ON THE AUSTRALIAN PECTENS CONFOUNDED WITH THE NEW ZEALAND *P. LATICOSTATUS*. (GRAY.)

By Professor Ralph Tate, F.G.S., F.L.S., Etc.,
Corr. Memb.

The only species of the section Vola, inhabiting New Zealand-waters, is generally known under Gray's name of *P. laticostatus*, to which is referred *P. Novæ Zelandiæ*, Reeve, as a synonym; but neither names should be employed, inasmuch as the first is pre-occupied by a Lamarckian species fossil in Pliocene Strata in Italy, and the second by another New Zealand species, established by Gray.

Eastern Australia, Tasmania, and South Australia have each a species of Vola, which has been confounded with that belonging to New Zealand. The Port Jackson shell is locally known as *P. fumatus*, Reeve; the Tasmanian shell is referred by the Rev. J. E. Tenison-Woods to *P. fumatus*, which is considered by him as the same as *P. laticostatus*, he writes* :—

"I regard it as identical with *P. laticostatus*, Gray. They would have been recognised as identical long ago, but for the foregone conclusion that the common shells were necessarily different, because of the different habitat." The South Australian shell is named *P. laticostatus*, by Mr. G. F. Angas.†

Though not indifferent to the opinions of these conchologists, yet in this particular instance I consider their identifications incorrect, and surmise that they have been made without comparison of authentic specimens.

Reeve's figures and descriptions of *P. fumatus*, and *P. Novæ Zelandiæ* are of little value for the purpose of differentiation —his figures lack detail, and the deficiencies are not made good by the descriptions. As the result of a very careful comparison of an extensive series of actual specimens from each of the four geographic regions, it is my opinion that *P. fumatus* is very distinct from *P. laticostatus*, that the South Australian shell is either a local race of *P. fumatus*, or a closely related species, and the Tasmanian shell is distinct from either *P. laticostatus* or *P. fumatus*, though more allied to the former. These several species will be referred to under the names of :—

P. fumatus, for the New South Wales shell.
P. fumatus, var albus, or *P. albus*, South Australian.
P. meridionalis, Tasmanian, and
P. laticostatus for the New Zealand shell.

* Proc. Roy. Soc. Tasm. for 1877, p. 56.
† Cat. of Marine Moll. in Proc. Zool. Soc., 1865, p. 656.

All agree in having about 16 principal ribs, but differ from one another in respect of shape, relative width of ribs and furrows, and sculpture.

In the absence of figures, the measures set out in the following table will serve to indicate the differences and resemblances of shape of these shells; and though the measures are those of a single specimen of each species, yet, they are virtually composite.

TABLE OF DIMENSIONS OF CONVEX OR RIGHT VALVE IN MILLIMETRES.

—	*P. laticostatus*	*P. meridionalis*	*P. albus*	*P. fumatus*
Antero-posterior diameter	116	120	86	65
Ventro-dorsal diameter...	100	104	76	61
Depth of valve	27	27	25	21
Ventro-dorsal curve ...	120	125	102	80
Distance from umbo of the intersection of major antero-post and ventro-dorsal diameters	38	40	36	30

The differences of outline of the shell, as dependent on the latitude of the major antero-posterior diameter, may be indicated by the ratio of the radii of the ventro-dorsal diameter, taking the dorsal radius as 1, then the ratio for *P. laticostatus* and *P. meridionalis* is 1 to 1·6, and 1 to 1·63 respectively, and for *P. albus* and *P. fumatus* 1 to 1·11 and 1 to 1·03 respectively. The different degrees of convexity of the valve may be expressed in terms of the ventro-dorsal diameter and depth, taking the latter as 1, then for *P. laticostatus* the ratio is 1 to 3·7; for *P. meridionalis*, 3·85; for *P. albus*, 3·04; and for *P. fumatus*, 2·9. It is thus clear that *P. laticostatus* and *P. meridionalis* are similar in shape, but different from *P. fumatus* and its variety. Moreover, the former species are characterised by a densely lamellose ornament in the furrows, whereas the latter have the surface smooth, or striated under the lens.

The specific differences between these species may now be detailed as follows:—

P. LATICOSTATUS is distinguished by its broad, flat, smooth ribs with perpendicular sides, two and one-third times broader than the flat furrows.

P. MERIDIONALIS has the ribs convexly depressed, concentrically lamellose, and with 1, 3, or more radial sulcations; the furrows are concave, and as wide or a little wider than the ribs.

