

wherein Prof. v. Koch's new paper was anticipated by mine of last year, and serves to confirm my published statements.

One of the advances made in my "abstract" was the recognition of lamellar structure throughout all the various parts of the Madreporarian skeleton. And this is the main kernel of the skeletal structure as now elucidated by Prof. v. Koch. For example, he writes of the epithecal "foot-plate" in the young coral:—"This first thin little plate is afterwards more and more thickened by more or less plainly laminated deposits (*Geschichtete auflagen*) of new skeletal substance from the ectoderm" ("Das Skelett der Steinkorallen," in *Festschrift, für Carl Gegenbaur* ii., p. 253). I give the translations from Prof. v. Koch's paper as literally as possible.

In the treatment of septal structure the results obtained by Prof. v. Koch coincide in a very great degree with statements previously published in my "abstract," as will appear from the parallel columns below.

"ABSTRACT," OGILVIE.

(*Proceedings Roy. Soc.*, 1895.)

The opacity of the "primary streak" is explained as due to "a larger amount of organic cell-material" originally present near the median plane—i.e. at the growing edge—of the septum. Then the passage continues: "Sections show that the fibro-crystalline structure of the septum is the same throughout its whole thickness, essentially that of a double system of thin calcareous lamellae, either smooth or fluted, and corresponding to a deposit from opposite flaps of an invagination (*l.c.* pp. 11-12).

Regular curves or lines of growth are evident on the septal surfaces marking the intervals between successive growth-periods. The space between two growth-curves or lines on the septal surface represents the part of the septum built up in one growth-period, and it has been called by the author a septal growth-segment (*l.c.* p. 12).

In certain cases "the fibro-crystalline deposit is radially symmetrical around ideal trabecular axes in the median septal plane." As examples, the markings perpendicular to the spiniform-toothed edge of the *Mussa* septum are quoted, and reference is made to the striae of *Galaxea* septa, the ridges on the septa of *Fungia*, &c. (*l.c.* p. 11).

Prof. v. Koch then goes on to derive the "porous" and "comb-like" varieties of septa from the simple "plate-shaped" septa, and this practically completes his contribution to the subject of septal structure. Septal varieties and their systematic importance form a large part of my paper presented to the Royal Society in July 1895, and are features shortly indicated in the published "abstract."

With regard to the question of "true" and "false" synaptolike, Prof. v. Koch does not go beyond the distinction originally drawn by Herr Pratz. But the important fact is that his research upholds this distinction even while he declares it to be of small value; whereas several authors have in recent years declared it quite untenable. In this Prof. v. Koch's actual observations again agree with, and were anticipated by, mine; this is also the case in his statement that both kinds of synaptolike occur alongside one another in the genus *Fungia*. A few farther quotations may be compared concerning other parts of the skeleton.

"ABSTRACT," OGILVIE, 1895.

"The microscopic structure of dissepiments and tabulae is demonstrated by the author to be the same. Both are composed of a series of calcareous growth-lamellae laid down from one surface only of the aboral body-wall of the polyp. The fibro-crystalline deposit is therefore perpendicular to the plane of contact between polyp and skeleton" (*l.c.* p. 13).

"DAS SKELETT DER STEINKOR-
ALLEN," V. KOCH.

(*Festschrift, für C. Gegenbaur*,
1896.)

Regarding the structure of the septa, . . . the first-formed parts, "primary streaks" (*Primärstreifen*) show a more irregular structure and distinguish themselves usually by greater opacity from the "stereoplasm" or secondary part lying on either side, whose crystalline elements are more or less perpendicular to the "primary streaks." One can often plainly recognise lamination (*Schichtung*) in these secondary deposits (*Auflagen*) (*l.c.* p. 255).

The fairly simple and easily recognisable structure thus described is, as a rule, rendered somewhat more complicated by the presence of growth-streaks (*Anwachsstreifen*) alternately darker and lighter lines, which appear in sections parallel to the surface of the septal edge, and are caused by differences in the crystallisation of the layers of thickening laid down one after the other (*l.c.* p. 256).

