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Loess Letter LL56 October 2006

LL56. Loess Letter is a newsletter for anyone interested in loess. Published for INQUA (the International Union for Quaternary Research) by the Waverley Materials Project at Nottingham Trent University; editor Ian Smalley (ian.smalley@ntu.ac.uk).

LL is published twice a year, usually April and October, and reference collections are kept at ISRIC in Wageningen, USDA and USGS Libraries, and the British Library. More details on INQUA at www.inqua.tcd.ie. LL looks forward to the 17th INQUA Congress, Cairns, Australia 28 July - 3 August 2007; details from www.inqua2007.net.au. LL also supports the Danubian Loess Conference, Novi Sad 29 September - 2 October 2006; for all matters relating to this meeting consult Slobodan Markovic at zbir@im.ns.ac.yu.

We celebrate INQUA becoming a full member of ICSU (the International Council of Science; www.icsu.org); we celebrated in 55 but this is an important event so we celebrate again. And, two new National Members to be recorded: the Serbian Academy of Sciences & Arts, and the Montenegrin Academy of Sciences - announced by ICSU on 7 July 2006; yet more celebration.

Anniversaries. In this issue we take note of several anniversaries. Forty years ago, in September 1966, the INQUA Loess SubCommission- led by Julius Fink, gathered in Yugoslavia, at a meeting organised by Jelena Markovic-Marjanovic. In September 2006 the INQUA Loess SubCommission returns; LL congratulates the organisers of the Danube Loess meeting.

We remember the birth, 130 years ago, of L.S. Berg, the most committed proponent of loessification. Lev Semenovich Berg 1876-1950, who proposed the idea of
loessification in 1916, was the subject of a memorial paper in New Zealand Soil News (vol.54, 71-74, 2006); we reprint in 56. (also reprinted in the Historical Newsletter of the IUSS- the International Union of Soil Science).

AFEQ 1969. For the 8th INQUA Congress in Paris the Association Francaise pour l'Etude du Quaternaire (aka AFEQ) published a key work on loess. With the benefit of hindsight we can see that this truly was an important work, a key publication in the history of the investigation of loess. 'La Stratigraphie des Loess d'Europe' was the statement of the scope and range of the work of the SubCommission for Loess Stratigraphy- which at the 8th Congress would be upgraded in status to full commission- the Loess Commission. The book listed 112 sections from UK to Ukraine; and many of these were in the Danube basin, and have relevance for the current Danubian activities. [sections 109 & 110 in particular].

But the real importance of the book was that it brought together all the early participants in the Loess Commission and defined the areas of interest and provided a focus for all of loess research in Europe. Of all the publications organised by Julius Fink to further loess research in Europe, this is probably the most important item, and will remain so until the INQUA Loess Map of Europe is eventually published. The cover of 56 shows the 8th Congress logo; we also reproduce parts of the map which shows the location of all the 1969 sections, and the paper by Jelena Markovic-Marjanovic, and a bit of the introduction by Fink.

QI. Moscow 2003. The INQUA Loess Commission meeting in Moscow in 2003 has generated a special issue of Quaternary International QI. This special issue 'Loess and Palaeoenvironments across Eurasia' comprises 21 papers in vols.152 & 153 and is edited by A.A.Velichko,

A.E.Dodonov & Norm Catto; it is dedicated to the memory of Marton Pecsi 1923-2003, President of the Loess Commission 1977-1991. We reprint some parts in 56 but this is a very important volume and it may be necessary to revisit it in 57. 57 is due to be a special issue for the 17th INQUA Congress in Cairns – which is approaching with startling rapidity; submit your loess proposals post haste.

Danubian Loess. The Danube basin is a major loess area. Julius Fink spent his entire career (as far as we know) at the University of Vienna- deep in the basin; and from here the Loess Commission was designed and implemented. The Danubian Loess Conference at Novi Sad 29 September- 2 October 2006 considers 5 major topics: Danube loess; Loess in the Vojvodina region; Eurasian loess; Recent dust deposition; and Loess and man.

