Der Chromatophor von Mesogerron lässt durch seine Flächenkrümmung eine phylogenetische Reminiscenz an einem Theil der Ulothrix-Arten erkennen.

Schwerer fällt in's Gewicht der Mangel eines Pyrenoids, unter der Voraussetzung, dass die Natur dieses Gebildes, welches allen den erwähnten Ulothrichieen zugeschrieben wird, für alle Fälle sichergestellt ist. Will man die Alge dennoch zu dieser Gruppe rechnen, so nimmt sie eine Mittelstellung ein zwischen jenen meist grösseren hydrophilen Formen, welche Vermehrungsorgane besitzen und deren Charakter als fadenförmige Algen noch nicht in Zweifel gezogen worden ist und gewissen anderen der Vermehrungsorgane entbehrenden Formen, deren aërophile mit plattenförmigen Chlorophoren versehene Angehörige Gay[1]) wegen ihrer Neigung zur Dissociirung als einzellige Algen auffasst und (als Stichococcus) zu Dangeard's Familie der Pleurococcaceen stellt. Neuerdings hat Klerker (l. c.) auch zwei hydrophile Formen zu dieser Familie gezogen.

Die in Vorstehendem beschriebene Alge habe ich trotz vielfacher Bemühungen an keinem anderen Orte, als dem bezeichneten, finden können und nehme an, dass sie wenig verbreitet ist, jedenfalls durch ihre Vergesellschaftung mit Zygnemaceen leicht übersehen wird.

Da ich nicht weiss, wann sie in einem Exsiccatenwerke ausgegeben werden kann, beabsichtige ich zunächst eine Anzahl von Exemplaren an die Kryptogamen-Tauschanstalt von Herrn Brunnthaler in Wien abzugeben.

Notes on Acetabularia mediterranea, Lamour. from the Lūchū Islands.

By Prof. Tokutaro Ito in Japan.

The structure and development of the European species of *Acetabularia* are now fairly known by the studies of those distinguished botanists, Nägeli, De Bary, Strasburger, Woronin, and others. There yet remained, however, some points which required further investigation. The publication of Count Solms-Laubach's elaborate monograph[2]) on Acetabularieae, in 1895, cleared up these points, and established the position of the genus on more solid ground, elucidating, at the same time, the relations of that genus to the other genera in the tribe. Thus we have an opportunity of determinig some species of this genus, which are, I expect, to be found in the seas of Japan.

Whilst occupied, some time ago, in arranging some specimens of the Lower Cryptogams in my collection of Luchuan plants, I came across a specimen of *Acetabularia*. Careful examination has shown me that the specimen belongs to *Acetabularia mediterranea*, Lam., found in the Mediterranean Sea. The absence of all mention of any species of this interesting genus, either from Japan or from the

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[1]) Recherches sur développement etc. de quelques algues vertes. Paris 1891. S. 56—66.

[2]) Solms-Laubach: Monograph of the Acetabularieae. London, 1895

Lūchū Islands, in De Toni's »Sylloge Algarum« and in Solms' »Monograph« (though the allied genus *Halicoryne* occurs), induces me to make a few remarks on this curious alga.

The Luchuan specimen of *Acetabularia* was collectet on the coast of Yuntanza in the Island of Uchina or Okinawa. It consists of fully developed pileate thalli of a pale-white colour, each furnished with a well-calycified stalk of some 60 mm long, at the upper extremity of which a circular cap of 14 mm in diameter is borne. The number of the sporangial rays of the latter is about sixty-five, and each ray is kept apart at the base. These rays are firmly connected together by means of a membrane, which, being thickened at the margin of the cap, appears, through transmitted light, highly refractive. That this membrane is not of calycified nature, as is observed to be in the cases of *Acetabularia major* and *A. Gigas* collected in Eastern Asia, was proved by successive applications of decalycifying tests[1]), to which it gave no reaction. The structure of the corona is not readily recognizable in my specimen, but the inferior corona is more distinct than the superior one, both being furnished with tufts of hairs. From these observations, there is but little doubt that the specimen belongs to *Acetabularia mediterranea*, Lam.

