

E.Paproth (BRD), M.Streel (Belgique), W.Ziegler (BRD)

PRESENT DATA ON THE DEVONIAN/CARBONIFEROUS BOUNDARY
IN WESTERN EUROPE

СОВРЕМЕННЫЕ ДАННЫЕ О ГРАНИЦЕ ДЕВОНА И КАРБОНА
В ЗАПАДНОЙ ЕВРОПЕ

Several sections showing sequences near the Devonian/Carboniferous boundary in northern France, Belgium and BRD, have been studied in detail by many specialists. Those situated in the northern belt of Hercynian strata in the Ardennes and the Rheinisches Schiefergebirge are abundantly fossiliferous, and are particularly useful for the recognition of this boundary (Figs. 3 and 4). The intensive study of these sections has demonstrated the distinct change in the development of the fossils which they contain. The successive incoming of several new species of cephalopods and trilobites near the Devonian/Carboniferous boundary is as useful for stratigraphy as that of the more prolific microfossils - spores, foraminifers and conodonts (Figs. 1 and 2).

At the Heerlen Congress of 1935, the Devonian/Carboniferous boundary was placed at the first appearance of the goniatite Gattendorfia subinvoluta, this boundary can be seen in the railway cutting in Oberrödinghausen. In 1971, the Sub-commission on Carboniferous Stratigraphy accepted as a desirable basis for discussion a boundary as close as possible to the base of the Gattendorfia subinvoluta Zone. For this purpose, the first appearance of Siphonodella sulcata was

considered (C.R. 7^e Congrès Carbonifère, Krefeld 1971, vol.1, p. 177-178). The first appearance of Siphonodella sulcata seems to be a definitive marker because this species issued from Siphonodella prassulcata (Sandberg et al., 1972). However, as this species is rare and locally absent in many of the NW European sections, the first appearance of Protognathodus kuehni might be used as an additional indication, since this coincides with the first appearance of Siphonodella sulcata (Sandberg et al., 1972). It seems reasonable to underline the fact that the base of the Wocklumeria Zone (or Stage) as defined by Schindewolf (1937, p.20) is placed in the lower part of the Middle Bispathodus costatus Zone. Siphonodella sulcata and Protognathodus kuehni appear at about the same time that a marked change takes place in other groups of fossils, i.e. a 'Devonian aspect' changes into a 'Carboniferous aspect'. These faunal changes seem to offer a workable approach to delineating the position of the systemic boundary, however, it cannot be accepted as a principle for its definition, because the simultaneous first appearance of several groups of organisms depends upon the interaction of different conditions, viz. changes

in climate, palaeogeography, current directions, appearance and disappearance of faunal and floral barriers, which we may be generally unable to define.

Until now, the investigations have centred on rock sequences and their cephalopod, trilobite and microfossil record. It should be useful to extend these studies to other sections and different fossil groups. It will be the task for the Committee on the Devonian/Carboniferous boundary to select and propose the definition of the boundary and its stratotype.

References

- Alberti, H. et al. 1974. The stratigraphic significance of the Protognathodus fauna from Stockum (Devonian/Carboniferous boundary, Rhenish Schiefergebirge). *Newsl. Stratigr.*, 3, p. 263-276.
- Sandberg, C.A. et al. 1972. Comparison between conodont zonation and spore assemblages at the Devonian-Carboniferous

boundary in the western and central United States and in Europe. *C.R.7^e Congrès Carbonifère, Krefeld 1971*, Vol.1, p.179-195.

- Schindewolf, D.H. 1937. Zur Stratigraphie und Paläontologie der Wocklumer Schichten (Oberdevon). *Abh. preuss. geol. Landesanstalt (N.F.)*, Heft 178, 132 p.
- Ziegler, W. 1970. Eine neue Conodontenfauna aus dem höchsten Oberdevon. *Fortschr. Geol. Rheinld. Westf.*, 17, p.343-360.
- Ziegler, W. 1971. A field trip guidebook, Post-Symposium Excursion, September 15-18, 1971, to Rhenish Slate Mountains and Hartz Mountains. *Symposium on Conodont Taxonomy, Marburg/Lahn, September 4 to 18, 1971.*

Geologisches Landesamt Nordrhein-Westfalen
D-4150 Krefeld, BRD (E.P.)
Université de Liège
Place du XX Août 7, B-4000 Liège, Belgique (M.S.)
Department of Geoscience, Lahnberge
D-355 Marburg (Lahn), BRD (W.Z.)