At Novi Sad (or very close by) is the Petrovaradin Fortress (Festung Peterwardein) one of the great castles of the Austro-Hungarian empire, guarding the border with the Ottoman Empire- and famous for its tunnels, some of which are in the loess. Regular readers of LL will remember the SEQs (SubCommission on European Quaternary Stratigraphy) meeting in Kyiv in 2001. A fantastic meeting with some beautiful loess, and a visit to the Pecherskaya Lavra- the Monastery of the Caves, another wonderful set of loess caves.

It appears that the first description of loess was made in this Danubian region- by Luigi Ferdinando Marsigli in his famous 1726 book 'Danubius Pannonico Mysicus; another reason for having a celebratory Danube Loess Conference.

Covers. The front cover displays the logo of the 8th INQUA Congress (to extol the genesis of the Loess Commission- bursting into life from its home in the Danube basin)- and
the back cover shows the logo for 17th INQUA Congress in Cairns in 2007; and the map of 1969 loess sections. Inside, to symbolise the current international nature of loess research two pages from Obunsha’s Comprehensive English-Japanese Dictionary; read Loess Letter.

He lifts the life wand and the dumb speak, Quoiquiquoiquiquoiquoiqoi!

James Joyce encounters some Chinese ducks

Anna Livia Plurabelle

LES PROGRES DE L’ETUDE DES LOESS EN EUROPE

PAR

J. FINK, Vienne.

L’étude des loess a fait des progrès considérables dans un passé récent. C’est pourquoi nos collègues polonais ont organisé, à Lublin en 1961, lors du VIe Congrès de l’Association internationale pour l’étude du Quaternaire, un colloque sur les loess. L’intérêt suscité par les conférences et les excursions de ce colloque a mené à la fondation de la « Sous-Commission pour la stratigraphie des loess en Europe », dénomination qui exprime ses activités spécialisées dans le cadre de la « Commission stratigraphique » de l’INQUA. En tant que président de cette Sous-Commission, m’échut l’honneur d’unir les chercheurs qui s’occupaient de la stratigraphie du loess afin de préparer la corrélation des résultats de leurs travaux.

Le succès d’une telle coopération implique : 1° l’activité de collaborateurs dans tous les pays où il y a des dépôts loessiques importants et 2° la corrélation des résultats, sur le plan international, ce qui ne se fait que sur le terrain dans le cadre d’excursions. Voici les raisons pour lesquelles la Sous-Commission du loess compte tant de membres (plus que ne le permettent d’ailleurs les statuts soumis au présent Congrès de l’Union internationale pour l’étude du Quaternaire). En outre, les mêmes raisons expliquent que seules des réunions annuelles donnent aux collaborateurs la connaissance approfondie, nécessaire, de la situation dans les pays étrangers. La Sous-Commission s’est réunie jusqu’à présent:

— du 31 mai au 3 juin 1962 en Autriche (avec peu de participants);
— du 22 août au 28 août 1963 en Tchécoslovaquie;
— du 1er avril au 4 avril 1964 en République démocratique allemande;
— du 21 avril au 24 avril 1965 en Hongrie;
— du 6 septembre au 10 septembre 1966 en Yougoslavie;
— du 29 août au 3 septembre 1967 en Belgique;

La prochaine réunion se tiendra vraisemblablement en 1970 en Bulgarie. Il faut insister sur le fait que toutes ces réunions — qui constituent une véritable propagande pour l’étude internationale du Quaternaire — sont dues à la seule initiative des membres de notre Sous-Commission, tous les frais d’organisation scientifique et technique, y compris les frais de publications, étant à la charge des Académies des sciences, des Services ou Instituts géologiques, etc., des pays invités. Je tiens à remercier vivement toutes ces institutions pour leur aide scientifique et matérielle si importante.

