NEWSLETTER 2 / 1992

E.S.S.C.

EUROPEAN SOCIETY FOR SOIL CONSERVATION

Prof. Dr. Jan de Ploey
Founder and first President
of the ESSC
* Antwerp, January 27th 1937
† Leuven, March 30th 1992

E.S.S.C. NEWSLETTER 2 / 1992

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THE NEXT FOUR YEARS

It is with some apprehension that I take on the great hounour of being the newly-elected President of our Society. We owe a great debt to the enthusiasm and vision of the late Professor De Ploey, our first President, and his will be a hard act to follow. Nevertheless, I look forward to working with all of you to further the activities and reputation of the Society.

The next four years will be critical because the initial motivation of a new Society will be gone. We must avoid the dangers of being too complacent and of regarding ourselves as part of the establishment. There is much work still to do. We have the opportunity of expanding our society into eastern Europe with the large increase in membership and exposure to very severe problems of soil degradation that this will bring. Also, there are other countries in western Europe whose scientists and policy-makers remain to be brought within our orbit.

In Newsletter No 4/1990, Professor De Ploey wrote, "the most difficult task will be to bridge between our academic circles and the large public and to 'sell good idea' to those who really are responsible for soil conservation policies." If there is any message to come from the First Congress of the Society at Silsoe, it is that we must involve policy-makers in our activities. Otherwise we will be solely an academic Society with little relevance to the outside world. Let us take up the challange and each recruit a policy-maker as a member of our Society so that we can become the forum in which scientists, planners, managers and those who develop and implement policies can work side-by-side to the benefit of soil protection throughout Europe.

R.P.C. Morgan, President
Silsoe
July 1992

SOME TRIBUTES TO PROFESSOR JAN DE PLOEY

Unexpectedly to everyone Jan De Ploey, Professor in the Faculty of Sciences at the Katholieke Universiteit te Leuven, passed away on March 30, 1992.

Jan De Ploey was born in Antwerpen on January 27, 1937. He went to the K.U. in Leuven in 1954 where he obtained his diploma (MA) in earth sciences in 1958. He then became an assistant to Professor F. Gullentops and three years later completed his PhD with a thesis on "Morphology and Quaternary Stratigraphy of the Antwerpian Kempen". This study is still considered as the basis for Quaternary geology in the region.

From 1962 to 1968 he worked at the Lovanium University in Kinshasa, first as an assistant and later as a Lecturer. The tropical landscape which he appreciated broadened his interest and to a great extent led to his reorientation to new domains of physical geography. In this period Jan De Ploey did pioneer work developing experimental methods in geomorphology e.g. the application of radioactive tracers. His publications during the 1960s became a source of inspiration for many researchers world-wide.

In 1969 he was called back to the K.U. Leuven where he established the Laboratory for Experimental Geomorphology. In 1973 he was appointed university professor in charge of the teaching of physical and regional geography. In the following years he contributed considerably to the acquisition of fundamental insights into many geomorphological processes such as soil erosion by raindrop impact, overland flow, mass movement, wind erosion and colluviation. He was one of the first to succeed in combining this knowledge with new insights of Quaternary landscape development.

Meanwhile Jan De Ploey built up a team of researchers focussing on the analysis of soil erosion, one of the most important processes in soil degradation, especially in Third World countries. He established an atmosphere of friendship and solidarity among his colleagues. Both his enthusiasm and encouragement of individual initiative served as a constant motivation for his team of colleagues. His geomorphological studies and his great geographical experience at home as well as abroad earned him a strong international reputation which resulted in numerous invitations to international scientific meetings. He also acted as a guest professor at six foreign universities among which are the Hebrew University of Jerusalem and the University of Toronto. Three important scientific honours, including the David Linton Award of the British Geomorphological Research Group, emphasized the international appreciation of his outstanding studies and publications. Jan De Ploey was undoubtedly a world authority in the field of soil erosion.

In the mean time Jan De Ploey stayed active in research and also practically applied the knowledge he previously obtained e.g. in the Belgium loess belt where he introduced minimum tillage operations as a means to mitigate erosion. His common sense and ability to keep things simple meant that he could pass on his scientific knowledge to farmers.

In 1988 he became the founder and Chairman of the European Society for Soil Conservation and in 1989 he was appointed Secretary of the newly established International Association of Geomorphologists. He filled many other positions in national and international scientific associations or institutions. His willingness to help was also seen in his taking over responsibility in the K.U. Leuven as academic secretary of the Faculty of Science and head of the Geography Section. Apart from this he also had a particular interest in matters of regional politics and the well-being of his Flemish fellow people which was expressed in his activities with the Flemish Red Cross.

During the last years of a life that was much too short he developed a method to express the effects of various geomorphological processes in catchments by the use of an index of erosional susceptibility. Jan De Ploey also took charge of the extension of postgraduate interdisciplinary teaching. Within the K.U., Leuven he was one of the promoters of the interfaculty postgraduate course on Enviromental Management. His national and international colleagues will miss his lively character, his sharp perceptivity and his hearty laugh and humour. Jan De Ploey leaves an impressive heritage. The greatest tribute that his department can express to him is to continue his work on the same level.

J. Poesen, G. Govers, D. Goossens, E. Paulissen
Laboratory for Experimental Geomorphology, K.U. Leuven

We send our sincere condolences to the friends and relatives of Jan De Ploey, President of ESSC, Professor of the Laboratory of Experimental Geomorphology at the Catholic University, Leuven, on the occasion of his death.

As President of the Society, Professor De Ploey exerted great efforts to bring together specialists from all European countries. Too early has been the passing of an extraordinary person and coordinator of cooperation in soil management and conservation.

The ESSC members from Siberia (Russia) are hoping that the Executive Committee will make the necessary measures to perpetuate the memory of Jan De Ploey.

I. Gadzhiev, V. Ilyin, W. Kurachev, V. Mikhailichencko, V. Panfilov, W. Reimche
ESSC members form Siberia

ESSC GENERAL MEETING
8th April 1992

1. BUSINESS REPORT OF THE PRESIDENT AND THE SECRETARY

(The first part of this report was written by the President Jan de Ploey before his death. It was completed and presented by the Secretary G. Richter.)

