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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, tessellated 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 conspicuous, 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

See Reg. Lond.

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

The anal fin, coterminous 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 *Gasterosteus* 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 Mitchell'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, retrouse, 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. SETIMANUS*,—Gibbons.

Shell convex, granulate tuberculate, antero-lateral margins toothed, retrouse, 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, inter 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 comprising 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 aculei.—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  $10\frac{1}{4}$  inches. Length of first pair of legs 9 inches. Weight of the animal  $6\frac{3}{4}$  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 theories of Mr. Perry and Mr. Stodder will not apply, I trust the whole subject will receive a new impulse of inquiry by physicists whose opportunities for research and observation are ample 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.