarded by the Pacific Express Company to their agents, and through them answers were returned in every case but two through the same source. From the facts thus obtained, it was found that in no locality east of the foothills, *was any shock felt whatever on that day or night*

Another report, equally unfounded, reached us on the arrival of the steamer from the Southern coast, to the effect that several houses had been demolished in San Diego from its violence, while the facts in the case are, *that the steamer left that port twenty-four hours before the shock occurred there*

This earthquake, or more properly speaking the series of shocks that began on the night of the 8th in this city, and which continued in the south part of the State during the following day and night of the 9th, was probably the most extensive of any on record on this portion of the Pacific coast, excepting, perhaps, that of the wave of the Simoda earthquake in December, 1854. The linear distance over which we are able to trace its course, amounts to six hundred and two miles, and its breadth, so far as now ascertained, is two hundred and ninety miles. It has all the appearance of having been the terminal movement of some more violent commotion at a distance from our coast.

From the best evidence obtainable at present, it seems to have had its origin to the west and travelled in an easterly direction. This is conclusively proved from the fact that it was felt earlier at San Francisco than at any other locality east of this city within the State. We have no record as yet of its occurrence along the coast of Mexico or Oregon.

I have been able to determine with considerable accuracy the period of time at which the shock between eight and nine o'clock on the morning of the 9th took place, at four localities east of the city of San Francisco, in this State, as the shock at that hour seems to have been more generally noticed than those which either preceded or followed it here or elsewhere, though at this city it was much less marked than the shocks at 1h. 33m., 4h. 15m., and 7h., these three latter occurring at those hours of the morning when most persons are sleeping. The shock at 7h. produced a circular motion in the pendulum, the diameter of which was about five inches The oscillations of the pendulum in all the others were in an easterly and westerly direction.

The precise period of time at which the shock took place at San Francisco, between eight and nine o'clock, is determined by the stopping of a timepiece belonging to J. W. Tucker, whose rate of error was three seconds fast. The time at San Diego was furnished by Mr. Cassidy, of the army, and that of the Tejon Reserve is by persons at that post. To private gentlemen at Sacramento and Stockton we are indebted for the time at those places. The accompanying table of latitudes and longitudes, of localities named, gives the hour at which the shock took place at each; the difference or elapsed time, from which the velocity was deduced, are the mean times corrected for the places named, the time as given above being taken as the standard at San Francisco.

It is proper here to state that three minutes four seconds, was the greatest error in time found, and the least was twenty two seconds:—

	Lat.	Lon.	Time of shock.	Elapsed time.	Velocity
	° ′	° ′	h. m. s.	m s.	miles
San Francisco....	37 48	122 25	8 13 30	0 00	0 0
Sacramento	38 32	121 23	8 20 00	7 30	6 6
Stockton.....	37 52	121 34	8 23 00	9 30	6 5
Tejon.....	35 00	118 46	8 45 00	32 30	6 0
San Diego.	32 42	117 13	8 50 00	36 30	7 0

The velocity is given in miles per minute, and by dividing the sum of the same by their number, it will be found that the movement of the wave at that time averages a fraction over 6.2 miles per minute.

The results obtained from the above data approximate closely the deductions of Prof. Bache on the wave which reached our shores resulting from the earthquake at Simoda on the 23d December, 1854, and which will be found in a paper read by that gentleman at the meeting of the American Association for the Advancement of Science, during the early part of last year.

From the facts before us, there can be but little doubt of the direction of the commotion, and that it proceeded from the west, or a little south of that point. The motion of the earth, as described at the different localities at which it was felt, with the motion of the pendulum—which was slightly south of a west line—leads to the latter conclusion Time is an important element in aiding us to form correct conclusions regarding their phenomena, and it is to be hoped that our friends in different parts of the State, in reporting the same, will be precise in this particular. Of the incidents attending the shocks, many and varied reports have reached us; and it seems to have acted with greater violence in the vicinity of the Tejon Reserve and upper Tulare county than at any other places. It is most remarkable that so small an amount of intensity was manifested when the area over which it extended is taken into consideration

The effects were felt in San Francisco several hours before they are reported to have been observed at any other place north or south. They began here at twenty minutes past eleven, on the night of the 8th, and continued till thirteen minutes past eight the following morning—six shocks occurring in the interim; while to the south, the first shock that was noticed at the Tejon was at 6 hours 30 minutes, on the 9th. In Los Angeles they continued at long intervals through the day until 23 hours 30 minutes of the same date. I have learned from persons who were present in Los Angeles at this time, and also at the shock of the 14th July, 1855, that the severity of the latter exceeded that of the 9th January last past.

Donations to the Library.

From Lieut. Maury, a full series of his Wind and Weather Charts.

From the Boston Society of Natural History, their Proceedings, vol. 6, pp. 49-64.

From the Natural History Society of Montreal, their Twenty-eighth Annual Report.

A Circular, from the California Society of Natural History, Stockton.

American Journal of Science, No. 68, from the Editors.

From Mr. T. F. Moss, eleven Nos. of La Science.

Mr. Moss deposited Paleontologie et Geologie, three volumes; also, Precis d'Analyse Chimique.

Capt. Russell deposited a volume of Records of the Mission of San Diego, in Spanish, dating back to A. D. 1770.

Letters were read from M. Rene Lenormand, Mr. W. H. Pease and Mr. W. P. Blake.

The thanks of the Academy were voted to the Editors of the *Pacific Sentinel*, Santa Cruz, for a file of their paper furnished regularly for several months past.

The Recording Secretary was requested to communicate to Mr. Joseph C. Palmer the thanks of the Academy, for his very liberal donation of the rent of the Academy rooms for the ensuing year.

Dr. Trask read the following paper

ON SOME NEW MICROSCOPIC ORGANISMS.

During the summer of 1855, while in the vicinity of Santa Barbara, engaged in the examination of several species of marine algae to which many zoophytes were attached, I accidentally met with the forms which constitute the subject of this paper. Since that time, further observations have been made, and examinations for their presence with more success than was at first anticipated.

The striated appearance of these minute organisms led to the belief at first that the lorica belonging to them was silicious, but the application of chemical agents has shown this not to be the case, for it is entirely destroyed by digestion in strong nitric acid, continued for a considerable length of time.

In the normal state the forms are brittle, and easily broken under a compressor, but after digestion in nitric acid the lorica becomes soft and flexible, losing none of its configuration except on the application of mechanical means. In this particular they comport themselves with the calcareous portions of animal structures. The striated appearance which they present is (by the above means) found to consist of septa, placed transversely across a longitudinal canal extending the entire length of the organism, and so far as present observations have extended, they present the peculiar features of being solid, for by compression they have been extruded from the canal, and retain their forms when thus free, the canal collapsing where the extrusion of the septa has taken place.

In view of the above facts it will be necessary to place these minute organisms among the family of crustaceas, their form and inorganic structure, with their configuration seeming to warrant this, more properly perhaps than among the zoophytes, or diatoms.

The mandibular process on the anterior end simulates in some particulars the vibracular organs of the zoophytes, but what particular office it performs in their economy is yet undetermined, having never had an opportunity of examining their movements when freshly collected, with instruments of sufficient power. The materials from which they have been obtained have laid for months, in most cases, before opportunity offered for their investigation.

The mandibular process is placed on a movable joint, and has the appearance of being attached and capable of motion through the agency of muscular filaments passing within the outer covering of the animal; by digestion in acid it is often very soon detached from the head of the styliform body to which it belongs, but when in place it has considerable lattitude of motion. The figures are drawn with the camera-lucida and a microscope by Oberhauser.

These forms are certainly most singular, partaking as they do, the appearance both of animal and vegetable forms. Certain it is, they belong to no genus at present known, or with which we are at present acquainted, and under this view we shall place them in a new genus, with the following definition:

LEPTOSIAGON—TRASK—*Nov. Gen.*

Lorica membrano-calcareous, styliform; straight or curved, having a central canal, which is divided by transverse septa its entire length; anterior extremity furcate, more or less enlarged, and traversed by one or more bands or ribs raised above the surface, and armed with a movable mandibular process more or less denticulated; posterior extremity either acute, rounded or capitate; body rounded, smooth, more or less compressed.

Leptosiagon gracilis ng. ns.—TRASK—Plate 6, fig. 1.—Lorica straight, smooth, compressed, anterior extremity furcate, forming two somewhat unequal beaks, and armed with a long smoothly curved mandible, having about sixteen fine acute denticulations on one side, its anterior end acutely terminated, broadest part of mandible about one-fifth greater than the body below; posterior extremity subcapitate and rounded, shows a terminal orifice to the central canal.—Transverse section ovate. Length of mandible contained about five and one-half times in the length of the body. Breadth of body about 1-80th its length. Mag. 550 diameters.

On algae attached to fish cars—Santa Barbara.

This species is adopted as typical of the genus, for the reason that it appears most plentiful when compared to the others, was the first met with and is beautifully marked, and symmetrical.

L. *occidentalis. ng. ns.*—TRASK — Plate 6, fig. 2—Lorica straight, smooth, anterior extremity equally furcate, and terminated on the ventral side by a somewhat bluntly rounded process, with a smaller one on the dorsal side, arm-

ed with a short and broad mandible, having a curved, blunted point, with four or five close-set somewhat acute and curved denticles, situated within its middle half; posterior extremity rounded, orrifice of the canal distinctly seen on its end. Length of mandible contained about seventeen-times in length of the body. Breadth of body about 1-77th its length. Mag. 460 diameters. Found with the preceding.