On 4th November 1988, 18 experts representing Portugal, Spain, Italy, Greece, France, West Germany, Great Britain, Denmark, the Netherlands and Belgium founded our Society at Leuven (Belgium). Launching the Society resulted from a general consciousness of soil degradation being a reality on our continent and an awareness of the need for the development of a conservation policy in Europe within the next decade.

The first Newsletter was a call to all Europeans to preserve our soil resources - I am quoting the Editorial - "from the Atlantic Ocean to the Ural". Today I am happy to announce that the first steps have been taken to realise that goal; namely, to extend our activities to the Ural and even beyond to the Siberian parts of Russia. In fact, successively Switzerland, Luxemburg and Sweden joined our Society in 1989, followed by Austria in 1990; but with a real breakthrough towards the east occurring last year when we established firm contacts in Budapest and Moscow with colleagues eager to promote the ESSC in Hungary and Russia. We are now sure that the ESSC has the potential to become a true European organisation provided no major political destabilization disturbs our plans and activities.

During the first year, the number of individual and institutional members increased to about 300. Thereafter - the curve was on the front cover of Newsletter 3+4/1991 - we passed into a period of consolidation with a slower affiliation rate, until last year when we started to collect the first memberships in Hungary, Russia and neighbouring East European countries. From 1991 to March 1992, 87 East European colleagues joined the Society (59 from Russia, 8 from Hungary, 9 from Poland, 7 from Czechoslovakia, 3 from Yugoslavia and 1 from Bulgaria). In January 1992 we reached the psychological figure of 500 members and today we have exactly 560. Although collecting membership fees is far from being our first aim, it is clear that increasing membership is one of the first indications of European support for the main aim of our young Society, namely promoting soil conservation.

From the beginning, we considered the regular production of newsletters to be of paramount importance for the existence and development of the Society. Eleven separate newsletters have been mailed to members since 1989. Their contents include concise but very valuable reports on

matters of soil degradation and conservation in the different member countries. This review will be completed in forthcoming newsletters by a series of contributions from Russian colleagues depicting the situation in their large republic. A flexible approach was adopted to the language problem in Europe: for us too, English is the "lingua franca" among scientists, but according to our limited information, people also appreciate some contributions published in other major European languages which gives the newsletters a more European flavour.

No society is without its statutes. Our hard working secretary-treasurer carefully prepared the document which was ratified during the Council meeting at Zurich and registered at the District Court of Trier. The document was published in three major European languages in Newsletter 4/1989.

After founding the Society in Leuven on 4th November 1988, the Council met three times to review and discuss membership, relations with international bodies, future conferences and seminars, and other matters of general importance. Those meetings took place in Zurich (October 1989), Lisbon (September 1990) and Barcelona (September 1991).

Concerning our relationship with international bodies, I have to mention Professor H. Vogt (Strasbourg) who, as an ESSC observer, takes part in the activities of the EC-Steering Group on Soil Conservation which is chaired by Professor W. Blum, from Vienna.

The ESSC Executive Committee is the body that has to implement decisions of the Council, to organise the current work of the Society and to prepare the Council meetings. The seven members of the Executive Committee came together in Barcelona (May 1989), in Thessaloniki (May 1990) and in Trier (May 1991). Finally, four members visited Moscow State University and the Institute of
Agronomy and Soil Erosion Protection in Kursk at the end of last year to prepare the affiliation of Russia with ESSC.

At all of these meetings we experienced a lot of hospitality and friendship from local hosts and this positive atmosphere guaranteed a fluent organisation of international seminars and conferences:

- 'Soil Degradation and Soil Conservation in Switzerland and in Europe'. 20 October 1989, in Zurich
- 'Soil Erosion, Soil Pollution and Conservation Practices', 27 May 1990 in Thessaloniki
- 'Interaction between Agricultural Systems and Soil Conservation in the Mediterranean Belt', 4-8 September 1990, Oeiras. near Lisbon
- 'Combating Soil Erosion in Vineyards', 22-25 May 1991, in Trier

- 'Soil Erosion and Degradation as a Consequence of Forest Fires', 3-7 September 1991, in Barcelona and Valencia.

Hundreds of outstanding European experts contributed to these seminars and conferences to to which Council and ESSC members of organising committees devoted a tremendous amount of energy and time to make them successful. We are grateful for all they did to promote, in this way, the aim of the ESSC.

The evolution of the Society which is greatly welcomed by the Council is giving rise to the problem of membership contributions. In the short term, one section of our membership is not able to pay in 'hard currency', that is, convertible currency. The Council has therefore decided that members from the former socialist countries in Central and Eastern Europe should be free of payment this year. Beginning in 1993, they should pay a reasonable equivalent in their own currency to their Council member. The money will be used for ESSC activities such as conferences in these countries until their currencies become convertible.

In the past, almost all income from membership dues has been spent on printing and mailing the newsletter. We consider the newsletter as a very important link between the Society and its members which plays an important role in the diffusion of information and ideas: but it has to be paid for! The Council therefore decided to raise the personal and institutional membership contribution for 1992-94 to DM 35 (about $ 23) a year or to DM 100 ($ 65) for these three years. This will enable the Society to cover some expenses in other fields and to supply our colleagues in Eastern Europe with the newsletter. In this sense it could be considered as an act of solidarity among Europeans.

Since the beginning of this year the newsletter has a new Editorial Board. Chief Editor is Roy Morgan, to whom all contributions in English should be sent. The Co-Editor for French contributions is Henri Vogt in Strasbourg, for Spanish contributions Jose Rubio in Valencia, and for German contributions Gerold Richter in Trier. Please make use of the opportunity to contribute working reports, announcements and information on what is going on in the field of soil conservation in Europe.

Does all of this mean that ESSC realised its main objectives within a minimal period of no more than 3½ years and that it is already a firmly rooted Society in Europe? The answer may be "yes and no".

"Yes", as far as we may consider an unexpected success, the affiliation of more than 500 individual and institutional members in about 20 countries. It means that from now on, ESSC is in close contact with the most important centres where research is done on soil degradation

processes and conservation. Also, by our newsletters, we are able to inform our members about issues of soil conservation in the different countries and depict the overall situation in Europe.

