

ABOUT THE "POLEMICAL QUESTIONS OF LOWER MIOCENE" AND
ON THE EUSTASY

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Abstract

The present paper discusses some problems of the synchronicity of orogenic phases, the question of the Paratethyan regional stages and the significance of eustasy. The occasion for this study is in connection with the publication of HORUSITZKY's book on the Lower Miocene (1979).

HORUSITZKY, as an old diastrophist, linked up the stage limits with the Stillean orogenic phases without convincing proofs. After him the Oligocene/Miocene boundary is represented in the sedimentary column either by hiatus or by lagoonal-terrestrial sediments. The following first transgression indicates the Aquitanian.

In my opinion, which agrees the general view of the stratigraphers, the orogenic phases cannot be used as accurate tools for correlation of Tertiary rocks. Many of the Stillean phases were not so short as it was supposed by HORUSITZKY. There are some phases, like the Pyrenean, which, seem to be really catastrophic (short-living and isochronous), but even in this case we have to make distinction between the tectogenesis (tectonic deformations in the crust below the surface) and the orogenesis s. str. (elevation and/or subsidence of these structures) (TRÚMPY 1973). We can apply for time-correlation only those geohistorical events, which left time-bound documentation in the rocks, furthermore which were geologically instantenous (paleobiological events, paleomagnetic reversals, etc.).

The regional stages of the Central Paratethys are the necessary consequences of the more accurate stratigraphic correlation. The value of the so-called global time scale of the Tertiary is rather vague. This is especially obvious in the case of the Oligocene, where at least three "Standards" are in usage today: 1. HARDENBOL and BERGGREN (1978); 2. CAVALIER and POMEROL (1977); 3. MARTINI's three-stages subdivision (Lattorfian, Rupelian, Chattian). One has the impression that the Oligocene and Neogene global scales have also only regional value. Anyhow, the establishing of the Paratethyan regional chronostratigraphic scale has been a very significant progress towards a better correlation.

I disagree also with opinions, which prefer a well-founded lithostratigraphic subdivision instead of the regional stages. We need of course the good lithostratigraphy, but since the lithostratigraphic units are local and they can be diachronous, it is necessary to build up "regional" between "local" and "global", in case of difficulties in correlation.