L. *magnas. ng. ns.*—Trask — Plate 6, fig. 3.—Lorica smooth, arcuate, gradually tapering from the anterior to the posterior extremity. Anterior end terminated by a wide, pointed beak on the ventral side, and a small rounded process on the dorsal, armed with a broad curved mandible, having a hooklike end, and a large pointed denticle near the middle; posterior extremity narrow and rounded; body tapering for nearly its entire length, compressed, transverse section oval.

Length of mandible contained about nineteen times in the length of the body. Breadth of body 1-22nd its length. Mag. 400 diameters.

Santa Barbara. Matsmai, Japan. On limpets and among the roots of zoophytes.

L. *falcata. ng. ns.* — Trask. — Plate 6, fig. 4—Lorica curved, anterior extremity very unequally furcate, the ventral side being projected into an acute long rostrate process, and a very small angular beak on the dorsal; armed with a somewhat narrow sickle-shaped mandible, which is finely dentlculated for little more than half its length; posterior extremity terminating in a narrow sharp point; body tapers uniformly throughout its length, much compressed. Length of mandible contained about eight-times in the length of the body. Mag. 540 diameters. On limpets. Japan, Island Mastsmai.

L.—var. (?]——Plate 6, fig. 5.—This at most is probably but a variety of the proceeding. I think it will prove a younger individual of the last species; it bears a strong resemblance to L. *falaata*. Mag. 540 diameters. Found with the preceding.

L. *glabrescus. ng. ns.*—Trask — Plate 6, fig. 6.—Lorica arcuate, anterior extremitywidened, subacute beak, and two smaller processes opposite, the one more prominent and acute than the other; body tapers from anterior extremity to posterior, the latter terminating in a narrow rounded end, much compressed; mandible very long, subulate thin, smooth upon both edges; length of mandible contained about four-times in the length of the body; breadth of body nearly 1-28th of its length. 640 diameters.

On Ostrea, Gulf California and Manzanillo.

L. *semirectas. ng. ns.*—Trask — Plate 6, fig. 7.—Lorica slightly carved for little more than one-third its length from the anterior end, becoming nearly rectilinear for the rest of its length; anterior extremity formed of rather a bluntly rounded wide rostra on one side, and a sublanceolate process opposite; a broad rib-like lobe extends from the apex of the beak obliquely across the anterior end, and raised above the surface on which it rests; body contracts from the anterior portions to the posterior, which terminates in a rounded end, canal central, mandible curved, and obliquely connate, very finely denticulate, no aperture observed on the posterior end. Mandible contained about eight times in the length of the body. Manzanillo and Gulf of California. On Ostrea. 750 diamters.

L. *incurva.* ng. ns.—Trask. — Plate 6, fig. 8.—Lorica curved, smooth, anterior end projected into a short acute rostra, and a small, sharp process on the opposite side; posterior extremity rather obtusely rounded; mandible slightly curved on one side, nearly straight on the opposite, without denticles. Canal central. Mandible contained about five times in the length of the body. Manzanillo. On Ostrea. 1000 diameters.

L. *attenuata.* ng. ns. — Trask. — Plate 6, fig. 9.—Lorica straight, narrow, gracefully contracting from the anterior extremity to the posterior, which latter is capitate. Anterior end unequally bifid, forming two bluntly rounded beaks, in which is inserted a narrow, subulate mandible. Canal central. No denticles were observed on this species. Manzanillo and the Gulf of California. On Ostrea. 1000 diameters. These new forms,now for the first time figured and described, constitute some of the most beautiful organisms to be met with. The fineness of the denticulations on the mandibular process well fit them for test objects for the microscope.

From the localities above named it will be seen that they occupy an extended geographical range, being found from Mexico to the coast of Japan. They are not plentiful, so far as observation at present extends, yet sufficiently so that I have been enabled to obtain a dozen specimens from one or two ounces of material. I have met with the best success in specimens of algæ and shells, from depths from four to six fathoms. A good locality for obtaining them frequently is from the large mytilus, found only at very low tides on this coast, more particularly on shells, to which sertularia and other zoophytes are found attached. I have met with them from Monterey, Bolinos and Tomales—from the two latter places attached to laminaria, and about the roots of plumularia on stones. A locality in the Bay of San Francisco, that furnished specimens last year, has not produced any yet this season.

Dr. Trask read the following paper on nine new species of Zoophytes from the Bay of San Francisco and adjacent localities:

Genus Sertularia. Linn.

Sertularia anguina. Trask. Plate 5, fig. 1. Polypidom erect, one to three inches high, alternately branched and pinnated, color corneous; rachis tortuous, jointed, with two cells on each internode, and four between each branchlet; pinna jointed, two cells on each, placed somewhat sub-lateral and forward, nearly opposite, aperture free, with oval smooth margins; cells attached by a broad strong base, at the insertion of which a slightly raised rounded ring is apparent. Its affinity is with that of *S. fallax*, (Johnston,) more nearly than with any other species with which I am acquainted, and at first sight would easily be msstaken for that species. Its ovarian vesicles have not yet been seen.

Plentiful on a large mytilus brought to our

markets from Monterey, Tomales Point, Punta Reys, and old shells, Bay of San Francisco.

S. furcata. Trask. Plate 5, fig. 2, *a. b. c. d. e.*—Polypidom long, four to nine inches, adnate to the various marine algæ on which it grows, and often quite embeded in the fronds of marine plants, pinnated, color corneous; rachis cylindrical, jointed; the pinnæ are simple and for the most part free, arising from the lower portion of the joints of the rachis. Their attachment to the main stem is somewhat peculiar; for, like the rest of the members of this genus, they are not given off from the main stem by a fixed joint, but have their origin from the end of a sessile pedicel; this is attached to the rachis by a strong base, is sub-pyriform and cylindrical, is free for about three-fourths its length, terminating in a rather bluntly-rounded rostrate process on the outer and superior aspect.

From this pedicel the pinnæ arise by a flexible joint, allowing a latitude of motion indicated between their attachment and the rostral end of this process. Figure (*a*) represents two joints of the rachis and its pedicels, with the pinnæ arising therefrom as seen under a power of thirty linear diameters. The cells are immersed in the pinnæ for about two-thirds their length, opposite, two upon each joint, compressed, the superior ends considerably divergent, acutely sinuated on the upper and outer edge, as seen in *fig.* 2, *c. d*, they are a little in front of the lateral line. A back view is shown at *fig. b.*

The ovarian vessicles are produced from the lateral and back part of the pinnæ at the base of the cell, are sessile, of a light corneous color, polished, and have an elongated oval form, somewhat swelling on the outer side, with a large oval mouth, the edges of which are somewhat depressed below the summit.

It is not without some doubts that I have placed this zoophyte in this genus, believing that there are sufficient distinctions in the species to form a new generic type; but as no opportunity has offered to observe its habits, and nothing is at present known regarding the animal, it is thought best to place it provisionally in this genus for the present, until farther opportunities shall offer for its investigation.

Bay of San Francisco and Farrallone Islands.

S. turgida. Trask. Plate 4, fig. 1.—Polypidom erect, from two to three inches high, pinnated, color corneous, at times it is found aduate to substances on which it grows; pinnæ arise alternately from opposite sides, jointed, compressed; cells latero-frontal, alternate, one on each joint, and situated above the middle, are free for nearly three-fourths their length, divergent, subcylindrical, round, full, with a broad aperture which is somewhat constricted below the edges; the upper and outer edge is deeply sinuated, thus forming two rather large denticulations more or less rounded, but occasionally one or both are found sub-acute. This peculiarity is often met with in adjoining cells on the same pinnæ. The inner edge of the aperture is slightly everted, and rather more deeply constricted than the outer or lateral portions, and forms a broadly rounded margin with a slightly raised lip.

The ovarian vessicles arise from the back part of the pinnæ, sessile, large, sub-pyriform, the upper half armed with stout, rounded, blunt, spines, twenty to twenty-eight in number; mouth sub-cylindrical, the edges surrounded with ten to fifteen smaller spines. The whole polypidom presents a full, turgid appearance, and is more or less marked with fine wrinkles,

Bay of San Francisco, Monterey, Tomales Point. On mollusca and algæ. Rather rare.

Genus Plumularia (Lam.)

Plumularia Franciscana. Trask. Plate 4, fig. 3.—Polypidom six to eight inches high, color corneous, alternately branched, the branches pinnated, one branch to each internode of the stem. The pinnæ rise one above the other, are pointed, and support three cells at each joint.—On two specimens four cells have been met with, but may be regarded an exception rather than otherwise. The pinnæ are dictotomously branched in adult specimens. Cells lagenculate, smooth, free, slightly decumbent; the attachment of the base is marked by a slightly elevated rounded rim, apertures round and smooth.

Bay of San Francisco, among rejectamenta of the beach.

Genus Crisidia (M. Edw.)

Crisidia gracilis. Trask. Plate 5, fig. 3.—Polypidom confervoid, very slender, branched, calcareous, growing in little tufts from one-fourth to a half inch in height; each cell is jointed, flexible, and dark brown or black. Cells cylindrical, free, the upper fourth divergent, in some specimens slightly curved, the upper cell given off from above the middle of the one below it, and which becomes somewhat incrassate at that point. Apertures round, smooth, facing more or less alternate, surface smooth and shining. Sparingly found, attached to other zoophytes and marine plants.

