

FIVE NEW  
CALCAREOUS ALGÆ

BY

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FIVE NEW

GALCARBONS ALCA

These new Galcarbons Alca are the result of a long and careful study of the properties of the various carbon compounds. They are characterized by their high purity and their excellent solubility in a wide range of solvents. They are particularly well adapted for use in the synthesis of dyes and pigments.

M. FOSCHÉ

The Galcarbons Alca are prepared by the action of carbon dioxide on a mixture of calcium chloride and calcium hydroxide. The reaction is carried out in a special apparatus which allows the reaction to proceed at a constant temperature and pressure. The product is then purified by repeated crystallizations from a suitable solvent.

ANALYSE

The Galcarbons Alca are analyzed by the method of combustion analysis. A known weight of the substance is weighed into a small crucible and placed in a stream of oxygen. The crucible is then heated to a high temperature for a fixed period of time. The carbon dioxide and water vapor produced are then absorbed in a series of absorption tubes, and the weights of the tubes are measured before and after the absorption. From these measurements the percentages of carbon and hydrogen in the substance can be calculated.

The following preliminary communications will on a subsequent occasion be followed by pictures.

*Lithothamnion californicum* Fosl. mscr.

The species forms 0.8—1.2 mm. thick, smooth and rather extended crusts on rocks between tides or on small stones in pools, however, the shape of the crust depending on that of the substratum. The conceptacles of sporangia are somewhat crowded especially in the central parts of the crust, subprominent, 300—400  $\mu$  in diameter seen from above, almost disc-shaped, occasionally slightly depressed in the central parts and here traversed by about 30 rather coarse muciferous canals. The sporangia are four-parted, 140—180  $\mu$  long and 60—90  $\mu$  broad.

With regard to structure, the hypothallic layer is composed of elongated cells partly with a rapid partly a rather slow convergens towards matrix. The perithallic cells are square or rounded, frequently 4—8  $\mu$  in diameter, sometimes with the longest diameter in horizontal direction.

The species approaches in habit partly *Lithothamnion magellanicum* partly *L. levee*, but stands as regards structure nearest to *L. tenuissimum*.

It is hitherto only known from California, Point Fermin, San Pedro, Setchell no. 1148, and Pacific Grove, Dr. Alton Saunders no. 36 b.

*Lithophyllum africanum* Fosl. mscr.

f. *truncata* Fosl. mscr.

*L. proboscideum* Fosl. On some Lith. p. 14; ex parte.

f. *intermedia* Fosl. mscr.

I mentioned l. c. a species under the name of *L. proboscideum* from California, and considered at the same time some steril specimens from the west coast of Africa to be identic with the latter. Through the kindness of Dr Bornet I got a large and well developed specimen from the same place as the last named specimens, Cape Verd, here collected by Mr. Bouvier. This shows that the African form is specifically distinct from the said Californian.

The form *truncata* rather resembles the said *L. proboscideum* in habit, but it is on the whole coarser, with thicker branches. Also in f. *intermedia* new formations are formed over the lower and mostly dead parts of the plant. The branches are in this form frequently longer than in f. *truncata*, partly terete and up to about 5 mm. thick, partly upwards often compressed and anastomosing, now and then almost palmate, or occasionally folded or winded, nearly 3 mm. thick. On the one side it approaches *Lithophyllum craspedium* and on the other hand *L. platyphyllum* in habit.

The conceptacles of sporangia are on a section about 200 by 100  $\mu$  in diameter. Only emptied ones are known.

With reference to structure the species shows smaller cells than in *L. proboscideum*. In a longitudinal section of a branch the cells are in the central parts frequently twice as long as broad, or 10—15 by 6—8  $\mu$ , getting smaller towards the periphery.

The species is only known from the west coast of Africa, at Cape Verd. Prof. Henriques no. 23, and Mr. Bouvier.

#### *Lithophyllum Okamurai* Fosl. mscr.

Thallus at first forming up to 0.6 mm. thick crusts on small stones or other hard objects which it at length surrounds. Frequently in a somewhat advanced stage the crust issues partly scattered partly at length rather crowded branches 3—5 mm. in height and 1.5—2 mm. thick. These are either simple, subterete, attenuating, obtuse, or, more frequently, angulate, scantily divided or knotty, sometimes increasing in thickness upwards, depressed in the centre and dentate, in all rather irregular and occasionally anastomosing even towards the apex.

The conceptacles of sporangia as well as those of cystocarps nearly agree with the similar organs in *L. fasciculatum*.

A longitudinal section of a branch shows cells which commonly are 12—20  $\mu$  long and 7—10  $\mu$  broad.

Old specimens of the present species approaches *L. fasciculatum* f. *subtilis* in habit, but is separated by essential characteristics.

It is known from the pacific coast of middle Japan, Marine Laboratory at Sagami province. K. Yendo no. 80, 120, 270, 379, 382, 389, and 408.

*Lithophyllum zosteriolum* Fosl. mscr.

f. *tenuis* Fosl. mscr.

f. *mediocris* Fosl. mscr.

It has been rather uncertain how the Alga described by Harvey as *Melobesia amplexifrons* was to be understood. Two somewhat different forms have been referred to it by me as well as other botanists. However, through the kindness of Dr. E. P. Wright I have had the opportunity to examine an authentic specimen from Port Natal of this in the southern hemisphere apparently widely dispersed species. From this specimen is to be seen that the true *M. amplexifrons* Harv. is a *Lithophyllum*, as formerly considered, agreeing with the plant delineated by Rosanoff, Rech. Melob. pl. VII, fig. 2—3. It frequently surrounds other and cylindrical Algæ, especially *Gelidium*, and attains a thickness of up to about 0.6 mm.

The other, for which i propose the above name, differs from *L. amplexifrons* especially by its much thinner crust and smaller cells. It appears frequently to stick to *Zostera*.

In f. *mediocris* the crust attains a thickness of up to about 150  $\mu$ , in f. *tenuis* about 60  $\mu$ . The former at first forms sub-orbicular, at length confluent and rather irregular patches on the host, but in the latter the delicate and minute crusts do not always fully anastomose, and sometimes the one crust stretches itself over the other.

The conceptacles of sporangia nearly agree with those in *L. amplexifrons*, however especially in f. *mediocris* at first slightly raised above the surface of the frond. It also much approaches young specimens of the said species in habit. However, on a section the cells are shown to be much smaller, and seldom vertically elongated as frequently in the latter species.

The species is known from the Pacific coast of middle Japan, Marine Laboratory at Sagami province, f. *tenuis*, and from Santa Cruz, California, f. *mediocris*. K. Yendo and Dr. Anderson.

*Melobesia* (Heteroderma) *canescens* Fosl. mscr.

Thallus forming suborbicular, at length confluent and irregular, rather extended crusts on *Padina arborescens*. In a young stage the colour is a pale rosy, older greyish or greyish-green. The crust attains a thickness of at least 120  $\mu$ , with more layers of cells. The basal cells are frequently several times longer than broad, or 25–60  $\mu$  in height, the upper shorter or often nearly square.

The conceptacles of sporangia are somewhat crowded, subconical, but not distinctly marked, 300–350  $\mu$  in diameter seen from above. The sporangia are four-parted, 45–60  $\mu$  long and 25–30  $\mu$  broad.

This species apparently stands nearest to *Melobesia coronata* Rosan. Rech. Melob. p. 64. I should even be inclined to consider it but a form of the latter, supposing that the specimen which underlies the description l. c. has been a young one. However, for the present it must be regarded a separate species.

It has been found on the Pacific coast of middle Japan, Marine Laboratory at Sagami province, K. Yendo.

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