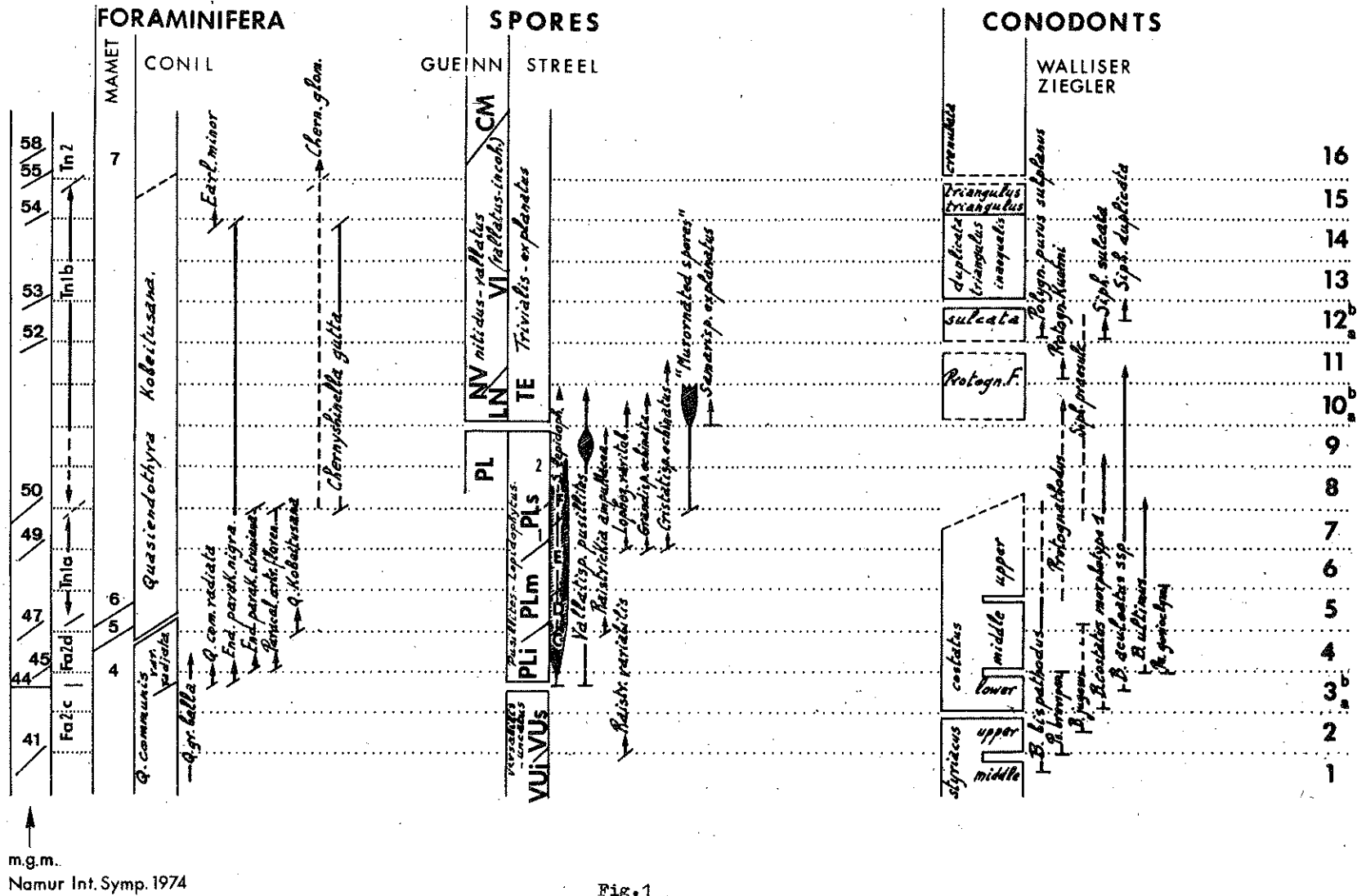


Fig. 1

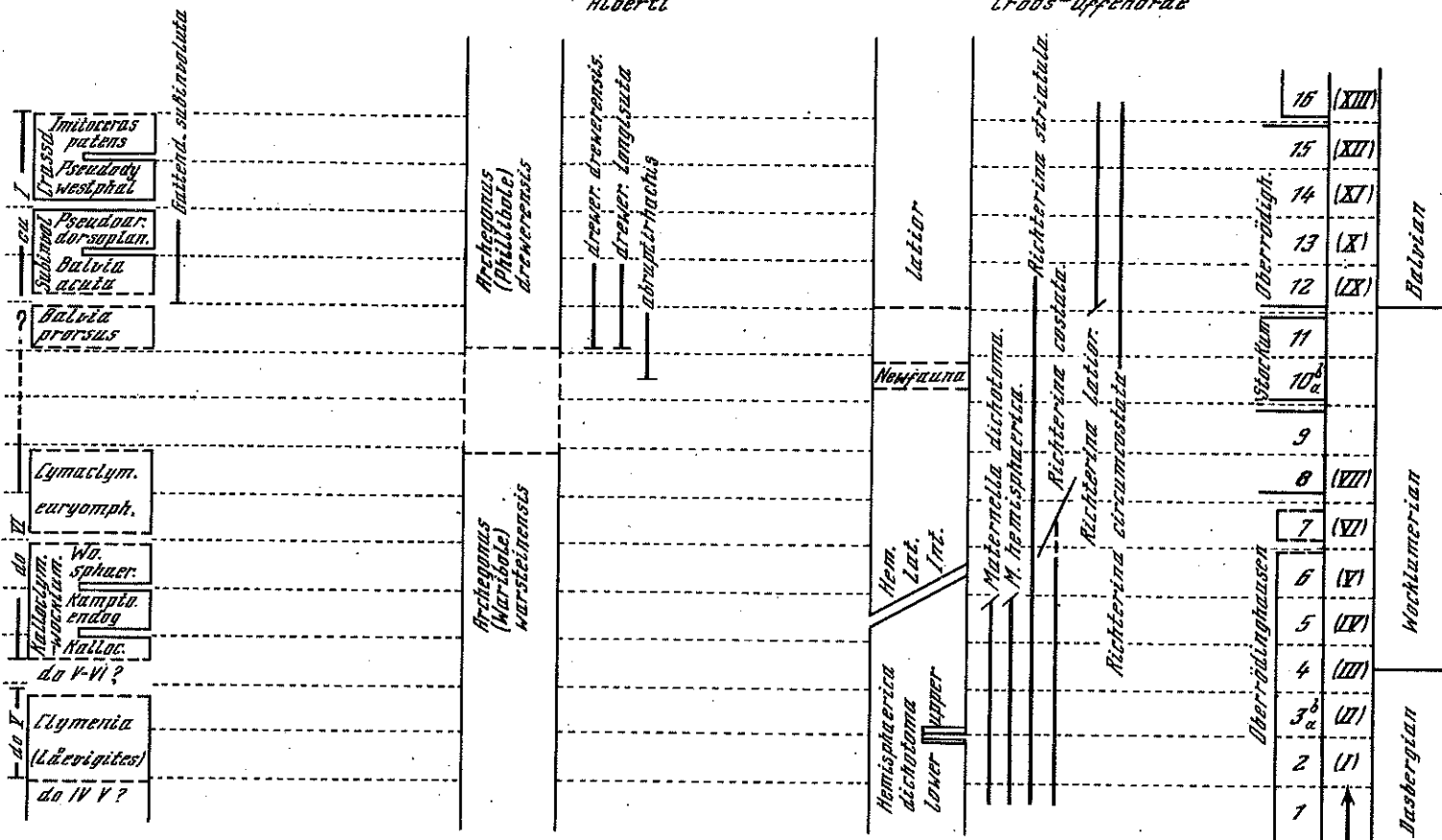
Cephalopods

Trilobites

Ostracods

Alberti

Cross-Offenarde



Streeb, Krefeld, 1971.