"No", in as far as we are still at the beginning in our aim to attract the attention of the farmers, the general public and the decision makers. Jan de Ploey reflected on this problem in Newsletter 1/1990:

"Undoubtedly the large public in our individual countries becomes more and more conscious of the major environmental causes of our time. But the process of sensibilization is targeting on different topics with differential insistence. So, for good reasons, mass media and governments in Europe pay recently much attention to water and air pollution problems on and around the continent. Compared to these fields the promotion of the concept of soil conservation is rather lagging behind. This has to do with the nature of the soil conservation problem. Soil degradation features are not always spectacular. They are mainly persistent but slowly acting processes which do not directly affect current life of the majority of the population. Moreover, soil degradation processes are partly difficult to monitor and to evaluate, even by experienced farmers. It will take years to explain the main soil degradation causes to the rural population and, finally to the general public and decision makers."

For reaching this target we appeal to all ESSC members to contribute in that sense, with patient endeavour. Let us regard soil degradation and conservation always in the context of the entirity of a complex and vulnerable agricultural ecosystem, which needs a proper management both for the conservation of its productivity and of the environment. Let us try to fill the gaps in our knowledge about these ecosystems. Let us continue to promote the exchange of scientific experience all over Europe. Let us discuss the needs for, and the methods of soil conservation with the farmers; and let us try to come together to reasonable and proper solutions. Let us find clearly formulated answers to the questions, "what are the risks of soil degradation in Europe, what are the costs and benefits of conservation?" And let us bring these answers to the general public.

When we continue to do all this with patient endeavour we follow the way that the founders of ESSC and its first President had in mind: "to come to a multidisciplinary union and to bring together people and professions that are all involved in the effort to preserve our lands and our soils".

J. de Ploey and G. Richter
Leuven and Trier

2. THE TREASURERS REPORT

According to the German laws, Societies of Public Utility have to declare their income and their expenses every three years as a base for setting their income taxes. Our accounts, therefore, were examined at the end of 1990 by a bureau of tax advisers and the result has been reported to the revenue office of our state. This procedure will be repeated at the end of 1993.

The balance carried down was the following, in DM:

	1988	1989	1990
Income	810,95	6700,24	5825,75
Meeting expenses	--	2403,39	--
Mailing expenses	--	123,40	323,60
Printing expenses	--	--	2903,11
Organization expenses	--	--	938,75
Bank transfer expenses	--	431,88	523,29
Other expenses	--	207,52	282,00
Balance	+810,95	+4325,00	+5200,00
Bank account at 31.12.	810,95	4325,00	5200,00

We have some problems in receiving and recording the membership contributions. In September 1991, for example, about 25% of our members had not yet paid their contributions for the current year and we had to remind them, which caused additional cost. We will discuss in the Council the possible introduction of an automatic reminder by sending out, with the newsletter, a receipt for the received contribution with a balance of the present state of the member's account.

Another problem is that of missing names. Sometimes we only receive a bank transfer with the name of the bank and the number of the bank account. Or we may receive a cheque from an Institute but without any information regarding the name of the member.

Last but not least we are losing money because most of our members do not appreciate that every international bank transfer which is not carried out by Eurocheque or a postal remittance causes additional expense to the Society. We are now offering our members a reduced contribution if they pay it once for the three years 1992-94. This is DM 100 for the three years instead of three time DM 35. We hope that this will reduce our expenses.

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G. Richter
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3. ELECTION OF THE NEW COUNCIL

The procedures for the election of the 1992-96 Council were published in Newsletter 2/1991. The list of candidates nominated by members was published in Newsletter 1/1992. According to section 4 of the procedures (Newsletter 2/1991) the former Council nominated six members to serve on the new Council.

The list of candidates was presented to the Genral Assembly and accepted by this body with 61 votes.

There was no other business.

G. Richter
Secretary

Elections to Council 1992-1996

Austria	Prof. Dr. O. Nestroy	Graz
Belgium	Dr. J Poesen	Leuven
Denmark	Mr. P. Schonning	Foulum
France	Dr. Y. Le Bissonnais	INRA, Olivet
	Prof. Dr. H. Vogt	Strasbourg
Germany	Prof. Dr. H.R. Bork	Berlin
	Prof. Dr. G Richter	Trier
	Fr. M. Rohdenburg	Catena, Cremlingen
Greece	Prof. Dr. N. Misopolinos	Thessaloniki
	Prof. Dr. N. Silleos	Thessaloniki
Hungary	Dr. A. Kértész	Budapest
Italy	Prof. G. Chisci	Firenze
Netherlands	Prof. Dr. A.C. Imeson	Amsterdam
Norway	Dr. A. Njφs	Aas
Portugal	Prof. Dr. M.A. Coutinho	Lisboa
	Prof. Dr. A.G. Ferreira	Evora
Spain	Dr. F. Diaz-Francisco	Santiago
	Dr. J.L. Rubio	Valencia
	Prof. Dr. M. Sala	Barcelona

Sweden	Dr. I. Hakansson	Uppsala
	Prof. A. Rapp	Lund
Switzerland	Prof. Dr. H. Sticher	ETH
UK	Dr. J. Boardman	Oxford
	Prof. R.P.C. Morgan	Silsoe
	Dr. R.A. Shakesby	Swansea
Union of Independent States	Prof. Dr. G.P. Glazunov	Moscow
	Prof. Dr. M.S. Kuznetsov	Moscow

REPORTS ON THE FIRST INTERNATIONAL ESSC CONGRESS, SILSOE, 6-10 APRIL 1992

REPORT BY J. PORTA

El First International Congress ha desarrollado sus trabajos del 6 al 10 de abril en sesiones plenarias y sesiones de posters, que han tenido lugar en Silsoe College y se han completado con dos interesantes visitas de campo. Con la asistencia de unos 90 congresistas han estado representados 22 paises, lo que indica la expansión del árca de influencia de la ESSC.

La conferencia invitada del Prof. A. Imeson destaca la concepción de la degradación del suelo como un proceso evolutivo. Aborda el estudio de la erosion con un diseno multiescala, que integra utilizando metodologias basadas en GIS. Busca establecer indicadores clave para evaluar la degradación.

La conferencia invitada del Prof. J. Thomas se centra en los problemas y desarrollos en modelización de la erosion de suelos en el contexto europeo. Se hace necesario una diferenciación clara en relación a las condiciones climáticas, muy distintas en la cuenca mediterránea que en paises con lluvias de baja intensidad y bien distribuidas.

