



bulletin

of the international society of soil science

bulletin

de l'association internationale de la science du sol

mitteilungsblatt

der internationalen bodenkundlichen gesellschaft

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**INTERNATIONAL SOCIETY OF SOIL SCIENCE  
ASSOCIATION INTERNATIONALE DE LA SCIENCE DU SOL  
INTERNATIONALE BODENKUNDLICHE GESELLSCHAFT**

Founded 19-05-1924; 7500 individual members; 60 affiliated national Societies.

Fondée 19-05-1924; 7500 membres individuels; 60 Associations nationales affiliées.

Gegründet 19-05-1924; 7500 individuelle Mitglieder; 60 angeschlossene nationale Gesellschaften.

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### XIII-TH ISSS CONGRESS, 13-20 AUGUST 1986, HAMBURG

#### **The Organizing Committee informs on the Congress:**

For the forthcoming congress the motto: "Demands on soil – increasing in variety and diversity" was published right at the XIIth Congress in New Delhi 1982.

It was aimed to stress the fact that competition for use of the limited resource 'soil' is becoming more and more important.

After the first announcement in July 1984 in Bulletin No. 65 a letter of intent was incorporated and in the second half of 1985 the invitation programme was mailed to our members.

This programme contained informations on plenary sessions, on symposia, a call for voluntary contributions and a guideline how to write prolonged informative abstracts.

The O.C. received thereupon ca. 1000 abstracts. This result confirmed that the motto of the congress was a good choice. Nevertheless it got our committee into trouble if we wanted to keep our limits at 7 days and 7 parallel programme events. The only option was selected and refusal, or enlargement of the resource base for presentation.

Since our Society is supposed to be the scientific forum for all our members, we opted for the second solution: we assigned to the poster presentation prestige at par with the oral presentation. This enabled us to accept all contributions which correspond to the formal demands. We believe this system serves best because it avoids the risk of turning down original views and hidden innovations. Moreover this decision renders it possible for the onlooker to choose more freely the objects of his personal interest than under conditions of an overloaded oral presentation. In the area of voluntary contributions you may therefore confidently expect new, unexpected and exciting results.

In order to form a contrast to this programme and to set some important accents, a relatively great number of symposia is provided. Here outstanding scientists give *state-of-the-art overview papers on important research areas*. Furthermore every Commission was allotted a plenary lecture in order to stress the current state of art.

Choices of topics and speakers for symposia as well as for plenary lectures are results of cooperation between the Commission presidents of our Society and the organizing committee.

We hope all of you will contribute your expertise and equally enjoy benefits from this Congress.

### XIII-EME CONGRES DE L'AISS, 13-20 AOUT 1986 A HAMBOURG

#### **Communication du Comité d'Organisation à propos du Congrès:**

La devise du prochain congrès 'Les besoins en sol – exigences croissantes en surfaces et en quantité', a été publiée au XIIème Congrès à New Delhi en 1982.

Le but était d'insister sur le fait que la concurrence pour l'utilisation de cette ressource limitée qu'est le sol s'accroît de plus en plus.

Un formulaire d'intention de participation avait été imprimé dans le Bulletin No. 65 en Juillet 1984, et au cours du deuxième semestre de 1985, un programme d'invitation a été envoyé aux membres de l'AISS.

Ce programme comprenait des informations sur les séances plénières, sur les symposiums, un appel pour les communications volontaires et un guide pour la rédaction de résumés informatifs.

Le Comité d'organisation a reçu environ 1000 résumés. Ce résultat confirme le bon choix de la devise du congrès. Néanmoins, cela mettait notre comité dans l'embarras pour s'en tenir aux limites de 7 jours et 7 programmes parallèles. Les seules possibilités qui s'offraient à nous, étaient la sélection, ou l'élargissement des possibilités physiques pour la présentation.

Puisque notre Association est un forum scientifique pour tous nos membres, nous avons opté pour la deuxième solution: nous avons attribué autant de prestige à la présentation des posters qu'à la présentation orale. Cela nous a permis d'accepter toutes les contributions qui correspondaient aux demandes formelles. Nous croyons que cette formule est la plus adéquate, parce qu'elle évite que des vues originales ou des innovations cachées ne soient écartées d'office. De plus, cette décision permet au spectateur de choisir plus librement ses sujets d'intérêt personnel que dans le cas d'un programme surchargé de présentations orales. De ce fait, vous pouvez vous attendre à des résultats nouveaux, imprévus et passionnants dans le domaine des communications volontaires.