Les réunions, organisées sous forme d’excursions dans les pays visités, ont été décrites en détail dans les périodiques nationaux intéressés ainsi que par le président d’une manière plus sommaire dans Eisselteiler und Gegenwart, 15, 16 et 19, dont le dernier volume est présenté aux participants du VIIIe Congrès de l’INQUA. La première description commune des résultats de notre travail fut préparée en vue du VIIe Congrès de l’INQUA tenu à Denver, U.S.A., mais ces dix-huit exposés incorporés au volume 12 des Proceedings du Congrès et intitulés
Fig. 1. — Localisation des procédés décrits dans le présent travail.
LES PROFILS DE LÈSS DU BASSIN PANNONIQUE, RÉGION CLASSIQUE DU LÈSS DE YUGOSLAVIE

PAR

J. MARKOVIC-MARJANOVIC.


I. — CARACTÈRES ET EXTENSION GEOGRAPHIQUE DU LÈSS

La situation géographique de la Yougoslavie, méridionale par excellence (entre les 41° et 46° degrés de latitude nord) et son grand enlèvement de l'Inlandis de l'Europe du Nord pendant la période glaciaire laisseront à peine soupçonner qu'on puisse y rencontrer des phénomènes pergigriques et des lëss. Pour cette raison, on est étonné de voir qu'une part considérable de la superficie de ce pays est couverte de lëss, qui forme une couverture continue dont l'épaisseur atteint par endroit 50 m et qui montre un caractère polyphasé sur une distance de plus de 100 km. Le lëss y est, en outre, très bien conservé, sans changements chimiques, depuis les phases les plus anciennes jusqu'aux phases les plus récentes du Pélaoctane et il renferme un nombre important de sols fossiles (jusqu'à 8), d'épaleures, couleurs et pédogenèses diverses.


Les caractéristiques du lëss d'oasis sont : moindre épaisseur (de 3 à 30 m), caractère polyphasé moins prononcé (de 1 à 4 lasses), le nombre de lasses augmentant à partir de la terrasse fluviatile la plus basse (1 lasss) jusqu'à la terrasse fluviatile la plus élevée (4 lasses), composition granulométrique moins fine (grosses granules), avec présence de matériaux d'origine locale, mais aussi de la faune pléistocène correspondante (Elephas primigenius, Elephas antiquus, etc.). Il est également important de souligner que le lëss d'oasis pénètre de 45 km au sud de la bordure du Bassin Pannonien et qu'il atteint, dans la vallée du Vardar — région où règne à présent le climat méditerranéen modifié — sa limite méridionale en Yougoslavie et dans la Péninsule Balkanique.

II. — DESCRIPTION DES PROFILS.

Dans les stations suivantes, nous avons rencontré en superficie, dix sols fossiles et neuf lasses. Les trois sols fossiles près du sommet (I, II, III) ont un caractère steppique. À la base, apparaissent deux puissants sols forestiers ; VII, type pseudoegy et VIII rouge roux, tandis qu'au milieu du profil se trouvent deux ensembles pédologiques : en haut, PK IV, composé de trois horizons, et en bas, PK V, composé de cinq horizons. Les sols fossiles apparaissent dans l'ordre suivant et montrent les propriétés suivantes :


— Sol fossile II (couché 5), chernozem brun, riche en humus (2,15 %) avec taupinières ; il contient un pollen d'herbes de la steppe, puis Quercus, Buxus, Carpinus, Ulmus, indiquant une communauté thermophile. Il correspond à la partie supérieure du complexe de Stiffried en Autriche, et au PK II de Tchécoslovaquie.

— Sol fossile III (couché 7), pauvre en humus (0,79 %), avec taupinières, de couleur rose, à caractère steppique. En Autriche et Tchécoslovaquie, son équivalent indépendant n'a pas été observé, si ce n'est les 1° horizon d'humus du complexe de Stiffried en Autriche, et du PK II de Tchécoslovaquie. Il correspond probablement à Amersfoort en Europe du Nord.

— Sol fossile IV. Ce sol est l'ensemble pédologique, désigné en Yougoslavie comme PK IV (pédocomplex de Nestšinski), tandis qu'en Autriche il forme l'horizon de base de l'ensemble de Stiffried A, et en Tchécoslovaquie le PK III. C'est donc, dans ces trois pays, un sol forestier qui correspond au dernier interglaciaire. Sur le profil de Batajnica, PK IV est un sol fossile double : à la surface, sol de steppe (couché 9) avec Carpinus, Fagus, Salix, à la base, sol de forêt (couché 11) avec taches de manganèse — séparés par une couche de lasses à concrétions (couché 10).