La conferencia del Prof. G. Chisci destaca los conceptos "sistemas erosivos" y "ciclos de erosión en paisajes erosivos", por resultar más comprehensivos. Analiza los principales cambios en los sistemas agricolas en Europa, en relación con los distintos tipos de procesos erosivos, con lo que proporciona una interesante visión de sintesis de la protección contra la erosión del suclo en los diferentes ambientas en Europa.

Las sesiones han estado dedicadas a la evaluación de la degradación de suelos, con 16 communicaciones y 10 posters; prediccion y modelización, con 15 comunicaciones y 9 posters; y a medidas de protección del suelo con 9 comunicaciones y 4 posters, lo que traduce la orientación temática de las lineas de investigación de los asistentes.

Se observan dos enfoques, uno a pequena escala, más orientado a proporcionar evaluaciones globales, que deben servir para los "decision makers", y otro a escala grande, encaminado a comprender, evaluar los sistemas erosivos y a proponer medidas de protección contra la erosión. No obstante, se observa una menor atención a nivel de e'ste u'ltimo aspecto, posiblemente por tener un intre's más local.

Frente al enfoque ya clásico de medir pe'rdidas de suelo en parcelas experimentales tipo Wischmeier con o sin simulador da lluvia y aplicación estricta de la USLE, cabe destacar las investigaciones encaminadas al desarrollo del EUROSEM y otros modelos; asi como la

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introducción de metodologias GIS y te'cnicas geoestadisticas, que exigen un adecuado nivel de información de campo, de la que no siempre se dispone a priori y que por consiguiente hay que producir.

Los aspectos socio-económicos deberán ser objeto de meyor atencion, como lo demuestran los trabajos del Prof. O. Nestroy en Austria.

Las visitas de campo han permitido plantear otros aspectos de la degradación de los suelos, distintos de le erosión hidrica. La contaminación ha sido uno de ellos, ya sea por metales pesados, por nitratos, por sulfatos ácidos. La erosión hidrica en turberas ácidas de montana y los problemas derivados; la erosión eólica y la utilización del cesio como trazador han sido otros de los interesantes temas planteados en las excurciones.

En la visita al Soil Survey ha quedado el intere's de la información de suelos a nivel de mapas detallados de suelospara asesorar en base a ellos.

J. Porta
Dep. of Meteorology and Soil Science
Lleida/Spain

REPORT BY A. KERENYI

I had never been in England before. My first impression was very pleasant at Heathrow Airport because a young man with the ESSC symbol on his pullover greeted me on behalf of the organising committee. Soon a lot of ESSC members assembled and began to discuss personal and sometimes professional topics. After a short trip by coach, registration and lunch, the Congress started at 14.30 hours on Monday 6th April.

At the Congress Opening Ceremony, Professor R.P.C. Morgan, Vice-president of ESSC, reported that Professor Jan de Ploey, President and founder member died suddenly on 30th March 1992. This information gave me a shock because I knew him and his scientific results: he was an excellent geomorphologist and a respected teacher. Professor G. Richter, Secretary and Treasurer of the Society, spoke with warm words of our valued colleague. After the opening address by the Rt. Hon. Sir Nicholas Lyell Q.C., Solicitor General of H.M. Government, the work started in three sessions:

1. Assessment of soil degradation
2. Prediction and modelling
3. Soil protection measures.

Besides the papers in these sessions there were also three poster sessions. It is impossible to report on more than 40 paper presentations and 24 posters and therefore I will comment on some at random without attempting to rank them.

Professor Imeson spoke, amonst others, about the term soil degradation in his keynote paper. According to him we have to interpret this term in a wider sense where the key words are "the scale of change". He emphasised the gaps in our knowledge of the assessment of soil degradation which are as follows:

1. the dynamic character of soil degradation susceptibility
2. integration of measurements at different scales
3. non-uniform methods and lack of theory.

He presented a research procedure which had three phases:

1. soil, geomorphological and land use mapping
2. establishment of relationships between infiltration and aggregation
3. laboratory research into aggregate size distributions and stability characteristics.

Pesticide pollution following runoff and soil erosion in Cornwall (Dr. T. Harrod) was of interest. Material removed from aldrin treated fields was winnowed and sorted in transport giving enhanced residues of aldrin and dieldrin in downslope colluvium and in runoff entering watercourses. Dr. Kértész presented results on the assessment of soil erosion in the Lake Balaton catchment using GIS methods. Dr. Boardman drew attention to the difficulties of integration of Caesium-137 measurements, plot studies, national and regional monitoring schemes because of the very different methods used in these surveys. We learned about the major erosion forms in Iceland from Professor Arnold.

Our colleagues from Spain (Rubio, Andreu, Fortesa, Cerni) presented their soil erosion studies from automated plots. Their results included runoff, sediment characteristics and nutrient losses in relation to vegetation cover.

Professor Thornes spoke of the new demand for conservation experts to improve the level of information on (1) the contemporary extent of degraded land (2) real rates of erosion and (3) the likely impacts of future environmental changes on soil degradation.

Professor Morgan reported on the new version of the European Soil Erosion Model (EUROSEM), which is a process-based model which uses a mass balance equation to compute sediment transport, erosion and deposition over the land surface. Compared with other similar models, EUROSEM simulates tillage and vegetation effects in a dynamic way. The potential applications of this model were shown in Rickson's presentation with a view to evaluating soil conservation methods. Professor Poesens' paper reviewed the effects of rock fragments on soil erosion by water, however more quantitative information on these effects is needed for the development of process-based models.

It was useful to compare the different soil conservation methods presented in some papers (Porta-Ramos-Boixadera, Kwaad, Kahl-Schwerdtfeger, Cazzuffi-Monferino-Monti-Rimoldi). Dr. Tobias' special theme of of the use of shear strength tests on grassland soils gave rise to a heated discussion which was a worthy finish to the presentations.

The Mid Congress Tour took place on 8th April. In the morning we visited field erosion plots, long term experiments on metals and organic pollutants, methods for measuring nitrate leaching and assessment of cover crops in arable systems. The experiments were situated on the Woburn Experimental Farm. The afternoon was spent at the Arthur Rickwood Experimental Husbandry Farm in Cambridgeshire to study ways of reducing loss of peat soils. Clear explanations were given on both experimental areas.