Bay of San Francisco, Monterey, Punta Reys.

Genus Crisia (Lamx.)

Crisia occidentalis. Trask. Plate 5. fig. 4. Polypidon erect, not exceeding one inch in height, calcareous, irregularly branched, joints dark and flexible. Cells tubular, slightly compressed and diminishing in size from above downward, lateral, from seven to nine on each internode of the joints, alternate, surface finely granulated, a high and sharply-rounded process extending laterally and upward from the edge of the aperture, and covered with a thin calcareous operculum, which is apparently sessile, and somewhat excavated on its upper surface. Apertures a little ovate, with smooth edges and slightly oblique.

This species is closely allsed to *C. eburnea*, (Johnston,) and would easily be mistaken for that species on a mere casual examination.—May not Mr. Thomson's speoimen from California, which he thinks identical with *C. eburnea*, have been an imperfect form of *C. occidentalis?* (*vide* Johnston's Zooph., 2d ed., page 284.)—There are sufficient differences in *C. occidentalis* to separate it from *C. eburnea*, as may be seen by an inspection of the figure, notwithstanding there is a close alliance in many particulars. My figure is drawn with camera lucidla under a power of thirty linear diameters.

Attached to marine algæ from Santa Barbara

to Cape Mendocino; often met with in Bay of San Francisco.

Genus Menipea. (Lamx.)

Menipea occidentalis. Trask. Plate 4, fig. 4. —Polypidom tufted, alternately branched, calcareous, from one to two inches high, color white and yellowish; branchlets rise from the superior and lateral portions of the internodes. Cells much compressed, diminishing rapidly from above downward; three on each internode.—Apertures roundly oval, with a slightly raised, rounded rim, which is armed with two stout, rounded, curved and acute spines, pointing upward and inward, one always being more or less sub-central. Internodes sub-triangular, with a somewhat tortuous, rounded rib passing through the centre, the lateral and superior angles surmounted by two or three long, rounded, irregular spines; points dark colored. The upper nodes are armed with four long and irregular spines, the two central being much the longest. All the spines more or less acute.

From Cape Flattery (Oregon) to Santa Barbary. Frequent among rejectamenta, Bay San Francisco.

Genus Scrupocellaria. (Van Beneden.)

Scrupocellaria Californica. Trask. Plate 4, ffg. 2.—Polypidom confervoid, jointed, growing in bushy tufts, calcareous; cells biserial, alternate, from seven to nine on each point, facing somewhat obliquely outward; apertures roundly oval, margins incrassate, and sustaining a single spine, which rises from the rim of the aperture on its upper and outer edge from the base of the inner edge; a pedunculate, pear-shaped operculum covers a portion of the aperture. The vibracular and avicularian organs are wanting.—The lateral cup-like cells sustain two round, obliquely set spines rising from the posterior edge. The affinities of this species are with that of S. macandrei.

Bay San Francisco.

Genums Hippothoa. (Lainx.)

Hippothoa amabilis. Trask. Plate 4, fig. 5. —Polypidom creeping, branched irregularly, calcareous, polished, branches anastomosing; apertures large, oval, with a rounded, thickened rim; within the upper part of the aperture a shining calcareous hemispherical operculum; the anastomosing branches are given off, for the most part, opposite the aperture, but this cannot be said to be a strict rule as regards this species.

Found on stones within half tides in the Bay of San Francisco.

Mr. Garratt's paper on new species of marine shells of the Sandwich Islands.

Murex-exigua. Garrett.

Shell, oblong-oval, solid, scabrous, and whitish; whorls about six, somewhat emgulated above, coarsely furrowed spirally, and crossed by numerous varices, which are crenulated by the spiral furrows; base furnished with a short, subclosed, slightly oblique canal; aperture round-oval; outer lip crenulated.

Length five lines.

Habitat: Pure, shallow pools on the rocky coasts of Hawaii.

Purpura-striatella. Garrett.

Shell, ovate, solid, smoothish, ventricose above, blackish, with sub-equidistant, spiral, pale lines; spire short, conic, convex; aperture large, elongated, notched above, and faintly lineated within; outer lip dilated, slightly, toothed within, and minutely crenulated on the edge, where it is margined with purple; columellar lip depressed, spreading, smooth and toothed above; throat bluish.

Length seven lines.

Habitat: Hawaii.

Observations.—This species is not common at the above locality; they are generally found attached to the spines of the *Echinus-atratus* (*Lin*) in the circumlitteral zone.

Turbo-multilineata. Garrett.

Shell, solid, sub-globose, sub-perforated; spire consisting of about three volutions and slightly depressed; the whole surface marked with numerous, spiral, coarse, equidistant, elevated, reddish lines; in a pale ground.

Length less than a line.

Habitat: Hilo Bay, Hawaii.

In the circumlitteral zone.

Trochus-striatula. Garrett.

Sub-genus.

Margarita.

Shell, thin, depressed, somewhat pellucid, glossy; surface marked with crowded, fine, regular, revolving striœ; body whorl large; spire small, with four volutions, separated by an obsolete sutural line; base somewhat flattened, and umbilicated; columella slightly reflected over the umbilicus; color, variously mottled and striped with pale fulvous, greenish and pink on a pearly ground.

Length one line; diameter the same.

Habitat: Laiminarian zone, Hawaii.

Pleurotoma-reticulata. Garrett.

Sub-genus.

Mangelia.

Shell, solid, sub-fusiform, turreted, whitish, with a pale purplish spiral zone; whorls six or seven, convex, and marked with numerous, regular, series of equidistant spiral rows of squarish punctures which give the surface a beautiful reticulated appearance; suture crenulated; base somewhat wrinkled and provided with a short, slightly oblique canal; aperture elongate, narrow and slightly contracted by the outer lip; labrum thickened outside and in, crenulated or toothed and deeply notched above; columella callosed.

Length three lines.

Habitat: Hilo Bay, Hawaii.

Rissoa-crassilabrum. Garrett.

Shell, solid, acute, turrito-conical, smooth, glabrous, white or a very pale fawn color; whorls eight, plano-convex; sutural line faintly impressed; aperture ovate; labrum somewhat dilated, very much thickened and dentated in the inner margin; columellar lip broadly callosed.

Length four lines.

Habitat: Rocky coast of Hilo, under stones, in the circumlitteral zone.

RISSOA-MULTICOSTATA. Garrett.

Shell, solid, somewhat cylindrically elongated; whitish or pale-fulvous and marked with regular, crowded, equidistant, longitudinal ribs; whorls about nine, convex; sutures well impressed; aperture sub-ovate, slightly effuse below; labrum thick; columellar lip callosed.

Length, three lines.

Habitat: Circumlittoral zone under stones, or attached to species of Holothuria; Hilo, Hawaii.

ADEORBIS-COSTATA. Garrett.

Shell, ovate-globose, thick and whitish-brown color; spine consisting of three moderately elevated volutions; body whorl with three or four large spiral carina; the whole surface marked with coarse, crowded, slightly waved, spiral, impressed stria; base perforated; aperture round-oval; outer lip slightly fringed by the terminal ends of the external keels.

Length, two lines.

Habitat: Rocky coast of Hawaii.

HIPPONIX-MINOR. Garrett.

Sub-genus.

Amalthea.

Shell, depressed, thick, convex above, spine lateral, mamillated; surface with minute, concentric stria; margin simple, sharp, rarely crenulated; above grayish, with a suffusion of red towards the summit; inside rich-brown, which becomes greenish towards the margin.

Height, half a line.

Length, one line.

Habitat: on turbinate shells, Hawaii.

BULLA-SCRIPTA. Garrett.

Shell, oblong-oval, thin, fragile, semipellucid, shining, whitish, and marked with three distant, transverse black lines; these crossed by several longitudinal waved similar lineations; surface furnished with minute, crowded, regular, transverse, impressed, punctured striæ; spine retuse, and mamillated.

Length, nearly three lines.

Habitat: shallow pools on the rocky coasts of Hilo. Rare.

SUCCINEA-NEWCOMBIANUM. Garrett.

Shell, wide-ovate, very thin, fragile, somewhat inflated, pellucid, whitish-horn color; body-whorl very large and distinctly striated; spine very small, depressed, with one volution; aperture sub-orbicular and nearly the whole length of the shell; outer lip much expanded.

Length, three lines.

Animal, pale flesh-color, mantle obsoletely maculated and slightly reflected over the shell.—Foot narrow, elongated and minutely speckled with brown.

Habitat: District of Waimea, Hawaii.

Observation.—This singular species is somewhat rare, and occurs on bushes at an elevation of about four thousand feet above the level of the sea. This species is dedicated to Dr. W. Newcomb, late of Honolulu, S. I.

SAN FRANCISCO, Oct. 5th, 1857.

President, Col. Ransom, in the chair. Dr. Kellogg read the following paper, with appended remarks by Dr. Beardsley.

Dr. Kellogg exhibited a drawing and specimens of a new species of Cypress.