Sol fossil V, n’est pas représenté sur ce profil. Il apparaît plus à l’est, le long du Donabie, près de la localité de Slanakamen.

Sol fossil triple PK VI nommé « ensemble pédologique de Slanakamen », d’après la localité où il fut observé pour la première fois en 1948 (couches 13-17). Les deux sols du sommet sont des sols de steppe (13, 15), rouage, avec Helix pelasga, une espèce qui vit actuellement sous le climat méditerranéen du Pélagonitocré, tandis que le sol de base est un sol forestier (couches 17), aussi rouage. Ils sont séparés par le less. Selon ses propriétés et l’ordre de superposition, il correspond probablement à un interglaciaire ancien.

Sol fossil VIII (couches 19), indicateur de facteurs pédogenétiques humides. Il correspond au Pliocène le plus ancien, mais pour le moment, la documentation nécessaire est insuffisante.

Sol fossil VIII (couches 20), de couleur rouge rousse avec une masse de crottes de fer et de manganèse, « plissées en poches » qui rappellent les crottes de latérobie. L’horizon rouge forme la limite entre le Pliocène et le Pléistocène, ce qu’on voit plus à l’Ouest (Slanakamen) où il fut formé sur les sables pendants. Il appartient probablement aux faciès du Villafranchien. Par analogie avec la Roumanie voisine, où cette terre rouge la plus ancienne a été aussi précisée par la faune, il indique une région de savane.

B. — PROFIL PÉDOLÔGIQUE DE SLANKAMEN COT (altitude 146 m).

Épaisseur d’environ 45 m. Il ressemble au profil précédent : par le nombre de less et l’ordre des types de sols fossiles. Ce profil montre également dans l’ordre de superposition : sols fossiliques I, II et III, ensuite PK IV, quatrième ensemble pédologique, tout comme dans la localité de Batajnica, sinon. Il montre une nouveauté : le

Sol fossil V (couches 14), individualisé, sol de forêt de couleur rouge-rousse à concrétions de manganèse, développé entre deux less continentaux, puissants.

Au-dessous du sol fossil V, il y a à Slanakamen :

Ensemble pédologique VI (PK VI, couches 16-20), exactement comme à Batajnica ; il est nommé « ensemble pédologique à plusieurs membres de Slanakamen », avec Helix pelasga, il est formé sur le less le plus ancien de cette région, le 5 less stadiaire (couches 21). Au-dessous du 5 less, le terrain est couvert (couches 22), tandis qu’à la base de ce profil apparaît le

Sol fossil III de couleur rouge (couches 23), à caractère forestier.

Le sol fossil VII n’a pas été observé jusqu’à présent dans cette localité, sa place stratigraphique étant inaccessible à l’observation.

III. — GRANULOMÉTRIE ET COMPOSITION CHIMIQUE DES PROFILS.

L’étude granulométrique des deux profils, dont le tableau ne peut être présenté ici par manque de place, montre que les less 2, 3, 6 et 7 de Slanakamen sont poudreux, tandis que les less 4, 8, 9 et 10 sont argileux. Le less 4 de Batajnica est aussi argileux, tandis que les less 2 et 3 sont poudreux.

Présence de CaCO$_2$ et d’humus dans les profils de Slanakamen et de Batajnica :

Les deux profils montrent la régularité de l’accroissement du pourcentage de CaCO$_2$ dans les less (jusqu’à 31,8 %) et la diminution dans les sols fossiliques (jusqu’à 0,82 %), tandis que le pourcentage de l’humus dans tous les sols fossiles est au-dessous de 1 % (0,48-0,79) à l’exception du less fossil II où il varie de 1,71 à 2,15 %.