That evening ESSC General Congress elected the new Council and the following day Professor Morgan, the new President of the Society, was elected by the Council. When this fact was reported to the Congress the participants applauded him, the new Treasurer/Secretary, Professor G. Richter and also the Vice-Presidents.

Finally I would like to emphasise that the Organising Committee of the Congress worked very hard and the result was a very well organised Congress which was a pleasant experience for the participants. We are grateful to them and give many thanks for their work.

Kerenyi
Kossuth University
Hungary

REPORT BY S. TOBIAS

Vom 6. bis 10. April 1992 hielt die Europäische Gesellschaft zur Bodenerhaltung (European Society for Soil Conservation, ESSC) ihren ersten internationalen Kongreß am Silsoe College in Silsoe (UK). Die Veranstaltung zählte an die 100 Teilnehmer aus 20 Ländern. Es war ein wissenschaftlicher Kongreß, an dem fast ausschließlich Universitäten sowie landwirtschaftliche und bodenkundliche Forschungsanstalten vertreten waren. Zu den drei Themenbereichen "Erfassung der Bodendegradierung", "Vorhersage und Modellierung" und "Erosionsschutzmaßnahmen" wurden 42 Vorträge und 24 Poster präsentiert. Eine ganztägige Exkursion führte zu zwei Versuchsfarmen. Die ausgezeichnete Organisation und die Disziplin der Vortragenden sorgten für einen reibungslosen Ablauf innerhalb des gesteckten Zeitrahmens.

Mehrheitlich wurden Projekte vorgestellt, die die Erfassung und Modellierung von Erosionsprozessen zum Ziel hatten. Erosion wurde dabei generell als Bodenabtrag durch Oberflächenabfluß definiert. Nur in Einzelfällen wurde auf unterirdische Erosion, Hangrutsche oder Folgeerscheinungen von Verdichtung und Verschlämmung hingewiesen. Jeder Themenbereich wurde durch ein Leitreferat eingeführt, worin das Thema generell umrissen und die Stoßrichtungen der Forschung gefordert wurden. In den anschließenden Kurzvorträgen sowie den Postern wurden einzelne Spezialgebiete näher behandelt. Am Schluß jedes Themenblocks und nach jeder Postersession blieb ausreichend Zeit zur Diskussion.

Zum Thema "Erfassung der Bodendegradation" wurden einerseits übersichtsmäßig die spezifischen Erosionsformen verschiedener geologischer Gebiete und Klimaregionen aufgezeigt. Andererseits wurde auf die Notwendigkeit gebietsspezifischer Methoden zur Erfassung der Erosion und Erosionsgefährdung hingewiesen. Zur detaillierten Erfassung der Erosionsvorgänge wurden Experimente auf einzelnen Versuchsparzellen vorgestellt. Für die flächendeckende Bestimmung der Erosion auf größeren Gebieten wurden weitgehend geografische Informationssysteme (GIS) angewendet.

Den Schwerpunkt des Themas "Vorhersage und Modellierung" bildeten computergestüzte numerische Modelle zur Simulation der Erosionsprozesse und Abtragssschätzung. Obschon im vorangegangenen Themenblock mit Nachdruck auf die gebietsspezifischen Unterschiede der Erosionsproblematik hingewiesen wurde, wird doch mehrheitlich versucht, universell anwendbare Gesamtmodelle zu erarbeiten. Die dargelegten Resultate erweckten den Eindruck, daß die Forschungsschwerpunkte größtenteils auf die numerische Simulation gelegt werden ohne der Verifikation anhand Naturbeobachtungen oder Feldversuchen die nötige Beachtung zu schenken. Die Ermahnung des Leitreferates, daß Modelle der - stets fehlerbehafteten - Beschreibung natürlicher Prozesse dienen, und die Natur sich nicht nach noch so plausiblen oder einfach zu berechnenden Modellen verhält, drohte in Vergessenheit zu geraten.

Zum dritten Themenschwerpunkt "Erosionsschutzmaßnahmen" wurden sehr verschiedenartige Beiträge präsentiert. Es wurden einzelne Praktiken zur Erosionsbekämpfung vorgestellt: In technischen Bereichen mit baulichen Maßnahmen oder Geotextilien, auf Landwirtschaftsflächen mit geeigneten Anbauweisen. Daneben wurde abermals betont, daß wirkungsvoller Erosionsschutz nicht aufgrund reiner Modellbetrachtungen möglich ist, sondern die intensive Naturbeobachtung im Feld voraussetzt. Zu guter Letzt wurde auch darauf hingewiesen, welche gesamtwirtschaftlichen Umstände die Erosionsproblematik beeinflussen. Das - vor allem in den Alpenländern - immer weiter verbreitete Phänomen der Teilzeitbauern schränkt die für die Feldbestellung zur Verfügung stehende Zeit stark ein. Das zwingt die Bauern, oft auch bei ungünstigem Wetter und verminderter Tragfähigkeit des Bodens die Feldarbeit zu verrichten.

Die Exkursion in der Mitte des Kongresses führte zu zwei Versuchsfarmen. Auf der Woburn Experimental Farm wurden wissenschaftliche Versuche des Silsoe College vorgestellt. Zwei Projekte befaßten sich mit dem Problem der Nitratauswaschung ins Grundwasser, beim einen ging es um die Erarbeitung geeigneter Meßmethoden, beim anderen wurden verschiedene Zwischenfruchtsorten auf ihre Wirkung bei der Nitrataufnahme aus dem Boden hin untersucht.