Fig. 2

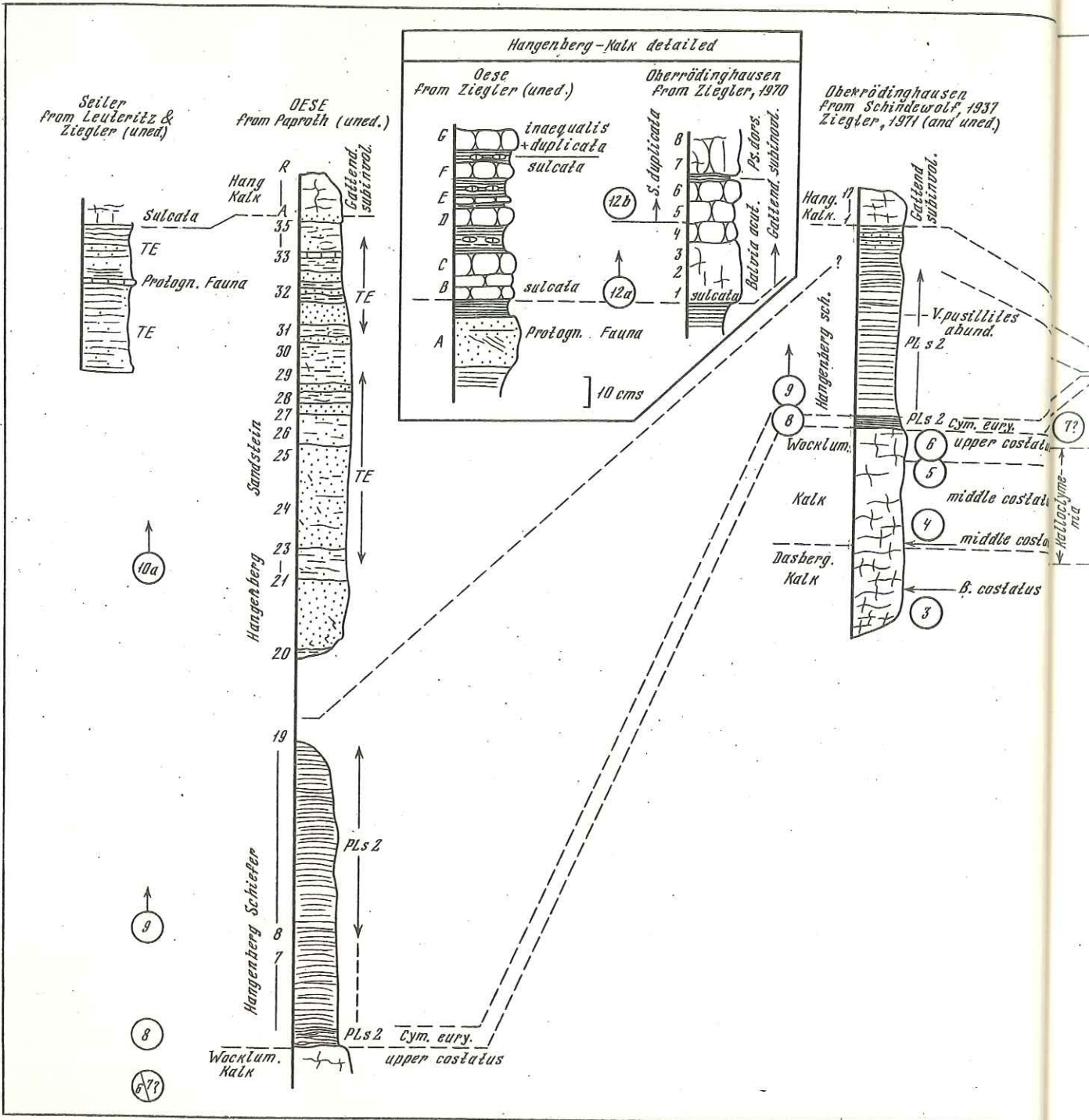


Fig. 3

er
f. 1937
(uned.)

Drewer
from Ziegler, 1971

Stockum
from Alberti et al., 1974

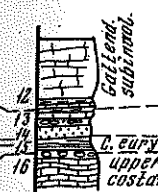
oustillites
abund.

Cym. eury
upper costatus

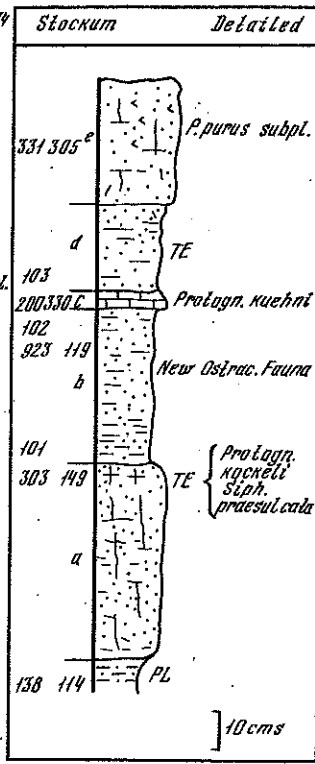
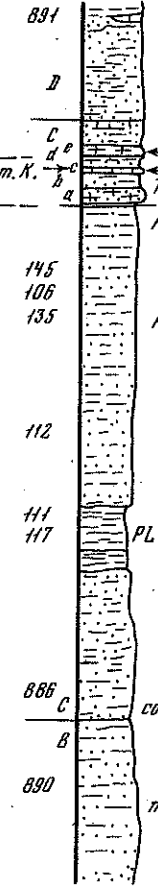
middle costatus

middle costatus

B. costatus



138: trench I
114: trench II



12a

11

10b

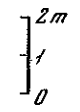
10a

9?