CUPRESSUS FRAGRANS, (Kellogg,) *or the Fragrant Cypress.*

Branchlets four-sided, somewhat compressed, densely crowded, sub-divisions numerous, with a frond-like arrangement; larger branches roundish, slightly compressed laterally, flexuose, *bark* madder brown; *leaves* diamond-acute and aculeate, shining, bright, vivid green, carinate, an oblong resinous gland along the back, appressed, imbricated in four rows; older leaves on the intermediate branches long, decurrent; point awl-shaped, incurved.

Cones pedicilate on long, scaly footstalks, similar to the branchlets, somewhat elongated; globose cinnamon color, size of a hazel-nut, composed of about nine peltate scales; centre depressed; margin thickened and rounded; disk corrugated and rough; a sharp, transverse ridge divides it somewhat above the centre; the mucro broad, thin or flat, pointed, fragile, curved outwards and pointed towards the apex; scales irregularly five-sided.

Seeds broadly winged all round, waved, oblique, scooped; base of the smooth cylindrical kernel portion prominent; apex emarginate, mucronate, bright cinnamon color.

This species bears the nearest resemblance to *C. Lawsonianna*, but differs from it most strikingly in the brighter green of its foliage and tis far denser branchlets; also in the leaves being narrower, much more angular, sharper pointed; the cones are from one-third to twice the size, more rough, also in color, form, and more sparce distribution, &c.; it is also a tree of larger proportions in all respects. The specific name chosen is intended to express its quality, *par excellence*. We know of no species so agreeably fragrant; the wood abounds in an oil which exhales a peculiar spicy aroma, in which the ginger odor prodominates. This notable odor has sometimes given it the common name of "Ginger Pine" among lumber-men. Some speak of it as "White Cedar;" in the market it is also known by the more indefinite name of "Oregon Cedar." The grain of the wood is commonly a fine, close texture, strong and elastic; the annual concentric circles are often as large and distinct as the Eastern white pine, (*P. Strobus*,) showing it to be a tree capable of rapid growth. It has gained a good reputation among carpenters, since it has been brought into market properly seasoned; it works easy, and burnishes smoother than the white pine.

We understand suitable machinery is now on the way to this city (S. F.) for the purpose of working this lumber into tubs, pails, and other domestic wares, similar to our Eastern "Cedar Coopers," as that class of mechanics is styled, who work only this species of wood.

The well-known collector, and enterprising discoverer of this, and several other new species of the Conifers—Mr. A. F. Beardsley—has furnished the following observations:

CUPRESSUS FRAGRANS.

Among the timber trees of the Pacific coast the White Cedar, as it is commonly called, of Southern Oregon, is among the most interesting for the beauty of its foliage and utility of its wood. It is found in almost every situation contiguous to the coast and for several miles inland, but most abundant in moist ground and low hills kept moist by the density of the forest. It nearly fills sections of the extensive forests in the maratime districts of Southern Oregon, latitude 52° to 44°. It is mingled with *Abies Canadensis*, *Abies Donglassii*, *Abies Menzsiesii* and a Silver Fir that I could not designate, it having neither fruit nor flower at the time, (May 25th,) resembling *Pinus Grandis* of Douglass. The trees stand so thick that the light can hardly penetrate the evergreen foliage, and in their gloomy shades spring at every step Rhododendrons, Dwarf Bay, Vacciniums, bearing a delicious red berry, and other shrubs and plants. This tree growes straight, six feet in diameter, 150 feet in height, and nearly destitute of branches for 50 to 70 feet; but when found singly, its long, slender, pendulous branches are retained down nearly to the ground, making the general outlines columnar, surmouuted by an elongated pyramid. The bark on the young stocks is thin, but as they grow old becomes thick, furrowed, and of a soft, fibrous texture, not unlike that of *Taxodium Sempivirens*, of a chocolate color. The color of the wood is white, rather heavier and firmer than white pine, (*Pinus Strobus*,) which it much resembles; is strong and durable, fine grain and easily wrought. It has a strong, fragrant, spicy odor, which it retains for a long time. This characteristic has suggested the name of Fragrant Cypress. The lumber made from it is of the best quality, being very clear from knots. It is extensively used in San Francisco for joiners' work, and commands the highest price in the market. It is preferred for clothes-presses, chests, etc., having the same properties in this respect as camphor wood (*Laurus Camphora*) in keeping away moths and other insects. It has been used in boat-building, and is highly recommended by those who have used it for this purpose. It would make excellent timbers in ship-building, where extra durability is required. There is no more valuable timber found on the Pacific coast—the famous sugar pine (*Pinus Lambertiuna*) not excepted. From the latitude in which it is found, it is unquestionably hardy, and its cultivation would be a valuable acquisition to Atlantic States and Northern Europe.

SAN FRANCISCO, Dec. 7, 1857

A letter was read from Mr. Swallow, State Geologist of Mississouri, acknowledging his election to membership.

Dr. J. A. Veatch read the following paper:

NOTES OF A VISIT TO THE "MUD VOLCANOES" IN THE COLORADO DESERT, IN THE MONTH OF JULY, A. D., 1857, BY JOHN A. VEATCH, M. D.

Among the numerous objects in California inviting the investigation of the scientific and the attention of the curious observer, none are more conspicuous than the "Salses" or "Mud Volcanoes" of the Colorado Desert. Hidden midst the burning sands of a frightful waste, few persons have had the temerity to encounter the labor and risk of visiting them. Even the Indians, inhabiting the border of this Western Sahara, do not willingly venture so far into its midst, unless it be during the annual rains. At any other period, to miss one of the few springs of brackish water, or to find the place occupied by drifting sands—a not unusual occurrence—would entail the certainty of the horrors of thrist, if not loss of life. From personal experience I cannot blame the repugnance of the natives to visit a district, which, in addition to its physical repulsiveness, they suppose to be the abode of dark and malignant spirits.

The striking peculiarities of this wild region are, however, too striking to remain long unsubjected to thorough exploration. The entire desert is supposed to have been the bed of a great brackish or fresh-water lake, and is said to lay many feet below the level of the ocean. The part I lately visited showed deep lacastrine deposits, inclosing, in myriads, the conchological records of the former sea.

It was the month of July of the present year that I had occasion, in the progress of a mineralogical excursion, to visit one of the above named salses. It is situated about one hundred and fifty miles from San Diego, and sixty miles in a north-easterly direction from the Indian village of San Filipe—the nearest inhabited habitable place. The exact locality, as reported by the U. S. Surveyors, is Township 11 South; range 13 East, San Bernardino meridian. The distance from San Felipe as above given is in an air line, but by any practicable route is, at least, thirty miles further, owing to the necessity of making a detour to the South, to find the only water on the route.

At the above named village, at the trading post of Messrs. Smith & Brill, we—myself and son—made preparation for our desert excursion, by procuring fresh horses and a guide, and providing provisions, and goards and leathern bottles for carrying water. Our guide, Jose Serano, who was one of the Captains of his village, spoke Spanish, and was the only one of his people who had ever been actually at the spot we wished to visit. The weather was intensely hot, and the guide advised starting late in the afternoon, so as to have the advantage of a night's journey, and thereby reach the watering-place early the next day,—before the heat became oppressive. The following I extract from my notes:

"Left San Felipe at 4 o'clock, P. M., July 17. Crossed the sharp Porphyritie Mountain Ridge separating San Felipe Valley from the desert. San Felipe Creek cuts through the ridge here and runs off in a narrow canon towards the desert. It is a bold, running stream, but never emerges from the canon in summer, being literally drank up by the first breath of the thirsty desert wind. The bed of the stream is not practicable for horses, so we climbed the moun-

tain, along an Indian pathway, and from the crest—about 1000 feet above the valley—had an extensive view of the desert, shading away into gloomy indistinctness and blending with the dull clouds that skirted the horizon toward the East. To the right and left, as far as the eye could reach, the mountain chain presented a series of fantastic and rugged seratures well in keeping with the sombre area of baron desolation it hedged in. A few stunted mesquit trees, a dwarf magey and a pretty fair representation of the cactacia, constituted the flora of the mountain. Descending the eastern slope at a rather sharp grade, we re-entered the San Felipe canon. We received now and again puffs of hot wind, giving us a foretaste of the furnace-temperature of the broad, herbless plain below. The canon sloped off rapidly, but with great regularity, expanding into a valley two or three miles wide and finally losing itself in the desert ten miles beyond. The soil—if the term be applicable—consisted of detrital matter and debris of the mountain rocks. A species of Catalpa, with slender, pendulous pods, grew in depressions marking the beds of winter torrents, and clusters of a tall shrub covered with strong secured prickles from the root to the extremities of the branches, gave warning not to approach them too closely. Succulent and arborescent Opuntias occurred in clumps and patches; and the Echinocactus, with its rigid fish-hook spines, lay often half covered in sand, and our horses frequently started suddenly to one side to avoid them. The columnar form of a huge cereus crowning some rocky eminences presented, often, a peculiar and picturesque appearance. Night overtook us in the valley, and our progress was much impeded by the opuntias constantly pricking the horses, rendering them restive and fretful. The road grew worse and worse every mile, and about 11 o'clock a dense forest of bristling vegetation completely blocked the way. In attempting to force the barrier, my horse became furious and commenced plunging, and I had to choose between throwing myself off into the spring moss or suffer the horse to do it for me. I chose the first, and in attempting to hold the infuriated animal, was dragged and shoved alternately amongst opuntias higher than my head, until my clothes were literally pinned to the flesh from head to foot by the barbed needle-like prickles. The horse fared no better, but I felt no great consolation on that score. Jose, with his *riata* came timely to the rescue, and the horse was secured just as the bridle reins broke in my hand and I came near experiencing the additional unpleasant mishap of being left horseless. Farther progress for the night was out of the question. The horse had freed himself from the saddle and riding gear, and was so covered with spines rankling in his skin, that to replace them was impossible; and even could the horse have borne the saddle the rider could not have borne the seat. So tying up in the most favorable spot that offered, a light was struck and the residue of the night spent in extracting prickles from the flesh of man and horse.