IV. — CONCLUSION

De tous les pays de l’Europe centrale dans lesquels on a eu lieu les réunions de la sous-commission pour la stratigraphie des less, la Yougoslavie et la Tchécoslovaquie ont les espaces les plus vastes sous couverture continue de less. En outre, le nombre de profil de less complets, comprenant le Pléistocène entier, est grand et il apparaissent fréquemment. Les profils s’étendent parfois sur plus de 100 km indiquant la régionalité des phénomènes et leur importance pour la stratigraphie et la détermination chronologique relative du Pléistocène du Sud de l’Europe. Ils indiquent :

— que l’horizon limite pliocène-pléistocène se distinguait par un climat plus chaud que le climat méditerranéen (crottes de fer et de manganèse du sol fossil VIII);

— que le puissant sol fossil VII, datant du 1er interglaciaire, de type pseudo-gley indique la longue durée de celui-ci, mais aussi la présence de facteurs d’une pédogenèse humide, tandis que le sol rouge de l’ensemble pédologique VI aux gastropodes méditerranéens témoigne d’un climat plus chaud que le climat actuel;

— que le sol fossil V, à caractère forestier prononcé, témoigne d’un interstadial chaud au Sud de l’Europe, entre deux longues phases de steps de less (Riss) ;

— que l’ensemble pédologique IV date du dernier interglaciaire (Riss-Wurm), en étant le dernier représentant du climat chaud et humide avec stabilisation de forêts d’arbres à feuilles caduques ;

— que les trois derniers sols dans la partie supérieure du profil (I-II) indiquent des climats de steppe (sol fossil III) et de forêt-steppe (sols fossilisés II et I) qui s’étaient étendus sur nos régions vers la fin du Pléistocène, dans le Wurm, indiquant également une baisse considérable de température.
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Loessification (on the 130th anniversary of the birth of L.S.Berg)

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We can define loess - at least we can attempt to define loess (Smalley & Jary 2004); we can discuss the factors that affect its distribution (Smalley & Jary 2005a) and examine attempts to describe that distribution (Smalley & Jary 2005b), but can we grasp the slippery concept of 'loessification' - the idea that 'not-loess' ground can, by various transformative processes, become loess ground?

Here is a word of some historical power but apparently very little contemporary relevance. It is a word that has never been deployed to any large effect in New Zealand, but there is a certain NZSN relevance because it is via the medium of soil science that it has had some impact. Also from our point of view the NZ Soil Bureau played a small, but important part, in the wider study. We propose, in this discussion, that the idea of loessification can be considered at two levels; we shall deal with 'grand' loessification and 'petit' loessification (gL and pL for short). At the centre of the discussions is the work of two individuals: L.S. Berg (for gL: Berg 1916, 1932, 1964) and M. Pecsi (for pL: Pecsi 1990, 1995, Pecsi et al 2000).

Berg was involved in the great 20th Century debates about the nature and origin of loess. He was the main protagonist for the idea that loess came about by processes of weathering and soil formation; he offered the 'eluvial' or soil theory of loess formation, sometimes called the 'in-situ' theory; he was the guru of loessification. According to Pyaskovskii (1946) Berg arrived at the conclusion that loess is to be regarded as a normal mineral zonal soil formation. So much of the discussion of loess in the 20th Century swirled about Berg that we feel justified in examining him and his ideas at some length.

Lev Semenovich Berg 1875-1950; more famous as an ichthyologist than a soil scientist, for most of his life associated with Leningrad University. In 1916 (when he was 40 years old) he published a long paper/monograph on loess, based on his studies in western Russia and Ukraine. In the words of the Great Soviet Encyclopedia "he proposed a soil theory of the formation of loess". This monograph was republished in 1925 in his book 'Climate and Life'. According to the Great Soviet Encyclopedia "Berg elaborated the study of landscapes and developed the teaching of V.V. Dokuchaev on natural zones... " He was much influenced by Dokuchaev and the development of soil science, and the basic Dokuchaev ideas can be discerned in the Berg loess hypothesis. A second edition of Climate and Life was prepared and was ready for publication in 1940, but the publication was delayed by the Great Patriotic War. It came out eventually in 1947, and a translation into English of the important loess portions was published by the Israel Programme of Scientific Translations in 1964. Berg (1964) is very like Berg (1916); we do not think that the Berg loess ideas changed significantly during his life; they were certainly very influential in the Soviet Union. To quote Pyaskovskii again "There can be no doubt that the most important factor in the development of our knowledge concerning loess was the fruitful idea of L.S. Berg as presented in a series of articles and collected under the title of 'the pedological theory of loess formation' (Pyaskovskii 1946).