Base of bed 22 of Schindewolf (1937)
Base of Wacklumeria zone/stage

costatus/Hemisph.-latic inter.

middle costatus



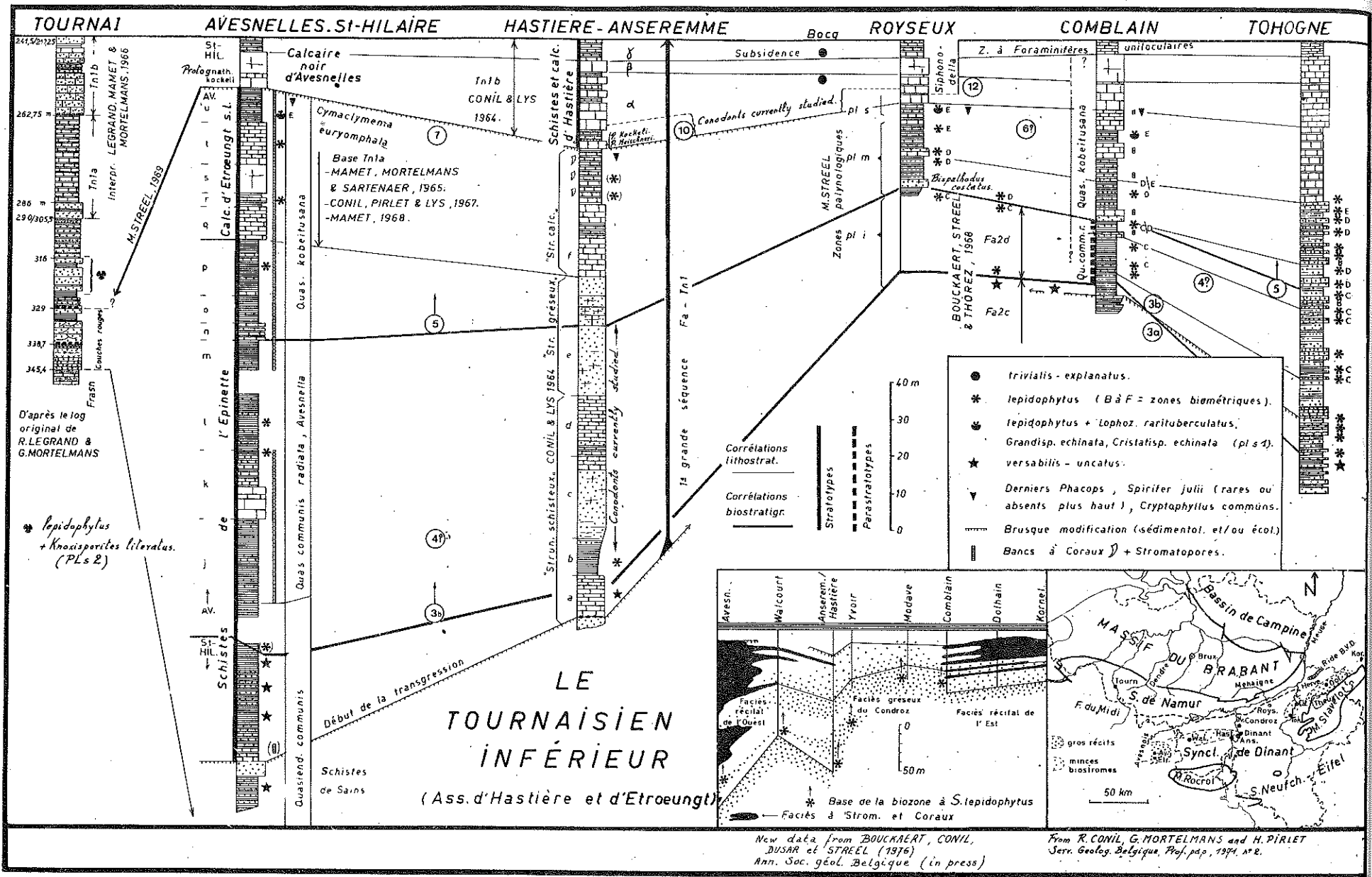


Fig. 4