"*July* 18.—At early dawn started again and had the good fortune to thread our way through the horrid grove without further mishap. A smooth surface of baked clay, in which not even a cactus could root itself, gave place to the disintegrated mountain deposite, and over which we passed at a sweeping trot. A beautiful specimen of Selenite was picked up here, and water-worn pebbles occasionally occurred. Two hours' ride brought us on to an enormous clay deposite, with fragments of thin bivalve shells—probably the margin of the ancient lake. The soil became gradually more sandy and the variety and number of shells greatly increased. Finally the entire deposite consisted of fine sand and clay, with minute univalve shells in astonishing quantities. Hillocks formed by drifting sand accumulating around clumps of mesquit bushes, leaving only the branches exposed, gave some variety to the surface of the plain. A few black Tabanis came buzzing about the horses, and a large spotted winged Libellula flitted by us. The presence of these insects was the more remarkable as the distance to water was not less than ten miles. Their appearance, insignificant as were the little creatures, was cheering and relieved the sullen sadness always produced by the total absence of animated beings. At 10½ A. M. we reached water, after thirteen and a half hours' riding. Horses much fatigued, hungry and half mad with thrist. Water brackish and warm, proceeding from a large fountain which rises up in the bed of a ravine, boiling and bubbling with the constant evolution of gas—probably carbonic acid. It runs off north-east in a stream yielding about 500 gallons per minute; but within half a mile it is lost in the porous soil, and there is no further trace of it. The ravine in which it rises comes from the south-west, and is probably a continuation of Cariso Creek. It here forms a little valley some hundred yards broad, covered with bushes and coarse grass—among which the stream meanders from side to side of the valley. The depression below the common level of the desert is about forty feet. I will take occasion to mention here that appearances presented by the bottoms of ravines, wherever I observed them, indicated that water might any where be found at a depth not exceeding forty feet. A small grove of mesquit trees, (Prosopus Glandulosa) with a heavy crop of dry legumes, stood on the brink of the ravine. The fruit formed a welcome repast for the horses, and the slight shade of the scattering boughs afforded us some protection against the hot sun-rays; with blankets spread over them a tolerable shade was produced, but afforded no barrier to the parching blasts of wind that came like the breath of an oven. I was driven to the water, where, with the tall rushes bent into a kind of bower and sitting up to the neck in the stream, I voted myself the presiding genius of the place, and half dosing, rested comfortably for an hour.

"At 5½ o'clock P. M., started again, hoping to reach the volcanoes by midnight. To lighten the burden of the animals, all our provisions, blankets and extra wearing apparel, were left behind, taking no weight save our arms and supply of water. Two black buttes, betwixt which our course lay, in a north-easterly direction, served us as guides. Within two miles, came to

a small stream of water, rising in a ravine but not sunk more than fifteen feet below the plain. It ran toward the North a very little wry, and was lost by evaporation and absorption. Beyond this, crossed a superficial clay ridge, strewn with pebbles and fragments of obsidian; near sundown, entered a sandy district, the horses sinking fetlock deep each step; after dark the buttes being no longer visible, kept our course by the stars. By-and-by the atmosphere became hazy, and only occasional glimpses could be had of the stars. Wandering from our course, we got into loose, drifting sands, thrown by the winds into ridges and hillocks, through which the animals plunged and struggled, and finally we had to dismount and lead them. Jose declared himself lost, and refused to go any farther till morning. There being no means of securing the horses, in case of a halt, we continued to toil on, and fortunately got off the sand banks in a little while. Soon, a few sage bushes were encountered, and selecting the stoutest, the animals were fastened to await the coming of to-morrow. In attempting to make our beds, the burning temperature of the earth required the interposition of saddle-blankets and leathern covers of the saddles, and still it seemed like submitting our limbs to the process of baking. The restlessness of the horses kept us in constant fear lest they might break the insecure fastenings and leave us in a rather unenviable predicament. It is useless to say the night was not passed in refreshing slumbers, and the dawn was never more welcome.

"*July* 19.—At daylight it was found that we had wandered last night too far to the North, and had to turn to the South and East. The white clouds of steam, shooting upward from the Salse, soon became apparent at the distance of ten miles. At sunrise the steam-jets presented an imposing and singular appearance; the cones from which they issued were distinctly visible, and the dull roar of the subterranean tumult could occasionally be heard. The black buttes that served as land marks yesterday lay on either hand—that to the left less distant. It had the appearance of a mass of lava heaped into a rough and fantastically irregular hill, crowned with sharp pinnacles and rude arches, as if the whole had been hardened suddenly while in a state of most violent agitation from boiling. The more distant one to the right seemed a black, compact mass, with a glittering, smooth surface common to the granite and gnisease rocks bordering the desert. If volcanic, the character was not so apparent as in that to the left.

"A little after 6 A. M., reached a point as near the Salse as was deemed prudent, on horseback. The ground had become soft and muddy, and the sulphurous scents and strange sounds frightened the horses. Giving them in charge of Jose Serano, we proceeded on foot about a quarter of a mile to the scene of action. The scene presenting itself is difficult of description. The accompanying engraving from a drawing made by my son, on the spot, gives some idea of the appearance, but the effect can only be known by one who has heard the wild rush of steam, the rude hubbub of the mud explosions, and the dull murmur of the boiling cauldrons of slime. The space occupied by the Salse is a parallelogram, five hundred yards long and three hundred and fifty broad—a table of hardened bluish clay, a little elevated above the surrounding plain.—The adjacent ground is low and muddy, and during the rains entirely covered with water.—There is a gentle slope toward the North and East, the mud and water of the Salse running off slowly in that direction, where a lake of salt water exists in the rainy season, but presenting now a vast sheet of crystaline chloride of sodium. Into this lake the arm of the Colorado, known as New River, discharges itself. The lake, having no outlet, would probably soon regain its ancient area if the channel of New River afforded a regular and more generous supply of water.

"The steam-jets of the Salse issue from conical mounds of mud varying from three to fifteen feet in height, the sides presenting various angles, some being sharp and slender cones, others dome-shaped mounds that seemed to have spread and flattened out with their own weight, upon the discontinuance of the action that formed them. Out of some of the cones the steam rushes in a continuous stream, with a roaring or whizzing sound, as the orifices vary in diameter or jets differ in velocity. In others the action is intermittent, and each recurring rush of steam is accompanied by a discharge of a shower of hot mud, masses of which are thrown sometimes to the height of a hundred feet. These discharges take place every few few minutes from some of the mounds, while others seem to have been quiet for weeks or months. During our short stay we had specimens of the rapidity with which a sharp, conical mound could be built up and again tumbled down. In one place a stream of hot water was thrown up from fifteen to thirty feet, falling in a copious shower on every side, forming a circle within which one might stand without danger from the scalding drops, unless the wind chanced to drive them from their regular course. It issued from a superficial mound out of an opening about six inches in diameter; but the column of steam and water immediately upon issuing expanded to a much greater size. The orifice was lined with an incrustation of carbonate of lime, and around it, and particularly on the south-east side, stood a miniature grove of slender stalagmitic arborescent concretions of the same substance. They were from half an inch to one and a-half inches in diameter, and from four to eight inches in height. Many of them were branched and the tips colored red, contrasting beautifully with the marble-whiteness of the trunk, and resembling much a corral grove. Some were hollow, and delicate jets of steam issued from their summits, and this seemed to explain the mode of their formation. Some were not hollow throughout, being closed at the summit, but when detached from their base, a small orifice in the centre suffered hot steam to pass, and some degree of caution was required to remove them without scalded fingers. To approach the spot was a feat of some difficulty, surrounded as it was by a magic circle of hot rain. I retreated, scalded, from the only attempt I dared to make; but my son, more adventurous or more attracted by the beauty of the specimens, succeeded in bringing

away several. The falling water ran off into a pool a foot deep, but what became of it was not apparent, as it had no seeming outlet. I brought away a bottle of it for examination. It was transparent, but had an intensely bitter and saline taste. This spot is represented a little to the right of the centre in the engraving. A little beyond and on either hand, are two huge cauldron-like basins, sunk five or six feet below the general level, and near a hundred feet in diameter. Within these cauldrons a bluish argillaceus paste is continually boiling with a dull murmur, emitting copious sulphurous vapors, and huge bubbles, bursting, throw masses of mud to the height of several feet. These kettles sometimes boil over, and the matter runs off in a slimy stream toward the salt lake. This seems to have been the case recently, as we encountered the track of one of these streams, not yet dry, a mile from the Salse.

"The volcanic action was far more violent at some former period than at present, as is proved by the erupted butte, above named, as well as by fragments of pumice scattered over the plain.