Afin de former un contraste avec ce programme et d'insister sur les points importants, un grand nombre de symposiums a été organisé. Des scientifiques éminents donneront un aperçu de la situation dans divers domaines importants de la recherche.

Le choix des sujets et des conférenciers pour les symposiums ainsi que pour les conférences plénières sont le résultat d'une coopération entre les présidents des Commissions de notre Association et le Comité d'Organisation.

Nous espérons que vous apporterez tous votre contribution experte et que vous profiterez des bénéfices de ce Congrès.

### **XIII. IBG-KONGRESS VOM 13–20 AUGUST 1986 IN HAMBURG**

#### **Das Organisationskomitee berichtet über die Organisation des Kongresses:**

Für den Kongreß wurde bereits 1982 bei der Einladung, die auf dem XII. Kongreß in Neu Delhi erfolgte, das Leitwort ausgegeben: „Böden – unter steigender Intensität und Vielfalt der Beanspruchung“.

Wir wollten damit der Tatsache Rechnung tragen, daß heute die Nutzungskonkurrenz beim knappen Gut 'Boden' eine immer größere Rolle spielt.

Nachdem wir im Juli 1984 im Bulletin Nr. 65 eine Vorankündigung publiziert hatten, wurden im Laufe des zweiten Halbjahres 1985 an alle Mitglieder Einladungen versandt. Diese Einladungen enthielten bereits Angaben über das Symposienprogramm sowie über die Plenarvorträge, ferner die Aufforderung, freie Beiträge anzumelden.

Wir erhielten daraufhin ca. 1000 Abstracts zugesandt. Dies zeigte die hohe Aktualität des Kongreßleitthemas. Es brachte aber unser O.C. in größere Schwierigkeiten, weil wir die Dauer des Kongresses nicht erhöhen konnten und eine Erhöhung der Anzahl paralleler Veranstaltungen die sachlichen Überschneidungen stark vermehrt hätte.

Da unsere Gesellschaft das wissenschaftliche Forum für alle Mitglieder sein soll, haben wir uns entschlossen, den Posteraustellungen den gleichen wissenschaftlichen Rang zuzuordnen wie der oralen Präsentation. Das setzte uns in die Lage, alle Beiträge anzunehmen, die den Formalen Bedingungen entsprachen. Wir halten dieses Verfahren bei den freien Beiträgen für angemessen, denn es stellt sicher, dass Neuentwicklungen und originelle Gedankengänge nicht als abwegig abgelehnt werden. Zudem ermöglicht es dem Beschauer die Auswahl nach seinen Interessen in höherem Maße als es bei Vortrag vor dem Auditorium möglich ist. In diesem Bereich dürften Sie

daher Novitäten und neuartige, seltene Aspekte mit besonderer Spannung erwarten.

Um diesem Prinzip gegenüber bestimmte Schwerpunkte zu betonen und anerkannte Fachleute zu Wort kommen zu lassen, wurde eine relativ große Anzahl von Symposien eingeplant. Um den Stand der Kenntnisse und die Brennpunkte der Diskussion herauszustellen, haben wir darüber hinaus jeden Tag einer Kommission einen Plenarvortrag ermöglicht.

Die Auswahl der Redner und Themen für Symposien und Plenarsitzungen erfolgte unter wesentlicher Teilnahme der Kommissionsvorsitzenden unserer Gesellschaft. Das Programm, das Ihnen hier vorliegt, ist somit das Ergebnis gemeinsamer Bemühungen des Exekutivkomitees und des Organisationskomitees.

Wir hoffen, daß alle Teilnehmer den Kongreß durch ihre Beiträge bereichern und ihn in fachlicher wie aus persönlicher Hinsicht genießen mögen.