Ein anderes Projekt hatte die Dauerbeobachtung des Schadstoffverhaltens im Boden zum Thema. Das jahrzehntelange Ausbringen von Klärschlamm auf Landwirtschaftsland führte zu einer starken Anreicherung von Schwermetallen und organischen Schadstoffen im Oberboden, welche auch nach mehr als 25 Jahren nicht in die Tiefe verlagert wurden. Eine natürliche Regeneration der obersten Bodenschicht ist somit nicht anzunehmen, und die Bestimmungen bezüglich Schadstoffgehalten von landwirtschaftlich verwandtem Klärschlamm sind zu verschärfen. Ein Folgeprojekt beinhaltet Versuche über die Schadstoffextraktion durch Pflanzen zur Sanierung der belasteten Oberbodenschichten. Gewisse Arten zeigten sich dafür geeignet, doch nun steht man vor dem Problem der sinnvollen Entsorgung des kontaminierten Pflanzenmaterials. Die eleganteste Lösung wäre bestimmt die Rezyklierung der Metalle in der Industrie, allerdings sind dazu noch keine wirtschaftlichen Techniken bekannt. Ebenso wurden Versuche zum Hauptthema des ganzen Kongresses vorgestellt. Am Fuß geneigter Testflächen von ca. 1 a Größe waren Auffangbehälter für Abtragsmessungen installiert worden. Die Testflächen mußten groß genug sein, um die konventionelle maschinelle Bewirtschaftung zu ermöglichen. Diese Feldversuche bilden die Grundlage bei der Erarbeitung des europäischen Bodenerosionsmodells, welches auch in diversen Vorträgen vorgestellt wurde.

Die zweite Versuchsfarm, die Arthur Rickwood Experimental Husbandry Farm, führt Forschungsprojekte im Auftrag staatlicher und privater Unternehmen durch. Ein großes Problem stellt die Winderosion dar, insbesondere weil in der Region (Cambridgeshire) der Feldgemüsebau (Zwiebeln) eine bedeutende Rolle spielt. In einem vorgestellten Forschungsprojekt wurde nach geeigneten Zwischensaaten zur Brechung der Windkraft gesucht. Hecken aus schnellwüchsigen Weiden (ein früheres Projekt) befriedigten die Erwartungen der Verantwortlichen nicht. Die Wei-

den wurden schnell zu Bäumen, so daß der Wind in Bodennähe erneut toben konnte. Zudem waren die einzelnen Individuen nicht von langer Lebensdauer. Im übrigen seien Hecken bei den Bauern unpopulär. Dennoch mag es befremden, daß gerade eine Versuchsfarm nicht mit gutem Beispiel vorangeht, indem sie ihre Felder mit nach alter englischer Tradition erstellten und unterhaltenen (Einknicken der Weiden) Hecken umgibt.

Den Abschluß des Kongresses bildete ein großes Bankett in der Gemäldegalerie der Woburn Abbey, das von der herzlichen Stimmung, die die ganze Woche unter Teilnehmern und Organisatoren geherrscht hatte, geprägt war.

S. Tobias
Amt für Gewässerschutz und Wasserbau
Fachstelle Bodenschutz
CH-8090 Zürich

THE CONTRIBUTION OF FROST TO THE ERODIBILITY OF LOAMY SOILS IN WESTERN EUROPE, ACCORDING TO THE CONTINENTALITY GRADIENT: WORKING PROGRAMME

The research concerning the physical processes involved in rill wash erosion in agricultural areas is mostly oriented to the mechanism of soil breakdown. The rainfall, correlated with other physical or human factors, remains the main agent of structural modification. Nevertheless, such modification determines the total volume of erodible particles on microaggregates.

Further, frost action in soils has formed the subject of many publications. The mechanisms, now relatively well known, change the pedologic structure either by breaking it up or compacting it.

Complementary mechanisms

Western Europe, which is located on the southern fringe of the effective winter frost area (except for azonal domains such as mountains) experiences a lot of freeze-thaw cycles. For this reason, we have an interest in studying the extent to which frost action on soils can play a part in the process of erosion by water. The question is whether a relationship can be established similar to that found in arctic processes, whereby superficial aggregate breakdown is one stage that contributes to water erosion processes.

More specifically, recent water erosion research shows how the structural instability of loesses relates to soil crusting. But these loams are not only sensitive to precipitation, they are also very sensitive to frost action. When a soil is freezing the water it contains changes into ice and causes structural and drainage modification in the profile, generally connected with the extent of segregation ice lenses. As an element in the seasonally changing soil structure this has to be considered as one of the processes preparatory to rill erosion.

The profile reorganisation

Within the framework of the environment of this study, it is necessary to consider the appearance of ice in the profile only as segregation ice. This type of segregation induces a reorganisation in the water profile during freezing and results in the formation of pore ice (interstitial), ice lenses or pipkrakes. It generally occurs when the freezing speed is slow, or when the thermal gradient into the profile is high, as in winter in our regions. The main result is frost heaving. Movement in the profile due to its heterogeneity tends to redistribute the soil. During freezing, cryosuction changes the soil water potential by capillary rupture. Water is redistributed

towards the front of the nucleation lenses, causing secondary frost heaving. The processes induce an important mechanical effect which ends in a modification of the pedologic structure.

Other mechanisms increase the disaggregation of particles for reworking by runoff. One example involves pipkrakes which are a variety of segregation ice. Their efficiency depends on the surface conditions: on a cloddy surface, aggregates are lifted up by ice needles (millimetric or even centimetric scale), and then move as a function of the slope angle during thaw. On a structurally damaged surface, the whole crust can be lifted up, creating an independent sheet on a soft substratum.

The presence of a structural crust may have other consequences. When affected by superficial cryodesiccation, as in the case of rain over frozen ground, it will collapse rapidly. On a substratum partly waterproofed by refreezing ice (thermal inversion), the consequences are or two orders: crustal deposits will be immediately mobilized as a function of the slope angle and runoff will be more efficiently generated by infiltration failure. Moreover, at the level of the rill network, in winter, gullies can evolve in an asymmetrical way under the double influence of freeze-thaw cycles and exposure or, in a lateral way, because the higher shear velocity of the runoff, on the frozen rill bottom.

This short papragraph reviews the possible contribution of frost action on water erosion. This research has to be conducted at different levels: field observations, laboratory experiments and spatial analysis.

The research framework

In Western Europe climate varies with longitude. On the Atlantic coast of Normandy there is an average of 15 to 45 frost days per year for a mean winter temperature of 5°C. This low frequency is compensated by constant high humidity due to frequent autumn and winter precipitation (150 to 180 days/year), which leads to more efficient frost.