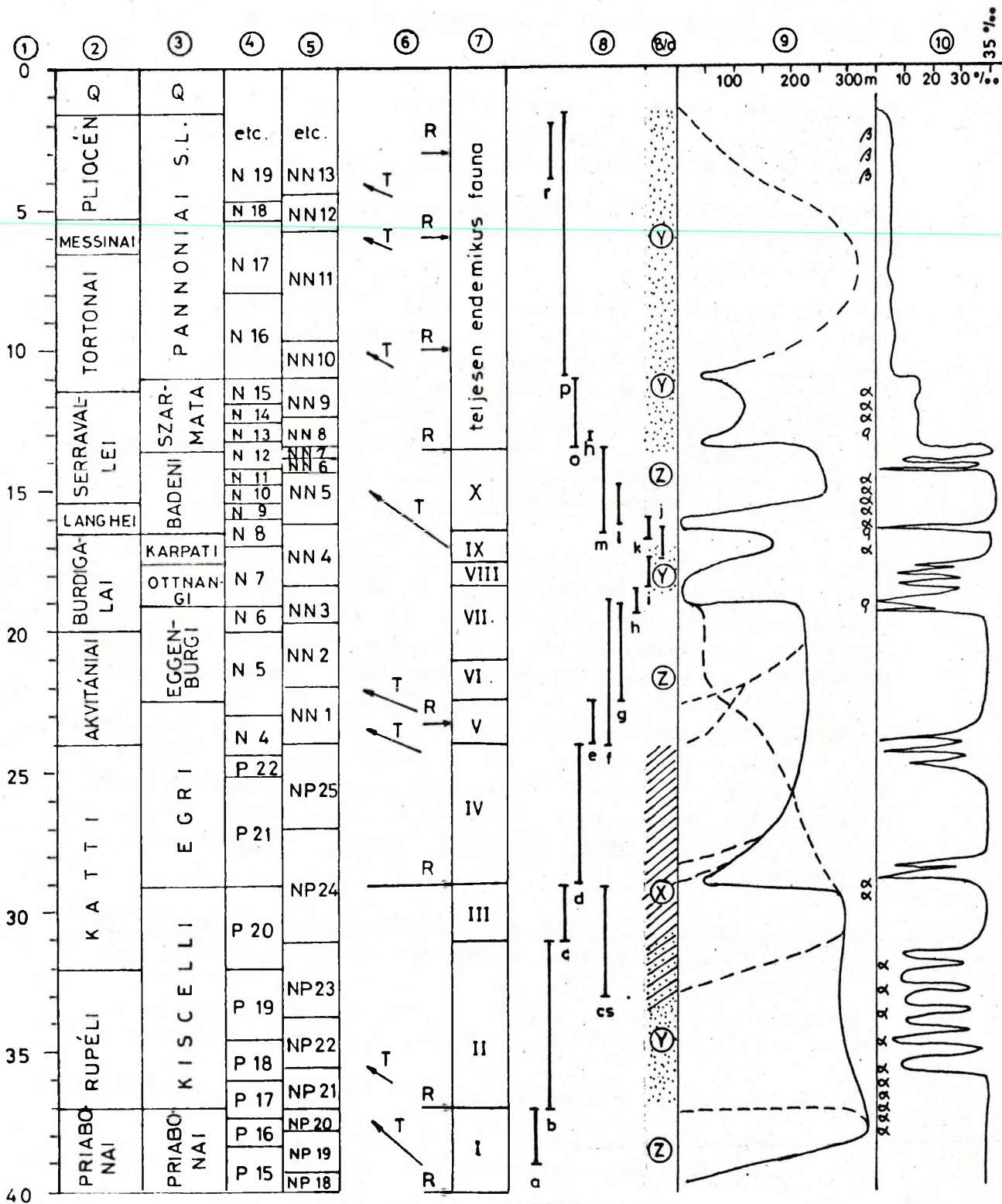
HORUSITZKY, because of his early death in 1971, did not (or could not) mention the Paratethyan regional stages. He unfortunately neglected the international rules of stratigraphic terminology and classification. His book is entirely out of date, in spite of the year of publication.

The only message of the late Author can be the recognition of the time-bound character of some transgressions and regressions. But this is realized not through the Stillean orogenic phases, but by eustasy of the sea-level, which is controlled by the volume of the mid-oceanic ridges and by the polar ice caps.

The enclosed table summarizes my compilation and results about the correlational data.

KRONOSZTRATIGRÁFIAI, BIOSZTRATIGRÁFIAI EGYSÉGEK EUSZTATIKUS ESEMÉNYEK ÉS LITOSZTRATIGRÁFIAI EGYSÉGEK VALÓSZÍNŰ KORRELÁCIÓJA.

Báldi T. 1980.