The basic Berg ideas (gL) were discussed some years ago in Soil News (Smalley 1980). In the New Zealand setting they were never applicable because they basically required a definition of loess which had no application in New Zealand. Loess definitions are still being discussed at some length (Smalley & Jary 2004) but we can say that if collapsibility and carbonate content are key defining factors, as Berg would require, then the NZ loess is excluded. But, if aeolian deposition and the mantling of the landscape are the key factors then NZ loess fits in nicely. Berg would never accept aeolian deposition.

Pecsi (our chosen champion of pL) was able to accept aeolian deposition as an important stage in the formation of a loess
deposits. He was essentially happy with all the sedimentological preliminaries, he required loessification to operate between the aeolian deposition event and our contemporary observation of loess. After the sedimentological processes have finished, then the pedological processes can begin, and a discussion in Soil News takes on some relevance. Pecsi was a great enthusiast for loess, he was president of the INQUA Loess Commission for many years and wrote many papers, and edited many volumes, on his chosen material. He was Director of the Geographical Institute of the Hungarian Academy of Sciences, and made Budapest a great centre for loess research. As a member of the Central European scholarly establishment during Soviet times he was bound to be influenced by the Russian loess ideas, and supported the idea of loessification to the end of his life (in 2003). A special commemorative volume of Quaternary International has been edited by A.Dodonov and A.Velichko, which contains (inevitably) further discussion of the in-situ approach to loess formation (Smalley et al 2006). We can see the attraction of loessification in a philosophical context: it confers on loess a special status: it makes it a special, unique ground material, a marvellous and wonderful thing. A Hungarian scholar might well be drawn to loess because it is a major deposit in that country and there is, in that land-locked sedimentary basin, a relative shortage of things to investigate. And in Soviet times there was no way that you could be an oceanographer in the Pacific, or even look at the Munich loess.

Pecsi(1990): a key paper with an intriguing title 'Loess is not just the accumulation of dust'. Pecsi states that "Dust only becomes loess after the passage of a certain amount of time in a given geographical zone". That small word zone has interesting echoes of a Dokuchaevian past; the idea of a zonal control of loess formation was very strong in the Russian approach to the problem. In fact in one of the most recent maps of loess distribution (Trofimov 2001, reproduced in Smalley & Jary 2005b) global climatic zones are emphasized. A similar statement from Pecsi (1995) "In the process of loessification, the development of loess fabric, the role of zonal, regional and partly of local environmental factors is regarded [as] decisive".

Pecsi et al (2000) "On the issue of explanations for the origin of loess Berg and Pecsi considered it important to emphasize that the sedimented material is not yet loess, i.e. it is not the loess which accumulates but its mineral weight. The ideal conditions for loessification are provided by soil horizons of semi-arid steppes and open woodlands (in some places warm and dry steppes) and during Pleistocene periglacials in those of cold steppes and open woodlands; they form the megazones of loess formation.

There have been explanations given concerning loess formation emphasizing the predominant role played by the geographical environment, i.e. by the loess megazone, in the soils of which organic and non-organic processes play a more important part than any other transportation or accumulation processes (… Berg 1916, Pyaskovskii 1946, Kriger 1955….)

Pecsi produces a gloss on Berg’s forthright views and adapts them somewhat to his own position. The Pecsi position is more interesting and does actually have some relevance to 21st century loess studies. Berg was too extreme; denying aeolian deposition was a mistake. It is interesting that Pecsi cites Pyaskovskii(1946). This is a remarkably interesting paper and gives real breadth to the GL discussion. This is where Soil Bureau made a critical contribution to the debate; the English translation of Pyaskovskii (1946) was prepared at Soil Bureau and published by Loess Letter in 1986; there is a shortage of windows into the Berg world- this allows a critical glimpse. There are aspects of interpretation which touch on the Pyaskovskii paper- it opens with a paean of praise for Berg (see above) but a careful reading suggests that it might be a carefully coded, and damaging attack on the Berg position. Pyaskovskii picks out a great weakness in the GL approach; how do you deal with deposits that have enormous thickness? Does the process front work its way down through hundreds of metres of ground, or is some alternative required to provide these vast amounts of loess material?