Later on, Prof. J. Matsumura of the Imperial University of Tōkyō, kindly submitted to me some beautiful specimens of *Acetabularia*, collected by him on the same island in 1897. These specimens proved on examination to be identical in species with the specimen above referred to. In them, however, the cap is of a greenish colour, which may be accounted for by its growing either in shady places or at a great depth. The length of the stalk in these specimens is 37—81 mm, with a cap of 9—11,5 mm diam. In one of the young plants, the stalk is 37 mm, and the cap 3,5 mm diam.

It is of great interest to note that in the latter specimens, I found some shoots with cap-whorls. These shoots are 13—20 mm long, with some twelve whorls, the upper ones being larger, but becoming gradually smaller toward the base. The entire shoots are pale white, the upper whorls being green. Solms, in describing these cap-whorls, calls attention to the affinity between *Acetabularia* and *Halicoryne*. I might append to his statement, that *Halicoryne*, which has these whorls in its mature state, may perhaps represent the ancestral form of *Acetabularia*.

With regard to the nature of the cap, together with its coronae, of this interesting genus, there are at present some differences of opinion. Falkenberg[2]) suggests that the cap is a highly complicated aggregation of hair-whorls placed together around the main axis of the stem, which abruptly terminates and does not extend beyond the cap; while the one hair-whorl goes to the inferior corona, another to the sporangial rays, and several to the superior corona. In this view, the cap is regarded as an equivalent to the hair-whorl in the shoot of *Acetabularia*.

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[1]) Solms, loc. cit. p. 15.

[2]) Falkenberg, P. — Die Algen im weitesten Sinne. (Encyclopädie der Naturwissenschaften, Botanik, II, 1884.)

To Solms[1]), however, this opinon seemed inadequate. For »the position of the hair-scars in all *Polyphysa*, particularly in *Acetabularia polyphysoides* and *A. Moebii*, where they form a whorl on each side oft the coronal prominences, shows that we have to deal in it simply with the parts of a complete peculiar body — the coronal prominences«; and »to this is to be added the late appearance of the sporangial rays in the development of the cap of *A. mediterranea*, in which an originally undifferentiated primordium breaks up into corona superior and an under portion which, long after the commencement of the growing out of their hairs, divides itself into sporangial ray and corona inferior.« Hence »it is impossible to close one's eyes to the view that the whole chamber with all its parts represents a complete formation, if, indeed, one may not take it as the homologue of a single whorl.«

In fact, Falkenberg maintains the superior and inferior coronae as belonging to the main-axis, while Solms regards them as only forming a part of the cap-rays.

Whichever of these opinions may be correct, we may conceive the prototype of the alga in question to have consisted of a main axis bearing whorls of foliar appendages, which, after discharging its function as an assimilative organ, become converted into a gametangium, which represents a cap.[2]) Thus the cap of *Acetabularia* serves a double physiological function, viz.:

1. By storing up food as an assimilative organ; and,
2. By producing and discharging gametes as a reproductive organ.

These and other points of physiological importance can only be clearly established after careful observation of this interesting genus of Algae with the help of more ample materials.

Tokyō, April 16, 1899.

Lichenes novi rarioresque.

Ser. II.

Scripsit Edw. A. Wainio.

*Usnea florida (L.) Wain. f. strigosa (Ach.) Wain., Etud. Lich. Brés. I p. 4. Ad ramulos arborum prope Les Quilles 900 m s. m. in Argentina (Dr. F. W. Neger: n. 121). Fert.

Var. perplexans (Stirt.) Wain., l. c. p. 5. Ad ramos Nothofagi obliquae prope Concepcion in Chili (Neger: n. 308).

Chlorea Poeppigii (Nees et Flot.) Nyl., Syn. Lich. p. 275. Frequenter in ramis Araucariae circ. 1000 m s. m. in Andibus prope Valdivian (Neger: n. 303). Fert.

Parmelia (Menegazzia) foraminulosa Krempelh., Neue Beitr. Flecht. Neu-Seel. p. 451, Aufz. Flecht. Wawra p. 440. Sporae 4:nae, long. circ. 0,025, crass. 0,014—0,16 mm. Paraphyses pulchre ramoso-connexae, gelatinam abundantem in KHO turgescentem

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[1]) Solms, loc. cit. p. 17.

[2]) A. H. Church: The Structure of the Thallus of *Neomeris dumetosa*, Lamour. (Annals of Botany, IX, 1895, p. 593.)

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