Magyarázat a táblázathoz

1. Millió év
2. Globálisnak tekintett kronosztratigráfiai egységek
3. A Közép-Paratethys regionális kronosztratigráfiai egységei
4. A Blow-féle plankton foraminifera zónák
5. A Martini-féle mészvázu nannoplankton zónák
1.-5. Nagyrészt BÁLDI, valamint HARDENBOL és BERGGREN (1978), valamint RÖGL, STEININGER és MÜLLER (1978) nyomán.
6. Eusztatikus tengerszintingadozások VAIL és mások szerint, ahol T = transzgresszió, R = regresszió, a nyilak hossza a szintváltozás mértékével arányos
7. Molluszka regionális zónák nagyrészt BÁLDI (1973 és 1979) szerint, ahol I = Propeamussium fallax zóna, II. = Ergenica-Cardium lipoldi-Janschinella z., III. = Propeamussium bronni-Chlamys picta z., IV. = Pecten burdigalensis - Camptonectes incomparabilis z., V. = Chlamys rotundata-Propeamussium duodecimlamellatum z., VI. = Chlamys gigas z., VII. = Chlamys palmata-Ch. praescabriuscula z., VIII. = Rzehakia-Limnopagetia z., IX. = Pecten pasini-Chlamys latissima z., X. = Pecten besserii-lejthyanus-Chlamys elini z.
8. Néhány magyarországi formáció helyzete a kronosztratigráfiai skálában. a = Budai Márga, b = Tardí Agyag, c = Kiscelli Agyag, cs = Hárshegyi Homokkő, d = Törökbálinti Homok, Mányi Hk., Csatkai Kavics, Parádi Slir, Egri Formáció, stb., e = Bretkai Mészke, f = Szécsényi, Putnoki Slir, g = Budafoki Homok és Pétervásárai Homokkő, h = alsó (Gyulakeszi) Riolittufa, i = Salgótarjáni (kőszénteleges) Formáció, j = Garábi Slir és Egyházasgergei Homok, k = középső (Tari) Riolittufa, l = Börzsönyi, Mátrai, Cserhádi, stb. andezitformációk, m = Badeni Agyag, Lajtamészke, stb., n = felső riolittufa, o = szarmata formációk, p = Pannóniai formációcsoport, r = Tapolcai Bazaltformáció. (Nagyrészt Hámor, Jámbor, Boda, Horváth M., Nagymarosy, B. Beke M. és Báldi alapján.)
- 8./a. Ósföldrajzi kapcsolatok alakulása: z = mediterrán, x = sok boreális alak a mediterrán mellett, y = nagyrésztben vagy egészen endemikus.
9. A medencére jellemző mélységek, szaggatott vonalakkal jelölve egyes peremi transz- és regressziók, ill. a pannóniainál a bizonytalanság.
10. Sótartalom alakulása a Közép-Paratethys magyarországi medencéjében.
= andezit-dácit vulkanizmus, = riolit-vulkanizmus,
= bazaltvulkanizmus (Magyarországon)

Explanation to the Table

1. Million years
2. Chronostratigraphic units regarded by many as global
3. Regional stages of the Central Paratethys area
4. Blow's zones of planktonic foraminifera
5. Martini's zones of calcareous nannoplankton
6. Major eustatic changes after VAIL et al., where T = transgression, R = regression, the length of the arrows is proportionate with the size of the sea-level change.
7. Molluscan regional zones largely after BÁLDI (1973 and 1979), where I = Propeamussium fallax zone, II = Ergenica-Cardium lipoldi-Janschinella zone, III = Propeamussium bronni - Chlamys picta z., IV = Pecten burdigalensis - Camptonectes incomparabilis z., V = Chlamys rotundata-Propeamussium duodecimlamellatum z., VI = Chlamys gigas z., VII = Chlamys palmata-Ch. praescabriuscula z., VIII = Rzehakia - Limnopageta z., IX = Pecten pasini-Chlamys latissima z., X = Pecten besseri-lejthyanus-Chlamys elini z.
8. Chronostratigraphic position of some Hungarian formations:
a = Buda Marls, b = Tard Clay, c = Kiscell Clay, Cs = Hárshegy Sandstone, d = Törökbálint and Mány Sands, Csatka Gravels, Parád Schlier, Eger Formation, etc. e = Bretka Limestone, f = Szécsény and Putnok Schliers, g = Budafok Sands and Pétervására Sandstone, h = Lower (Gyulakeszi) Rhyolittuff, i = Salgótarján coal-bearing Formating, j = Garáb Schlier and Egyházasgerge Sands, k = Middle (Tar) Rhyolittuff, l = andesiteformations of the Mátra, Börzsöny, Cserhát, etc., m = Baden Clay and Leytha Limestone, n = Upper Rhyolittuff, o = sarmatian formations, p = Pannonian Group, r = Tapolca Basaltformation. (Largely after Hámor, Jámor, Boda, Horváth M., Nagymarosy, Báldi-Beke, Báldi.)
- 8/a. Paleogeographic connections: z = Mediterranean, x = many Boreal taxa among the Mediterranean ones, y = decisively or entirely endemic
9. Characteristic bathymetric conditions, where dotted lines mean marginal trans- and regressions, in case of Pannonian uncertainty.
10. Salinity changes in the Hungarian part of the Paratethyan basin.
 α = andesitic-dazitic volcanism, ρ = rhyolite volcanism
 β = basaltic volcanism

Addendum: 1.-5. Largely after BÁLDI, furthermore HARDENBOL and BERGGREN (1978), and RÖGL, STEININGER and MÜLLER (1978).