In both, the right valve is moderately convex, and broadest at about the dorsal two-fifths. In the following the convexity is much greater, and the greatest width is medial.

P. FUMATUS has the ribs roundly convex, but slightly elevated, the furrows a little narrower than the ribs; the whole surface concentrically striated under the lens, not raised into lamellae; the ribs are radiately distantly striated; external colour reddish-brown, internally white with a brown border all round. P. FUMATUS, VAR ALBUS differs in being less convex, and in colouration; the convex valve is white inside and out, the flat valve exteriorly pinkish-white, the ribs of a deeper tint, and streaked or blotched with darker colour.

P. bifidus, Menke, Moll. Nov. Holl., p. 35, 1843 (non Munster in Goldfuss Petref. Germ.) is probably conspecific.

PECTEN MERIDIONALIS. (Spec. nov.)

(*P. meridionalis.*) Brazier MS.)

Right or convex valve with about 16 radiating ribs; whole surface closely concentrically lamellose, more conspicuously so in the furrows; ribs convexly depressed, longitudinally sulcated; furrows concave, as wide or a little wider than the ribs. Exterior colour purplish-grey, pale straw about the umbo; interior colour maroon around a white central patch.

Left or flat valve closely concentrically lamellose, ribs roundly convex, furrows concave about as wide as the ribs, exterior colour purplish-grey, interior maroon.

Young shells up to 60 mills. long have the convex valve both inside and out, white with a pinkish tinge towards the margin; the flat valve is ruddy-brown exteriorly, white with ruddy-brown ribs interiorly.

Dimensions of right valve of a large specimen:—Antero-posterior diameter, 120; ventro-dorsal diameter, 104; ventro-dorsal curve, 125; greatest depth at 40 from umbo, 27 millimetres.

LOCALITIES.—Living on the shores of Tasmania. Fossil in the newer tertiary deposits at Ascot Heath, River Glenelg, Victoria. (J. Dennant!)

REMARKS ON DISTRIBUTION.

Pecten fumatus is restricted to New South Wales, whilst *P. albus* is only known from St. Vincent-Gulf and Port Lincoln in South Australia. The characters which separate these forms may not be accepted by conchologists as of specific value, and for the present I am content to regard the latter as a variety or local race of the former. So far as known, a thousand miles of coast line intervene between

their respective stations, but the exploration of the intermediate tract may possibly bring to light a connecting link, which may reasonably be expected if *albus* is a variation due to migration. However, of the many examples I have seen of both, I have not observed any other variation than that of colouration, and then only of trivial amount. *P. albus* would appear to have been introduced to the South Australian fauna in comparatively recent times, as it has not yet been found in any of the raised beaches or other Pleistocene deposits which abound throughout the southern coast line of this continent.

P. meridionalis and *P. laticostatus* are certainly closely related species, and may be the direct descendants of a common ancestor; but, nevertheless, the divergence was prior to the Pliocene Period. The former is fossilised at Ascot Heath, W. Victoria, there associated with some extinct species of mollusca, the percentage number of which indicates for the deposit an antiquity equal to that of the Wanganui Series in New Zealand, the lowest horizon at which *P. laticostatus* is found. No species of Vola is known in earlier deposits in either Australia or New Zealand.

NOTE UPON THE OCCURRENCE OF THE SYDNEY CRAWFISH, *PALINURUS HUGELLI*, ON THE COAST OF TASMANIA.

By W. Saville-Kent, F.L.S., F.Z.S., Superintendent and Inspector of Fisheries, Tasmania.

A few weeks since one of the fishmongers of the city, Mr. Jones, of Collins-street, presented me with the specimen of crawfish which I now exhibit and that was taken in the neighbourhood of the Schouten Islands. I am informed by the fishermen that they have not unfrequently captured similar specimens, but that thinking from their colour, dull brown, or olive green, there was something wrong with them, they have usually thrown them overboard. A very superficial examination sufficed to show how widely it differed from the common Tasmanian form *Palinurus Edwardsi*, and the chief between the two distinctions I will briefly enumerate. The body shield or carnpace is covered with even rows of smooth, sharp-pointed conical spines in place of the depressed hispid spines characteristic of our market species. The cervical and branchio-cardiac grooves are not conspicuously developed, but at the same time there is a deep sulcus immediately in front of the posterior margin. The beak or rostrum terminates in a very long and sharp projecting median spine, instead of with a short turned-up one as found in the Tasmanian crawfish.