In the east, in the German Massif of Kraichgau, under more continental conditions, mean winter temperatures are -5°C to 0°C with between 150 and 200 rain days per year with a spring maximum. Superimposed on this climatic gradient is the uniformity of the loessic material. However, the depth varies from 2-4 m in the west, a few centimetres in Lorraine, and 8-12 m in the Kraichgau; and its behaviour varies: rough and not very calcareous in the Pays de Caux, but thick and very calcareous in the Kraichgau.

The study is subdivided into three parts, each corresponding to a specific scale.

The experimental part will determine the frost susceptibiltiy for each studied loess by calibrated frost heave experiments. Micromorphological studies of cores will look at the evolution of the different loesses. These experiments will take place at the CNRS geomorphology laboratory in Caen.

Field assessment will concentrate on two extreme situations based on the climatic gradient described above. The western study site is at Blosseville near Saint Valery en Caux. Experimental fields have been equipped with plots for three years to measure runoff, sediment load and soil characteristics. The eastern site is near Karlsruhr in the Kraichgau. This catchment has been equipped by Karlsruhr University to provide continuous data for natural conditions and under simulated rainfall. In addition use will be made of thermal data recorded at 50 cm depth in loess for 20 years by the INRA station of Colmar.

Finally, the CNRS laboratory of physical geography of Meudon will study the spatial distribution and typology of frost action with respect to erosion by plotting the different local parameters and correlating the information collected during the research.

The results of this study will lead to a better understanding of the contribution of winter frost to erosion of loess in a temperate area.

P. Renau
Paris

LAND RESOURCES OF RUSSIA: THEIR STATUS AND PROSPECTS

Russia has vast land resources. The total area of the Russian Federation is 1709,5 mln ha including agricultural lands of 222,1 mln ha (13%) of which 132,3 mln ha (7,7%) are arable.

Until 1991, land relations between the State and land users concerned only such issues as granting land use rights and land withdrwal. Land rent was confiscated using the zoning of agricultural products purchase prices. Finally, it had led to the alienation of real estate from the results of its use, to land degradation and collective mismanagement.

In 1991, land relations were changed in Russia. Basic legislative acts were adopted, such as the Law of the Russian Federation "On the Land Reform", the Land Code of the Russian Federation, The Law of the Russian Federation "On Land Payments". The main forms of land relations are now determined as follows: land tenure (individual, collective, State) and land lease (short-term, long-term). Equality is recognised in granting land rights to citizens, farmers and enterprises. The main obligatory element of the economic mechanism of land tenure and use is land payments. The change of land relations was determined by the need to provide more food; to protect productive lands and to involve land resources in active ecomomic turnover.

Today, the main problem is overcoming the food crisis. The way out of this situation is to use a variety of land management forms. A peasant himself has to decide whether to work in a collective farm or to be an independent farmer. There were over 40.000 farms in Russia in 1991 and they owned 2,5 mln ha of land. Land privatization has started on state and collective farms. Workers on state farms have a right to choose - to remain as hired workers on land in state ownership, or to become shareholders and to transform a state farm into a joint stock company, or cooperative enterprise. It is possible to be a good manager in a collective enterprise too, but only in cases where he has a share in the estate and in the final results of labour.

The increase in food production is connected with the problem of protection of the land from degradation. In Russia, the rates of degradation are higher than rates of protection. The process of degradation is not controlled. For the last 20 years, Russia has lost 11,8 mln ha of agricultural land including 1,4 mln ha of arable land due to invasion of small fields by shrubs and trees, drainage failure, innundation and industrial construction. 38,4 mln ha of agricultural land is exposed to water erosion, and more than 12,0 mln ha to wind erosion. Annual average losses of humus are 0,9 t/ha, of nitrogen 2 mln tonnes, of potassium 18,6 mln tonnes, and of phosphorus 1,1 mln tonnes. Annual average damage from erosion is assessed at 3 bln roubles. Land protection is inadequate in Russia.

Russia has 6,1 mln ha of irrigated and 5,1 mln ha of drained agricultural land. Land reclamation measures on the significant part of these areas are not sufficient. Complex

reclamation work on more than 26% of irrigated lands and about 20% of drained land is required.

Land protection measures are quite expensive. Financial support for these purposes will be received after the introduction of land payments in January 1992. The main concept of the law "On Land Payments" is that the land tax consists of two parts, an annual payment for the land itself and the differential part of the tax which is connected to the quality and location of the land. The first part of this tax is fully transferred to local councils and the second part is partially transferred. The whole sum of the land tax is expended only on land amelioration.

To stimulate the increase in land productivity, land users are given the right to spend their own money on land amelioration which can be set against tax. This may include spreading of lime, gypsum, erosion control measures or expansion of farm land.
When a land owner has improved his land and productivity has increased, land tax rates are not increased.

The success of the land reforms in Russia depends on the availability of reliable information about land resources. The wide diversity of natural resources and lack of up-to-date knowledge of many of them, mean that new techniques of mapping and monitoring are needed. Maps include limited agricultural and ecological data and large-scale surveys using remotely sensed data are required.

Finally, it is necessary to note that it is absolutely wrong to consider our land reforms as a simple evolutionary redistribution of land. This complicated set of measures are designed to realise the following aims: to move to a wide variety of land tenure forms; to do this in a socially just manner; to create the economic means for regulation and stimulation of proper use and protection of the land against degradation.

Peter F. Loiko
Committee for Land Reform and land resources for Russia
Moscow

[Ed: this is the first of several short papers on soil degradation and conservation in the former USSR; others will appear in subsequent issues.]

NOTICES RECEIVED

Newsletter of the International Research and Training Centre on Erosion and Sedimentation (IRTCES) No 13, December 1991

Contains reports on

(1) 'Regional Symposium on Special Problems of Alluvial Rivers' Seoul, Korea, September 1991
(2) 'Workshop on Soil Erosion and Debris Flow Control' Indonesia, November 1991
(3) 'Training Course on Reservoir Sedimentation and its Control' New Delhi, India, December 1991
(4) 'International Symposium on Debris Flow and Flood Disaster Protection' Emeishan City, China, October 1991
(5) Sixth Meeting of the 'Network of Sedimentation Information' Beijing, November 1991.

Newsletter contact address: P.O. Box 366, Beijing, China, 100044; FAX 8411174.