"Our visit only lasted an hour and a quarter. The sun was already scorching hot, and our supply of water could not last, with the most rigid economy, more than three hours longer. The watering place, left yesterday, was not less than 20 miles distant. A spring was marked by the U. S. Surveyors, only 4 or 5 miles to the north, but as no land-marks were known by which it might be found, it would have been rash to waste time in seeking it. The tempting objects in the vicinity, which would require many days for examination, could only be greeted with a farewell glance, and our horses' heads were turned towards the water. Leaving the sand hills, that gave us so much trouble last night, to the right, our course lay south-west.

"We soon had reason to congratulate ourselves upon being clear of the drifting sands. The winds increasing as the day advanced, whirled the dust into a black cloud through which Jose declared it would be impossible to travel. It would certainly have been exceedingly unpleasant, to say the least. The season of the rains was due—the Sonora rains prevailing here—and showers were observed at a great distance, but none approached us.

"For the first three or four miles, after leaving the Salse, the plain presented a smooth surface of sand and bluish clay—baked and fissured—strewn sparingly with volcanic cinders and obsidian fragments. Round holes marked the escape of gas when the ground was softened by water. Soon the plain became cut up with ravines 3 or 4 feet in depth, which Jose said were the arms of "New River," which branched out before entering the salt lake. The remains of a most luxuriant vegetation, now dead and dry, proved the place to be only a desert for want of water. The suddenness and rankness of grass and weed-growth where the New River broke away from the Colorado, some years since, and irrigated the desert, is remembered by many who witnessed the magic-like transition from barrenness to fertility. An intervening sandy district confused our course—loose and drifting, but not deep—and fortunately no sand-storm was gotten up for our benefit while passing it.

"It was now near noon; the wind blew a gale, but seemed only to add, by its scorching dryness, to the raging solar heat. Our water bottles were exhausted, and the distance betwixt us and the watering place was yet ten or twelve miles. Two hours' deprivation of water is certainly no great inconvenience, under ordinary circumstances, but on the desert can only be appreciated by one who has felt it. About two o'clock, P. M., the green bushes and cheerful rippling of water greeted us, and men and horses plunged in and blessed the fountain in the desert.

"The tired condition of the animals made it imprudent to leave our present position until they were somewhat recruited, so arrangements were made for a shelter from the sun. A black cloud that had been slowly heaving up for some hours from the west, at last met the sun's track and brought its friendly shadow to our relief. After a refreshing nap of two hours, an attempt was made at getting up a breakfast—we had eaten nothing during the day—but all appetite was gone, and nothing craved but continued drafts of water. Jose, however, was a bright exception, and had certainly lost nothing of his gastronomic powers, but merrily devoured the meal prepared for the three.

"As night closed in, two or three black bats came forth from their hiding places, and a solitary goat-sucker flitted around in silence. No other animals appeared, save a lizard, whose movements were too quick for us to capture him, and three coleopterous insects, less agile than their neighbor, fell a sacrifice to the interests of science.

"On the morrow—Monday, the 20th—it was still thought imprudent to leave until evening, so as to make the most of the journey to San Felipe during the night and early the following day. The forenoon was therefore spent in collecting a few shells from the soil, one of which, the Physa humerosa, was still found inhabiting the water of the spring. Two species of fishes were observed, about an inch in length, one slender and of a whitish color, the other, broad in proportion to length, and dark colored, looking like a small perch. Our guide states that this secluded spot was his early home. He was born here, and the tribe he now rules over here had their lodges, and lived in abundance on the maize, melons and frijoles that he describes as growing with a luxuriousness unknown to any place away from the so called desert. A succession of rainless summers drove them away, and they have not since returned. They planted with the early rains, say in July or August.

"At 4 P. M., bid adieu to our camp and set out for San Felipe. About midnight we arrived on the margin of the cactus thicket—the scene of my former mishap.

"*July* 21.—At daylight again on the move, and startled a vagrant coyote, the only one ever seen in our route. A trail of a flock of mountain sheep was observed, and the head of one, probably killed by Indian hunters, lay by the wayside. A 10½, A. M., the welcome sight of San Felipe cheered us from the heights above it, and

a half hour more found us safe under the hospitable roof of Messrs. Smith & Brill."

Thus ended a hurried trip to a most interesting spot in the midst of a no less interesting district. The shells obtained were submitted to Dr. Trask and were found to consist of two species of Amnicola (A. protea and A. longinqua —Gould) and the Physa (P. humerosa—Gould) before named. A large bivalve was observed, but so thin and fragile that the specimens broke to small pieces for the want of safe means of transporting them.

The water from the volcano has the specific gravity of 1.075, and holds in solution free boracic acid, with borates and a large quantity of chloride of sodium, and other salts. These matters would indicate the true volcanic origin of the Salse, and but little doubt rests on my mind of its being so. The evidences of former volcanic action in the neighborhood and the testimony of the boracic acid, establish its true character. The acid and its compounds exist only in small quantities, but sufficient to be unequivocally determined. Similar Salses exist some thirty or forty miles further south. One made its appearance during the earthquake of November 29, 1852, a few miles below the line of the State. Two others exist in the same district, as I was informed by a person who professed to have visited them. One is represented as a single jet of steam and water from an opening a yard in diameter, situated in a plain of hardened clay. The other consists of several pools of warm water, through which hot gas is continually escaping. Another is again spoken of in the adjacent mountain, partaking of the true volcanic character, emitting fire and smoke. I hope some one may soon have occasion to examine these and other interesting localities, at a season when it will be practicable to pass a few days on the desert without danger of perishing with thirst.

The real character of this desert has not been generally understood. In its present condition it is truly a desert. But only a portion, however, of its immense area is condemned to irretrievable barrenness—viz: the part covered with drifting sands. The greater part, from the constituents of its soil, must be fertile in the extreme, and only wanting moisture to produce a wilderness of vegetation. This is proven in the case of New River, while it continued to run. This arm of the Colorado might be made permanent, but a far more convenient supply could be furnished by artesian wells, or better still, by wind mills raising water from common wells, as is now so successfully practiced throughout the fertile valley of San Jose. As stated before, there is every reason to believe water can be had any where at a depth not exceeding thirty or forty feet."

As the great Southern Railway must pass through this district, it is interesting to know that the now dreaded desert can easily be changed into the happy homes of a thriving people. Repulsive as are the features of the country at present, the presence of a rail-way will convert it into the garden of the Pacific slope, and it is destined to become the cotton and sugar growing district for Arizona, Utah, California and Oregon.

Since writing the above I have had the pleasure of seeing a letter from Dr. Newbury, Geologist of the Colorado Exploring Expedition, being now fitted out by the U. S. Government, to Dr. W. O. Ayers, of San Francisco, from which I am kindly permitted to make an extract. Speaking of the desert, he says: "I find it not a bad country—having, most of it, a better soil than the mountain districts west of it. If water could be supplied regularly to the New River country it would be a perfect garden."

San Francisco, Jan. 11, 1858.

Dr. Trask read the following paper on the occurrence of earthquakes during 1857:

Earthquakes in California during the year 1857.

During the past year there has been rather a frequency in the occurrence of the phenomena of earthquakes, and, with the exception of two, there have been none that were particularly remarkable either for extent of surface affected or severity of action. In one, that of the 9th of January, the greatest extent of surface, and greatest intensity of action was manifest. Its principal force seems to have been expended in the more southerly portions of our State, and in the immediate vicinity of those volcanic vents found at different localities upon the Colorado Desert. It is manifest, however, that this shock and those which preceded it on the night of the 8th, had their origin to the west of our coast, as the times of occurrence of the shock at different localities most fully prove. This matter was fully discussed in my previous paper, "On the direction and velocity of the Earthquake of January 9th, 1857," read before this Society March 30th, which will be found on page 98 of their proceedings.

The other shock of greatest extent, on the 2d of September, extended over an area of about 200 miles, but was marked by no particular severity or injury except that of fright to those who experienced it.

The whole number that can be authenticated as occurring during 1857, amounts to seventeen, being greater than the number recorded in 1853 and 1856, and it would seem probable from our records that this number is the maximum to which we shall probably be subjected in this State.

From the Sandwich Islands we have no news of earthquakes save one, which is here inserted: "A very severe shock of earthquake was felt at Kawaihae, Hawaii, on the 24th of February, the most severe that the residents there have had for many years."

The arrival of the whaling fleet from the Northern seas brings no intelligence of the occurrence of these phenomena, as was the case of the preceeding year, hence, the presumption is, that subterranean action has not been violent in those distant regions during the year just passed.

On the coast of Mexico, and inclusive between the 25th and 32d parallels, we have received intelligence of the occurrence of one earthquake, which appears to have been felt on both shores of the gulf of California for a dis-

tance of nearly 200 miles, both North and South. We have no records South of that point.

The shocks which we can authenticate within the limits of our own State, are as follows:

Jan. 9.—This shock was felt from Sacramento to the Southern boundary of the State. It was preceded by three smart shocks the night and morning previous. The time of its occurrence at this city was 8h. 13m. 30s.

Jan. 18, 9 A. M.—A light shock at Martinez and Benicia.

Jan. 20, 8:30 A. M.—A smart shock was felt at Santa Cruz and Mission San Juan.

Jan. 21, 11 P. M.—On the evening of this day a smart shock was felt in Mariposa. The wave and sound seemed to travel from N. W. to S. E. It was accompanied with a report like that of a distant gun.