**Welcome to the CCH – Congress Centrum Hamburg!**

**ISSS Cooperating Journals – Journaux Coopérants de L'AISS – IBG Kooperierende Zeitschriften**

1. **CATENA**, an interdisciplinary journal of Pedology-Hydrology-Geomorphology.  
Size: variable number of issues per year, in one volume of about 400 pages.  
Publisher: Catena Verlag, Cremlingen-Destedt, Federal Republic of Germany.  
Editor-in-Chief: Prof. Dr. H. Rohdenburg, Braunschweig, FRG.  
Full subscription rate, including surface mailing: DM 248.00.  
Personal subscription price for ISSS members: DM 148.80 (about US \$ 58.00; 40% discount).  
A similar discount applies to the issues of the CATENA SUPPLEMENT.
2. **SOIL BIOLOGY & BIOCHEMISTRY**  
Size: 6 issues per year, in one volume about 700 pages.  
Publisher: Pergamon Press Ltd., Oxford, England.  
Editor-in-Chief: Prof. Dr. J. S. Waid, Bundoora, Australia.  
Full subscription rate, including surface mailing: US \$ 210.00.  
Personal subscription price for ISSS members: US \$ 42.00 (80% discount).
3. **GEODERMA**, an International Journal of Soil Science.  
Size: About 8 issues per year, in 2 volumes of about 400 pages each.  
Publisher: Elsevier Science Publishers, Amsterdam, The Netherlands.  
Editor-in-Chief: Dr. R. W. Simonson, College Park, MD, USA.  
Full subscription rate, including surface mailing: Dfl. 518.00 (US \$ 178.00).  
Personal subscription price for ISSS members: Dfl 170.00 (about US \$ 58.00); 66% discount.
4. **BIOLOGY & FERTILITY OF SOILS**  
Size: Four issues per year, in one volume of about 250 pages.  
Publisher: Springer International, IJmuiden, The Netherlands.  
Editor-in-Chief: Prof. Dr. J. C. G. Ottow, Hohenheim, Fed. Rep. of Germany.  
Full subscription rate, including surface mailing charges: DM 220.00.  
Personal subscription price for ISSS members: DM 175.00 (about US \$ 63.00; 20% discount).



Name and full address/Nom et adresse complète/Name und vollständige Anschrift:

.....  
.....

..... Signature: .....

*I wish to take a personal subscription to the following Cooperation Journal(s) of ISSS, under the conditions as outlined on page 3 of ISSS Bulletin no 68.*

*Je souhaite m'abonner personnellement au(x) Journal(Journaux) Coopérant(s) suivant(s) de l'AISS, sous les conditions mentionnées sur la page 3 du Bulletin 68*

Ich wünsche ein persönliches Abonnement zu nehmen auf den/die folgende IBG Kooperierende Zeitschrift(e), unter die Bedingungen genannt am Zeite 4 vom IBG Mitteilungsblatt no 68.

.....

*Forward to Secretariat ISSS/A retourner au secrétariat de l'AISS/Einsenden zur IBG Sekretariat: P.O. Box 353, 6700 AJ Wageningen, The Netherlands.*

## REPORT OF THE SECRETARY-GENERAL, 1982–1986

In compliance with the Rules of the Society, the report of the Secretary-General over the period between the last Congress (New Dehli – India, 1982) and the new Congress (Hamburg – FRG, August 1986) is printed in the Bulletin immediately preceding the latter. Highlights will also be mentioned at the Inaugural Session of the Hamburg Congress.

### **Administrative**

The number of registered members stood at 7222 in May 1986, against 6115 in October 1981, and 7356 at the end of 1982 when the last Membership List was printed. A new increase is expected to take place immediately before the Hamburg Congress, and this will be reflected in the new Membership List to be printed at the end of 1986. Since 1982 the List has been maintained in computerized form, first at the Printers of the Bulletin in Wageningen and now at the Office of the Treasurer in Gent. It greatly facilitates the membership and payment recording, and is also used for automated addressing of the Bulletin.

Through most of the reporting period the exchange rate of the US Dollar – the reference currency for the established fees – has been quite high in comparison with many other currencies. Nevertheless the collection and transfer of membership fees has improved. This was in great part due to good cooperation between the respective national Societies of Soil Science and the Treasurer Dr. Gabriels. Members residing in countries without such a Society were stimulated to pay for four years in once. Since this diminishes bank charges, a reduction in total fee could be allowed in a number of cases.

The *life Membership scheme* as started at the New Delhi Congress has resulted in a slow but steady trickle of extra income (25 thus far, at US \$ 200.– each). Also the 10% levy of registration fees at the Congresses, in compensation for ample and steady publicity in the Bulletin, has contributed to a positive balance. At mid-term the requirement for such a levy at inter-Congress meetings and abolished, with the argument that such meetings should be stimulated rather than taxed. The financial resources in fact permitted the granting of small annual subsidies to those Working Groups and Subcommissions that had an active means of communication through newsletters, workshops, or else.

The yearly contribution by the Dutch Soil Survey Institute was highly valued. Many of the support functions for the Officers of the Society were carried out at their respective institutions (in Hannover, Hamburg, Wageningen, Budapest and Gent) without any charge to the International Society.

Also at mid-term, a *Fellows Fund* (or 'young scientists travel fund') was created, to stimulate the participation of young soil scientists of developing countries in international meetings especially those in their own region or continent. The fund now counts with annual contributions from the national Societies of the Netherlands, Canada, the United Kingdom and the U.S.A., supplemented with an annual grant of the Committee on Science and Technology in Developing Countries (COSTED) of the International Council of Scientific Unions (ICSU). A small number of these scientists could already be supported from the fund, also for the Hamburg Congress, and it is expected to become fully operational thereafter (for details on the Fund's Stipulations see Bulletin no. 66).