Also available from the same address is ESA: Newsletter of the Regional Training Programme on Erosion and Sedimentation for Asia (RTPESA) No 2, 1991.

Geo Confine 93: International Symposium on Geology and Confinement of Toxix Wastes. Montpellier, 8-11 June 1993.
Contact: Michel Barres, Geoconfine 93 Secretariat, BRGM - Department "Environment", BP 6009, 45060 Orleans Cedex, France.

Conference on 'Environmental Regeneration in Headwaters' Prague, 2-6 November 1992

Call for Papers and Participation:

Contact: Dr. Josef Krecek, Institute of Applied Ecology, Agricultural University of Prague, 281 63 Kostlec n.C.1., Czechoslovakia. FAX: 42 203 97458.

New Publication

No 12 of 'Bulletin du Reseau Erosion' (463 pp) February 1992.

The 'Reseau Erosion' is an informal organisation of mainly French speaking researchers, professionals and teams for exchange of information on erosion and conservation, under the active leadership of E. Roose (ORSTOM). Each year it organises a symposium on a specific theme. The 1991 Symposium in Grenoble was on 'Anti erosive control in mountainous areas: forestry approach and peasant strategies'. Bulletin No 12 publishes papers from the Symposium.

The 1992 Symposium will be held in Poitiers, 5.-7. November, on the themes (1) man induced slope instabiltiy in humid tropical environments (2) soil and water degradation and conservation in the Mediterranean area (3) evaluation and policy of antierosive control in Southern EEC states.

Contact: Eric Roose, ORSTOM - B.P. 5045, 34032 Montpellier cedex, France FAX 33 67 54 78 00.

Symposium on Erosion

International Symposium on Erosion at the Federal University of Technology, Owerri, Nigeria, 20-25 September 1992.

The main theme is the challanges of soil erosion control in the tropical environment. The symposium is organised by the Erosion Research Centre established under the umbrella of a European Community sponsored Inter University Research Project.

Contact: Hans R. Vermeulen, Centre for International Co-operation and Appropriate Technology (CICAT), Delft University of Technology, P.O. Box 5048, 2600 GA Delft, The Netherlands.

MEMORIAL SYMPOSIUM J. DE PLOEY
"EXPERIMENTAL GEOMORPHOLOGY AND LANDSCAPE ECOSYSTEM CHANGES"

First Announcement

In order to honour the memory of Professor Jan De Ploey who passed awy suddenly on March 30, 1992, a symposium will be organised by the Laboratory of Experimental Geomorphology at the Catholic University of Leuven. The symposiumm will take place in Leuven from March 22-27, 1993 and will be organised in cooperation with GERTEC (IGU Commission on Geomorphological Response to Environmental Change) and the ESSC (European Society for Soil Conservation). It is the aim of the organisers to concentrate the discussions on those topics which Jan De Ploey dealt with in his research.

Particularly, the following themes are proposed:

- The use of experimental geomorphological methods (in a broad sense) to aid in the understanding of landscape ecosystems.
- Prediction of geomorphological response to environmental changes (climatic, land use change) on landscape ecosystems.
- The application of experimental geomorphological research to develop strategies to counteract negative effects of environmental change (soil and water conservation).

During the conference a one day excursion will be organised to various sites in central Belgium where members of the Laboratory for Experimental Geomorphology conduct research.

A selection of the presented papers will be published in a volume of Catena.

Organising Committee: R.B. Bryan (Canada), A.C. Imeson (The Netherlands), R.P.C. Morgan (UK), A. Yair (Israel), J. Poesen, G. Govers, D. Goossens, A. Pissart (Belgium).

Those wishing to receive the second circular should return the enclosed registration form before September 30 1992 to:

Memorial Symposium J. De Ploey,
Laboratory for Experimental Geomorphology,
K.U. Leuven,
Redingenstraat 16 B,
3000 Leuven,
Belgium

REGISTRATION FORM

MEMORIAL SYMPOSIUM J. DE PLOEY
"EXPERIMENTAL GEOMORPHOLOGY AND LANDSCAPE ECOSYSTEM CHANGES"
LEUVEN, 22 - 27 MARCH 1993

Mail to:

Memorial Symposium J. De Ploey,
Laboratory for Experimental Geomorphology,
K.U. Leuven,
Redingenstraat 16 B,
3000 Leuven,
Belgium

Name: .....
Title: .....
Institute/Organisation: .....
Address: .....
.....
.....
.....
Phone: .....
Fax: .....

I intend to participate in the symposium O Yes O No
I intend to submit a paper/poster O Yes O No

Tentative title: .....
Approximate cost: .....

- registration fee (including field trip and banquet): 6000 BF
- accommodation in hotel (double room) + meals: 2500 BF/day

A second circular will be sent to those who sent in the registration from before **30 September 1992.**

IN GRATITUDE

The following ESSC-members heeded our appeal in newsletter 1/1992. They sponsored the cost of accomodation for one day for an Eastern European colleague. We are in gratitude for this act of solidarity among the members of our society.

Prof. Dr. Dieter Prinz, Karlsruhe	30 £
Prof. Dr. Gerold Richter, Trier	30 £
Prof. Dr. Maria Sala, Barcelona	30 £
Dr. Horst Strunk, Regensburg	30 £
Prof. Dr. Henri Vogt, Strasbourg	30 £

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A Cooperating Journal of the International Society of Soil Science.

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- the total environment of landscapes and sites
- the flux of energy and matter (water, solutes, suspended matter, bed load) with special regard to space-time variability
- the changes in the present ecosystem, including the earth's surface and

LANDSCAPE EVOLUTION, the genesis of the present ecosystem, in particular the genesis of its structure concerning soils, sediment, relief, their spatial organization and analysis in terms of paleo-processes;
- soils: surface, relief and fossil soils, their spatial organization pertaining to relief development,
- sediment with relevance to landscape evolution, the paleo-hydrologic environment with respect to surface runoff, competence, and capacity for transport of bed material and suspended matter, infiltration, groundwater and channel flow,
- the earth's surface, relief elements and their spatial-hierarchical organization in relation to soils and sediment
- the paleoclimatological properties of the sequence of paleo-environments.

CATENA publishes multidisciplinary studies as well as monodisciplinary papers that are of interest to other disciplines and are of relevance to landscape studies.

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