It is better to let the sedimentological processes perform their function before applying the pedological reasoning. Pecsi is taking a correct approach, and this approach can be fitted quite neatly into a study of loess deposit formation which requires all the critical events or stages to be identified and elucidated. Actually many questions remain, and in the interests of context setting a few can be discussed here. Berg (1932) stated that. "The wind, according to its velocity, can carry either coarser or finer particles, but why it should give a preference to particles of 0.01 to 0.05 mm in diameter, has never yet been explained by any follower of the aeolian theory." This is easy to explain; a simple compromise is
operating. The forces on ground particles are essentially cohesion and weight; the smaller particles are more cohesive and the larger particles are heavier. At around 80 um the best lift is achieved, so it is no surprise that aeolian loess has particles in the silt size range. There is another factor becoming more established; it appears that quartz in nature is predisposed to fracture and breakage leading to a silt-sized product (Kumar et al 2006); so the silt sized pick-up occurs because it is silt sized particles which are overwhelmingly available. It is interesting to note that Berg may have been the first person to suggest that the size range 10-50um is the special 'loessial' size range (see Browzin 1985).

The 'sequence-of-events' approach to loess deposit formation has been brilliantly deployed by Wright (2001) to explain loess deposits in Nigeria, China, Hungary and Tunisia. We can add the pL event on to the main sequence and it will fit quite comfortably. There are other event types which are still being currently discussed. The problem of making the silt particles for loess deposits is still active (see Wright 2001, Kumar et al 2006) and this bears on the difficulties of supplying material for deposits of 'desert' loess. There is increasing awareness of the role played by large rivers in distributing loess material far and wide across the landscape, before the property-producing aeolian transportation event occurs. There is almost certainly much more loess in India than has been appreciated and the great rivers, e.g. the Indus, the Ganges and the Brahmaputra, deliver vast amounts of potentially loess material into convenient positions. And another three rivers, the Dnepr, Don and Volga, have had a greater effect on loess distribution in western Russia and Ukraine than has been hitherto acknowledged. So there are vast transportation events that require further study, and now we have a late event, a post-aeolian event, to add to the list of significant loessial activities that require investigation and explanation.

The aeolian deposition event gives to a loess deposit its open, metastable structure, and contributes to the characteristic (Berg-noted) particle size distribution. This appears to us to be the truly defining event; all the other events are important and significant, but at the heart of loess deposit formation is that remarkable aeolian event. Now, although this provides the metastability, it does not necessarily provide collapsibility. The open metastable system has potential energy, it could collapse into a more stable system- but a mechanism has to be available to allow the collapse to take place. And this is where the pL process has a role. Recent (on-going) studies on the loess at Ospringe in Kent, UK have indicated that post-aeolian processes modify the inter-particle contacts in the metastable ground and facilitate collapse. Deposition of a network of needle-shaped carbonates at particle contacts allows clay mineral material to be trapped and concentrated at the particle contacts. A clay level content is reached which provides collapsibility. It has been noted that a system with a very low clay mineral content does not collapse, and a system with a relatively high clay mineral content does not collapse. There is a middle range of clay content that allows collapse, and it is this middle range which is achieved in the pL process.

2006 is the 130th anniversary of Berg's birth; and it is the 90th anniversary of his pedological theory- so some celebration is justified. He has produced 90 years of discussion and debate. The gL approach may be fatally flawed- but the pL angle looks worthy of consideration. 2006 is also the anniversary (60th) of the publication of Pyaskovskii's remarkable paper- we should also celebrate this, and the small, but key, contribution by the NZ Soil Bureau to the great loessification debate.

