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level of the growth breaks [51]. The secondary correlation involved is that between bands and nodes: the first will usually cover the last, evidently not because they are directly releated to them, but because both are related to the growth breaks.

VII. Interrelationships between pattern elements

Since the author hopes to be able to give a more extended consideration to that subject in the near future, only a few preliminary remarks will be made here.

The various types of relationship mentioned above as existing between pattern elements and ribbing seem to be present also in the interrelationships between the pattern elements themselves: they are here however often harder to elucidate, owing to the frequent absence of clearly defined «primary» features. Examples of various relationships are given below:

In *Conus generalis* L., when the radial homogeneous bands are well developed, they appear to be quite independent of the transverse sinuous lines.

Presence of «necessarily subordinate» elements is demonstrated by the relationship between cells and frame in networks; more typical cases of subordinate relationship could not be detected anywhere with absolute certainty; and indeed in the usual absence of clearly defined primary elements in shell patterns, such subordinate elements must be rare indeed.

In *Smaragdia viridis* L., black sinuous transverse lines are generally followed by rows of white blotches, often in a very conformable manner (Pl. IX, fig. 9). Yet each of these types of elements may be absent from one to many periodic cycles without the other being noticeably modified thereby. We have thus here to all evidence an associated type of relationship between black lines and white blotches; on account of the variable appearance of the elements, it might be termed an «irregular association». To note, however, that though the author has examined many shells of that species that showed only blotches (esp. in the Caribbean variety *viridimaris* Maury), he has never yet observed a shell with lines only: this, plus the very peculiar configuration of the black lines half-surrounding the white blotches, gives the impression that the latter may be the dominant factor in the colour pattern.

A somewhat similar relationship between elements seems to obtain in the case of some «junction figures». In the complex pattern figures of *Bulimulus coturnix* Sowb., *Neopetraeus arboriferus* Pil., etc. (Pl. V, figs. 9, 10) the relationship of the various parts to each other is always the same, even though the figures

[51] The periodicity of appearance of labra is very irregular, that of the modes much less so. When appearance of a new labrum is very much delayed, a node may be secreted before this new labrum appears, in addition to or in place of the adlabral node; or this interlabral node may continue to be secreted until this labrum finally appears, forming a very elongate node indeed! — see Pl. IX, fig. 10.

are repeated periodically: this to the extent that when owing to a very variable periodicity, the width of periodic secretion is in some places less than the width of the junction figures, these latter will overlap on each other (Pl. V, fig. 9, at right) and still be mostly unmodified thereby. The one alteration that may take place is an elimination, more or less complete, of the overlapping portions of the figures, this especially in *B. coturnix:* but in that case the residual portions of the figures remain absolutely unchanged. The associated relationship of the components of these junction figures is made even clearer in the case of *B. coturnix* Sowb. where in the upper whorls the transverse component may be absent from these patterns: in such a case, the other components will maintain exactly the same position in respect to each other, as if the transverse component were present [52].

It has been indicated above that the juvenile *Neritina communis* Quoy has a homogeneously striped pattern that is later limited to radial bands (Pl. IX, fig. 1): With the original pattern thus split, it is observed that the stripes do not correspond from one band to another: if the unified pattern is restored, then the bands become again continuous across the whorl. We have a similar situation in *Conus generalis* L., where the transverse lines are often discontinuous on each side of the radial bands (Pl. II, fig. 7), but continuous where the latter disappear. This «dissociation» phenomenon is of quite generalized occurence for transverse and oblique pattern elements transected by radial ones (see p. 12). This all seems to indicate that in such cases there is a «general factor» producing an approximately similar periodical secretion for the whole width of the whorl, and an «organizing» factor that will correlate the activities of all the sources in a much closer manner [53]. When the pattern is interrupted, so is the activity of the organizing factor: either this organizing activity is then totally eliminated, or more likely, it acts separately on each isolated region and is uncoordinated over the mantle margin as a whole. – In the case of rib-pattern elements relationships of the correlated type, the ribbing may act as an additional «influencing» factor superposed to or perhaps even replacing the «organizing factor».

[52] A weird feature of this species (or at least of the two specimens at hand) is that the «trees» are interrupted along a radial band that runs at the upper end of the whorl base. Below this band, the stems and leaves have a reverse orientation!

[53] In the rib-denticle relationship mentioned in the author's last work the rib is evidently the «organizing» element: so are apparently the varices of many Gasteropoda for those of the whorl beneath. For ex. in *Scala scalaris,* the varices correspond from one whorl to the next when those of the whorl above impinge, or come close to impinging on the whorl below. As soon as the whorls separate, the varices of the different whorls tend to loose all trace of correlation.