"Frequently also streaks are found at right angles to the former (they correspond to the teeth of the septal edge), and in many genera, *Mussa*, the *Fungias*, *Siderastraea*, and others, they can be so clearly distinct from each other that one can distinguish individual centres of crystallisation in them, and lines of separations" (*l.c.* p. 256).

"The fine lines ('Schraffen' denoting the arrangement of the crystals) are always placed nearly perpendicular to the surface of the dissepiment; there is often in addition a very fine set of lines parallel with the surface, and in this, therefore, the dissepiments closely resemble the stereoplasm of the septum." . . . "A tabula is just the same as the sum of all dissepiments lying in one plane" (*l.c.* p. 260).

"Cases occur in both those families where the only peripheral support is afforded by the epitheca. The author is inclined to think this was the primitive form of the Madreporarian calyx, and to look upon both theca and pseudotheca as later modifications associated with retrogression of the epitheca, greater prominence and rapid growth of the septa, and very often with the processes of vegetative budding (*l.c.* p. 14).

A series of evolutionary changes are enumerated, which appeared within the group of Madreporaria during the course of geologic ages. Among others, the following occur as shortly expressed in the abstract:—"Septa became more prominent and exert in growth; their structure became more elaborate, their surfaces fluted and richly granulated, their edges knobbed, toothed, serrated, spined" (*l.c.* p. 16).

"The 'Rugose' epitheca became tardy in growth, and was replaced functionally by a theca or pseudotheca" (*l.c.* p. 16).

"We may accept as a great probability that the primitive skeleton of the Madreporarian corals consisted of a lamellar shedding (*Abscheidung*) of lime by the ectoderm basis and epitheca, which formed a protective covering round the individual polyps" (*l.c.* p. 272).

"Provided the septa are once present in their due position, it can easily be understood how the varieties of septal structure, briefly described above, may come to originate. In a very low grade they would simply be present as small eminences of the basis and epitheca, and would then eventually grow outwards as longer processes" (*l.c.* p. 273).

"As soon as the wall is once present . . . the epitheca loses its significance as a supporting skeleton, and it continues to exist only as a protective covering outside, which in consequence tends to become less thick." . . . "Especially in colonies the epitheca is completely retrograde round the individual calyxes" (*l.c.* p. 274).

Naturally, Prof. v. Koch's paper of some twenty-five pages treats only a few of the questions examined and discussed in my complete paper of some 275 pages, as it will appear in the *Philosophical Transactions* of the Royal Society. Nevertheless, it is satisfactory that these few points included in Prof. v. Koch's paper should afford strong and independent evidence in favour of results arrived at by me and already published a year ago.

MARIA M. OGILVIE.

British Association.—Toronto Meeting, 1897.

It is possible a number of the members present at Liverpool were unable to obtain all the information they desired regarding the programme of the Toronto meeting, and others may be glad to avail themselves of an opportunity to obtain information on various subjects connected with the meeting. Kindly grant me the use of your columns to say I shall not return to Canada till probably in February, and that I shall be only too pleased to answer inquiries and give information. My address is "Canaan Lodge, Canaan Lane, Edinburgh." ALAN MACDOUGALL, Secretary, Local Executive Committee, Toronto Meeting, 1897. Edinburgh, December 1.

A Case of Abnormal Magnetic Attraction.

LETTER, copy of which is appended, came to me this morning. May be it is of sufficient interest for your readers.

A. G. FROUD.

60, Fenchurch Street E.C., December 4.

S.S. *Coronilla*, Oxelosund, November 30, 1896.

To A. G. Froud, Lieutenant R.N.R., Secretary Shipmasters' Society.

DEAR SIR,—Compasses and their deviations and errors being a matter of importance, you may perhaps be interested in a case of local attraction which came under my notice here.

Whilst approaching here, Hafringe Lighthouse, bearing N.N.W. (c.m.), about six miles distance, our standard compass suddenly started swinging over an arc of sixteen points. On mentioning this to our pilot afterwards, he told me of a nineteen-fathom patch on that bearing and distance which has been found to affect compasses so, and on the latest Swedish charts the bank and its effect are noted. Going out I shall try and pass over it again. Sea was smooth and compass steady at the time.

THOS. ROGERS.