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This issue of Quaternary International is dedicated to Professor Marton Pecsi—prominent Quaternary scientist and geographer of the 20th century. Marton Pecsi was born on December 29, 1923, in Budapest. In 1949, he graduated from the Erno Lorand University. His doctoral dissertation dealt with paleogeography and geomorphology of the Pannonian Plain and the Carpathian Mountains, and with history of bluvial terrace formation in the middle reaches of the Danube. While teaching in the University, Marton Pecsi took an active part in activities of the Geographical Research Center established by the Hungarian Academy of Sciences in 1952. After the Center was given a status of Geographical Research Institute (in 1967), Marton Pecsi served as its Director until 1990. The wide scale Quaternary studies carried out under his guidance resulted in publications such as the National Atlas of Hungary, seven-volume monograph on the Hungarian landscapes and many others. His meticulous and extensive studies spanned a variety of environmental problems and particularly those of Quaternary history.

It seems logical to suggest that it was the search for original sources, for the roots of the present-day environmental systems that dictated his growing interest in loess sequences. Marton Pecsi fully appreciated the loess series significance as a source of data on the history of environments: a sequence of fossil soils alternating with loess horizons provides an excellent instrument for reconstructing palaeoenvironments over many hundreds of thousands of years, for placing modern environments within this evolutionary process and foreseeing their development in the future.
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The most detailed studies were primarily performed by Marton Peci and his colleagues on key sections of loess-palaeosol series in Hungary, including Mende, Basaharc, Paks—those names sound familiar to stratigraphic units not only in Hungarian schemes, but also in stratigraphic correlations of other countries. The mentioned sections being widely known among scientists of many countries may be partly attributed to the fact that Marton Peci was always open handed with his results and readily invited foreign scientists to take part in his researches. This quality of a genuine scholar could be defined as "scientific hospitality". Most of his colleagues abroad were equally willing to share their results with him. Being an enthusiastic researcher and indisputable authority on the loess problems, Marton Peci served as the President of Loess Commission (INQUA) from 1977 to 1991. His contribution to the scientific work of the INQUA Commission on Loess was especially important. The Commission activities, as planned by Marton Peci, started from direct studies of loess-palaeosol series in various regions of the Earth, extensive discussion of their characteristics and appraisal of their capacity as a source of palaeogeographic information. Regional stratigraphic schemes for North America, Western, Central and Eastern Europe, southern Siberia, Tajikistan and China were essentially amplified in the process. In Central Asia, new material on loess research was presented during the International Symposium on the Neogene-Quaternary boundary, Tajikistan, 1977, and then in two field excursions during the 11th INQUA Congress, Moscow, 1982, and the 27th IGC, Moscow, 1984. In North China, the International Loess Symposium, followed by a five day
A scientist of great abilities, Marton Peci was an excellent and kind man. In spite of his high official position as a full member of Hungarian Academy of Sciences and honorary member of many foreign academies and scientific unions, he was never conceited or haughty. He was always open to friendly discussion not only with venerable scientific men, but with young researchers, both in the field and in lecture halls, including the famous 19th century hall in the Geographical Institute in Andratx Sr., Budapest.

The Loess and Palaeoenvironment conference, Moscow, May 26-June 1, 2003, was devoted to the subject which was one of the main scientific interests of Professor Marton Peci. His attending the Conference had been awaited, although it regrettably could not happen. Marton edited many volumes devoted to loess research. We regret to say that we have to do this without him. The contributions of this volume cover a very wide range of topics connected with stratigraphy, geochronology, paleogeography, palaeo-environmental and lithological properties of loess. Nevertheless, we are well aware that this amount of papers represents only a small part of the material available in the hands of loess experts. Thanking all contributors of this volume, we are happy to present this volume as our modest memory to Marton Peci, wonderful man, and enthusiast of loess studies.

There is little doubt that the materials given in this issue would be received by Professor Marton Peci with great interest and approval; the results obtained by various methods and approaches would become subjects of heated discussion and would be accepted without all-around consideration. Marton Peci never dogmatically asserted only his own scientific concept to be correct. The subsequent studies, however, proved the validity of his results and attested to correctness of his chosen way in scientific research.

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Fig. 1. — Localisation des profils décrits dans le présent travail.