Feb. 5, 7 P. M.—A smart shock was felt in San Francisco, which shook the buildings that are situated on made ground very severely, while those situated on firmer bottoms were affected. This shock was felt at Oakland and Stockton, but was not felt at San Jose or Sacramento, as reported at the time.

March 14, 3 P. M.—A severe shock was felt at Santa Barbara and Monticito. It was momentary in duration, attended with a loud report.

March 23, 12:27 A. M.—A light shock in San Francisco.

May 3, 10 P. M.—A smart shock at Los Angeles and the Monte.

May 23.—A light shock at Angeles; a report also that a severe shock had been felt at Fort Tejon.

June 14.—A shock was felt at Humboldt Bay. On the same day several severe shocks were experienced at the penal island, Carmen, Gulf of California, and which extended almost ninety miles north and south of the island.

Aug. 8, 11 A. M.—A smart shock was felt at Rabbit Creek, Sierra county.

Aug. 29.—A severe shock at the Tejon Reserve. No time is given.

Sept. 2, 7:45 P. M.—A light shock at San Francisco. This shock was felt at Sacramento, Marysville, Nevada, San Juan, Downieville and Camptonville.

Sept. 14, 2 P. M.—A light shock in San Francisco.

Oct. 19, 6:30 P. M.—A severe shock of an earthquake in San Francisco. On the following morning, at 12:8 A. M., at 12:35 A. M., and 1:15 A. M., three other shocks occurred; the last was equally severe with that of Jan. 9th, at 8 A. M. People were much frightened, and left their beds. The shock was felt at San Jose, but not at Oakland.

Nov. 8, 3:45 A. M.—A shock at San Francisco, which was felt at Oakland and Bodega.

Dec. 23, 7 A. M.—A light shock at San Francisco.

Of the whole number which have occurred during the year, two only have been felt at San Francisco that were not experienced at other localities, and four others have occurred which have been felt in common at other portions of the State; thus making about one-third of the whole number that were in common here and elsewhere.

Eight of the aggregate have occurred between the summer and winter solstices.

Seven have occurred during the spring and summer months, and ten during the winter and autumn.

Eight have occurred between the vernal and autumnal equinoxes.

San Francisco, June 29, 1857.

President, Col. L. Ransom, in the chair.

Donations to the Cabinet to Jan. 1, 1858.

Tibia of mastodon, from Shaw's Flat, by Mr. Charles H. Stokes.

Carolina limestone, from Alpha, Nevada Co., by Mr. Isaac Wisner.

One hundred and fifty species of marine and land shells from the Sandwich Islands, by Mr. Garrett.

Coleopterous insects, by Mr. T. F. Moss.

Serpentine, perforated with Pholas, from Oregon, by Mr. Beardsley, with tertiary fossils from the same coast.

Red and black oxide copper and sulphur from Lower California, by Dr. Norrline.

Copper ore from Hope Valley, by Hon. John Bigler.

A jar containing preparations of the nutmeg in every stage of growth, from Singapore, by Mr. Thomas Dalton.

Ores of copper from the Arizona mines; also fossil Ostrea from the Desert, by Mr. J. Wilson.

Dipterous insects of this State, by Mr. T. F. Moss.

Fossil vertebra of mammalia from Mission San Antonio, by Dr. Eckel.

Auriferous quartz and limestone from the crystal mine at Angels' Camp, by Mr. Benjamin.

Specimen of the new genus Loxorynchus, (Stimpson), by Nahl & Bro.

Kaolin clay from foothills San Joaquin county, by Mr. Patrick, of Stockton.

Marine fossils from Russian America, (tertiary), Mr. T. F. Moss.

Mastoid process temporal bone of whale from San Diego; recent and fossil shells of Physa humerosa, planorbis Ammon, and two species of Amnicola, Colorado Desert; also, three specimens of carabus, fruit of two species of mezquite and composite flowers, from same locality, by Dr. J. A. Veatch. Also specimens of botany from the vicinity of Santa Barbara.

A collection of plants from the vicinity of Port Orford, by Mr. Beardsley.

Specimens of Pinus tuberculata and other plants from Contra Costa, by Mr. Bloomer.

Specimens of Sienite from Yosemite Falls, by Mr. Hepburn. Also carbonate copper from the North Carolina Mine, Rough and Ready, Nevada county.

Argentiferous grey copper, with analysis of the same, from Tubac, G. P. Plomosa, Tubac. G. P.

Silver ore from La Mina Bolanos, Durango, by K. G. Killaly.

Silver ore from La Paz, L. C., by J. K. Moller & Co.

Picrolite (?) from Three Buttes, Mariposa county; also two specimens granite, with large crystals, black tourmaline, from Texas Flat, by Mr. James Hepburn.

Red oxide copper and Atacmite from La Mina Mozamique, Sinaloa, by Mr. G. F. Walker.

A bark tunic of South Sea Islands, by Mr. E. Stanley.

A collection of the honey ants found in the Gadsden Purchase, by Mr. Poston.

Sugar from the honey dew from Napa county, by Mr. R. T. Montgomery.

Deposited by Mr. Hutchings: two specimens indurated tufa from Mokelumne Hill; also a large specimen bark of Sequoia gigantea, in glass case.

Specimens of silicified wood from Mokelumne Hill, by Mr. S. A. Briggs.

Colepterous insects from Sierra Nevada, by Mr. Hepburn.

Malleable sulphuret silver with ruby ore, La Mina Guadalupe y Calvo, ruby blende in calcareous gangue, from Batopilas Chihuahua; Plumose Argent Galena, with grey copper, from Siberijou, Sinaloa, by R. G. Killaly.

Specimens of a new species of Sabella, and specimens of teredo from Bay of San Francisco, by Dr. Trask.

Wood of the Cupressus fragrans, (Kellogg) by Mr. Beardsley.

Auriferous limestone and quartz from Calaveras Mine, Angels Camp, by Mr. L. P. Bouton.

Ores from the Grain Gold Lode, Butte Co.; ores from Keystone Mine, Amador county, by Mr. Waitt.

Limestone from Santa Cruz, by Mr. Dunham.

Peroxide Manganeese from Mount Diablo Range, by Mr. Lyman.

Gum Acacia from Mazatlan.

Marine shells from Acapulco, by Dr. Stillman.

Specimens of heart of redwood, enclosing acorns, by Mr. Charles Simson.

Arraganite from Suisun, by Dr. Veatch.

Specimens of pinus contorta, (?) and cones of Abies menzezii, by Mr. Beardsley.

Skull of cannibal from New Caledonia, by Dr. Pique Dupuytren.

Marine shells from Panama, by Dr. Stillman.

Specimens of Clay from San Antonio, by Mr. Beardsley.

Specimens of serpentine from Amador county, by Mr. T. F. Moss.

Donations to the Library to the Close of the Year.

List of members of the Linnean Society.

Address of Thomas Bell to the Linnean Society.

Journal of the Proceedings of the Linnean Society, parts 1-3 Botany and parts 1-3 Zoology; vol. 1, 1856.

Kongl Vetenskaps Akad Handlinger; vol. 2, 1853-4.

Oversigt Kongl Vetenskaps Akad Forband, Stockholm; vol. 1, 1855.

Schriften, Russich, Kaiserl, fur die Gesam Mineralogic; parts 1 and 2, 1842. St. Petersburg.

Jahrbuck der Kaiser Konigl Geologischen Richenstalt; No. 1, Jan., Feb., March, 1853; No. 3, July, Aug., Sept., 1855; quarto.

Descriptions of land and fresh-water shells, by Isaac Lea, from the author.

Catalogue of human crania of the Museum of Philadelphia Academy Natural Sciences, by Mr. J. L. Sargent, Phila.

La Science for 1857, by T. F. Moss.

American Journal Science and Art, from the publishers.

Proceedings Boston Society Natural History, pp. 145-176, from society.

Researches on the Cyprinoid Fishes west of the Mississippi Valley, by Mr. Charles Girard, from the author.

Also contributions to Ichyology of the United States, and a notice of the genus Salmo of Oregon and California.

Report of the Sanitary Commission of New Orleans on the yellow fever of 1853; Report of Special Committee of New Orleans Academy on Survey of Louisiana; Annual Address before the New Orleans Academy; Proceedings of the New Orleans Academy—from the society.

Prodromus Descript Animaliam Evertabratorium, Part 2, from author.

An account of the Smithsonian Institute, from the Institute.

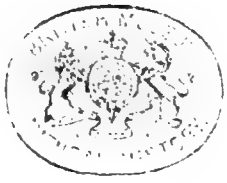
Catalogue of North American Mammals, by S. F. Baird, from the author.

Maury's Wind and Current Charts, quarto, from Lt. Maury.

Zietschrift fur Wissen Zoologie, by Liebold &

1. AMMONITE Chicoensis TRASK
2. BACULITE Chicoensis "

Lith. Britton & Rey S. F.



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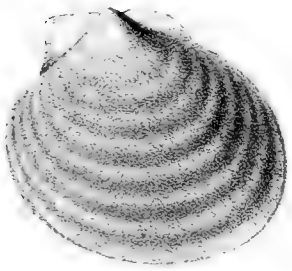

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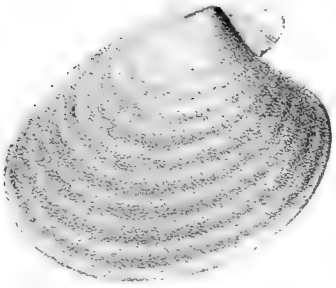

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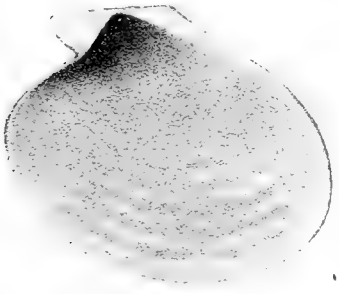

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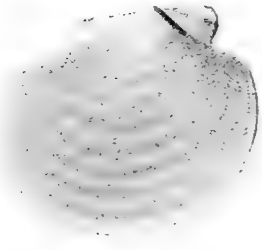

1. PLAGIOSTOMA (Sow.) Pedroana. TRASK.
2. " annulatus "
3. " truncata "

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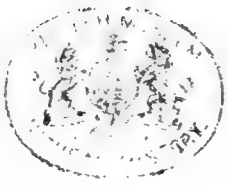
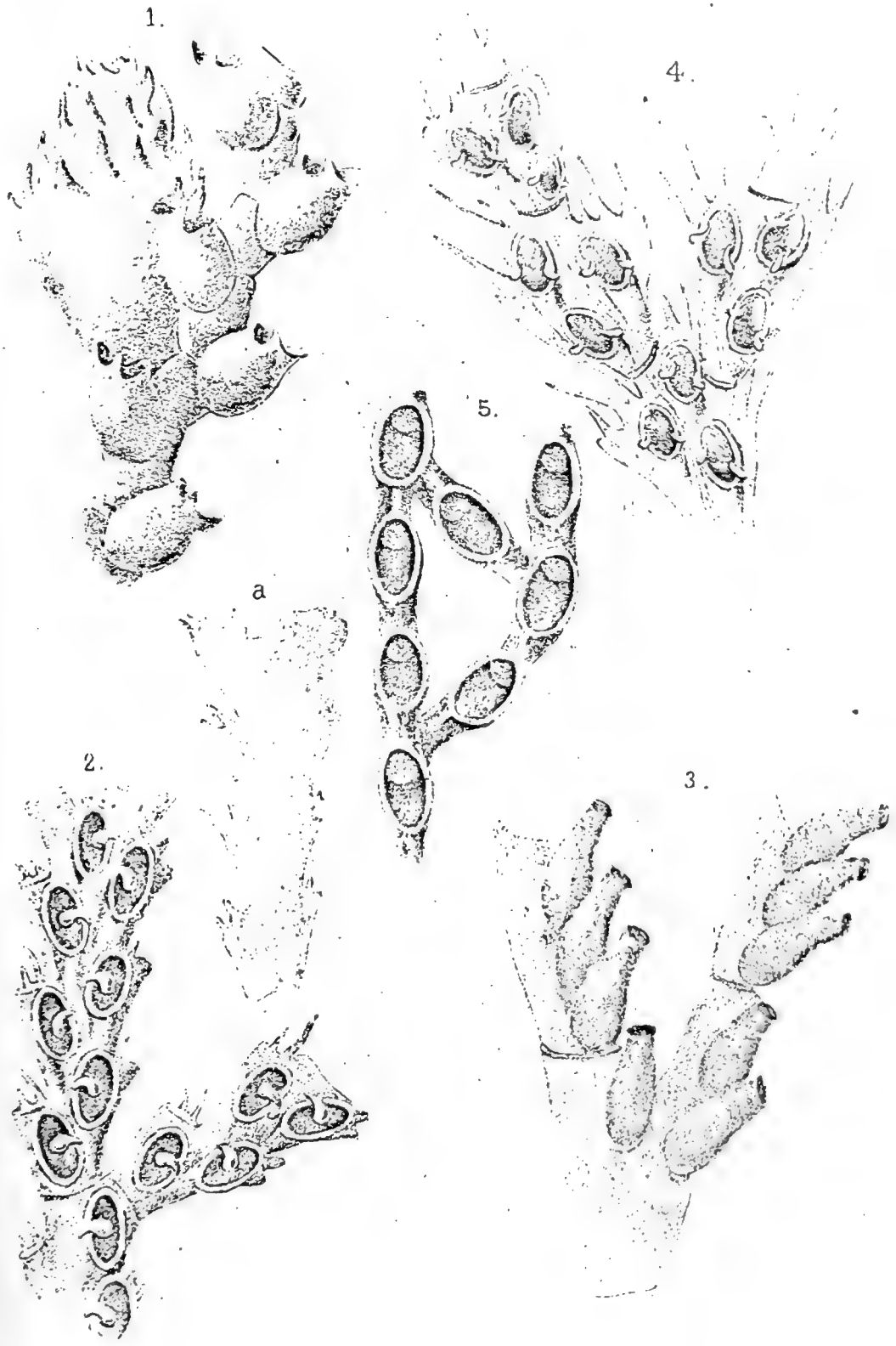


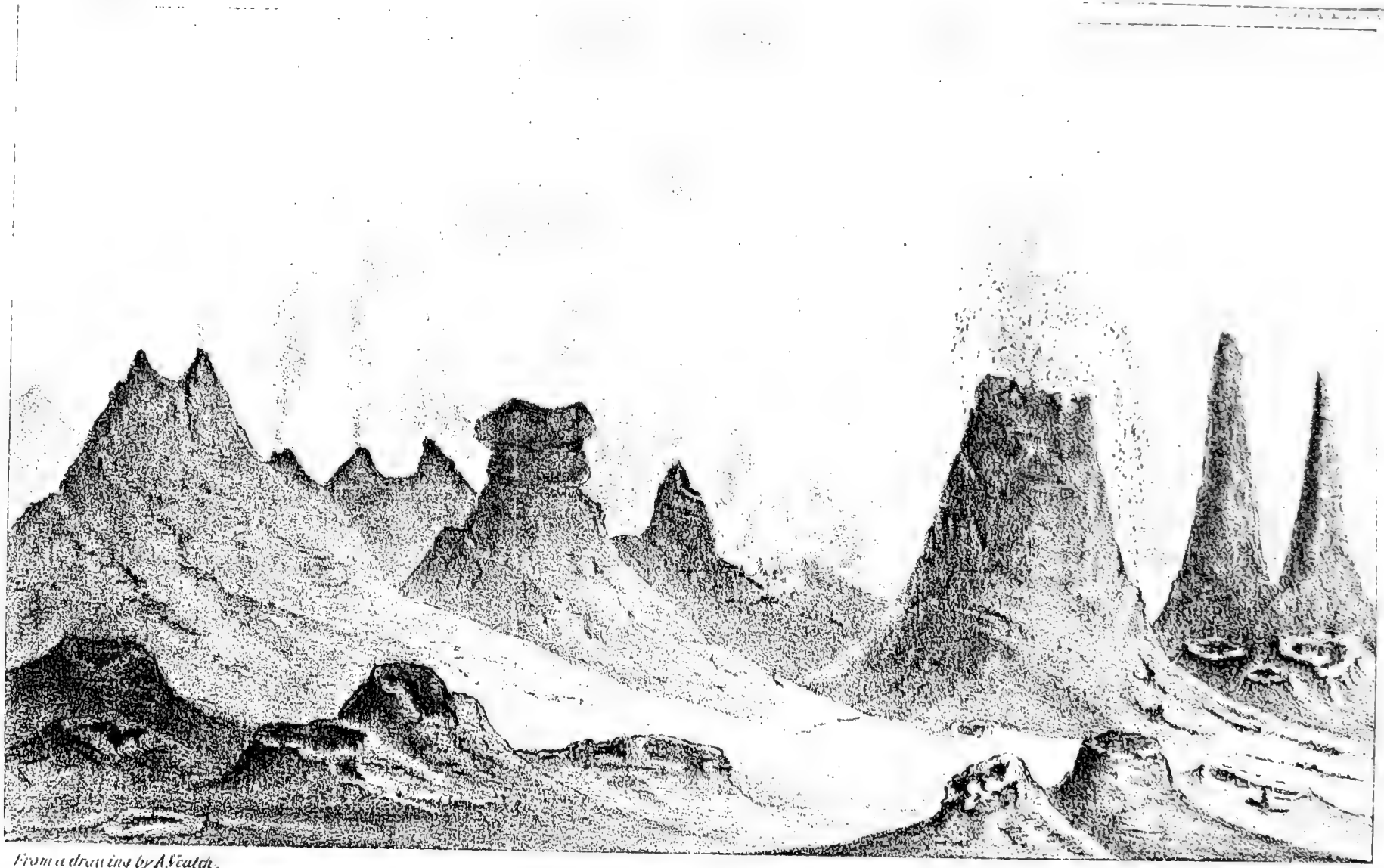


Lith. Britton & Rey S.F.

1. SERTULARIA TURGIDA TRASK
2. SCRUPOCELLARIA CALIFORNICA -
3. PLUMARALIA FRANCISCOANA TRASK.
4. MENIPEA OCCIDENTALIS. -
5. HIPPOTHOA AMABILA TRASK

Lith. Britton & Rey, S.F.

1. SERTULARIA ANGUINA. TRASK.
2 . . FURCATA .
3 CRISIDIA GRACILIS. TRASK.
4. CRISIA OCCIDENTALIS .



From a drawing by A. Veatch.

Britton & Rey lith.

FUMORALES OF THE COLORADO DESERT.