Benefits for the membership-at-large were obtained through the creation of the *Cooperating Journals* scheme, implying an average of 50% discount for personal subscription to four selected international Journals of Soil Science (for details see Bulletin no. 68).



During the past four-and-a-half year a number of prominent ISSS members passed away, and several of them were remembered in the In Memoriam Section of the Bulletin. Among them were the Honorary Members: Dr. Auguste Oudin (France) and Dr. Richard Bradfield (USA).

The number of affiliated National Soil Science Societies rose to 57, with the creation of new Societies in Zimbabwe and Cuba. Several of the early national Societies celebrated their Golden jubilee, viz. the Indian Society of Soil Science (December '84), the Association Française pour l'Etude du Sol (October '84), and the Nederlandse Bodemkundige Vereniging (November '85). The U.S.S.R. Society celebrated the Centennial of Dokutchaev's 'Russian Chernozem' in 1983.

Nine issues of the *Bulletin*, each of about 80 pages, were published in the past  $4\frac{1}{4}$  years period. Notwithstanding high printing costs, the quality and scope of subjects could be maintained at the same level as in the periods 1974–1978 and 1978–1982, because arrangements between the Secretariat in Wageningen, the Netherlands and the Treasury in Gent, Belgium allowed for avoidance of payment of unwanted taxes and relatively cheap dispatching of the bulk of the Bulletins to members (though with the implication that advertisements and loose-leaved inserts could not anymore be accepted). The necessity of surface mailing to the 7500 individual members remains a drawback, which is only partially offset by the sending of advance airmail copies to all Chairman of Commissions and Working Groups and all Secretaries of National Societies. The sections in the Bulletin on 'Reports of Meetings', 'Announcement of Meetings', 'International Training Courses' and 'New Publications' are apparently much appreciated, especially by members residing in countries without strong national science organizations or easy access to international scientific publications.

### **Scientific Activities**

The activities of the Scientific Commissions, Subcommissions and Working Groups varied strongly per field of interest. Some maintained a lively correspondence, aided by the design of appropriate letter subheadings, others were semi-dormant.

A total of 26 official inter-Congress meetings took place. They were patronized by Commissions and/or Working Groups, in each case with the strong backing and organizational facilities of the local Society, and often supported by grants from FAO, Unesco, UNEP and national or international donor agencies. Participation varied from 50 to well over 200 members. They were, in chronological order:

#### **September 1982. Working Group ZO:**

Eight International Colloquium of Soil Zoology – Louvain-la-Neuve, Belgium.

#### **January 1983. Subcommission C (co-sponsoring):**

Third International Conference on Soil Erosion and Conservation – Honolulu, Hawaii, USA.

#### **March 1983. Working Group DP:**

Fourth International Meeting on Soil Information Systems – Bolkesjø, Norway.

#### **July 1983. Commissions III and IV:**

Meeting on Biological Processes and Soil Fertility – Reading, England.

#### **September 1983. Commission II (co-sponsoring):**

Eight International Symposium 'Humus et Planta' – Prague, Czechoslovakia.

#### **October 1983. Subcommission A:**

International Workshop on Salt-affected Soils of Latin America – Maracay, Venezuela.

#### **October 1983. Working Group IRB:**

Third Meeting on an International Reference Base for Soil Classification – Sofia, Bulgaria.

- November, 1983. **Working Group LE:**  
International Workshop on Land Evaluation for Extensive Grazing – Addis Abeba, Ethiopia.
- February 1984. **Commission IV:**  
International Symposium on Soil Test and Crop Response Correlation Studies – Dhaka, Bangladesh
- March 1984. **Subcommission A:**  
International Conference on Soil Salinity under Irrigation; Processes and Management – Bet Dagan, Israel.
- July 1984. **Commissions V and VI** (co-sponsoring):  
Third International Panel on Volcanic Ash Soils – Tenerife, Spain.
- August 1984. **Commissions I and V:**  
International Symposium on Water and Solute Movement in Heavy-clay Soils – Wageningen, the Netherlands.
- September 1984. **Commissions V and VI:**  
International Working Meeting on Classification and Management of Soils in Mountainous Regions – Sofia, Bulgaria.
- September 1984. **Commission I and Working Group MV:**  
International Workshop on Soil Spatial Variability – Las Vegas, USA.
- December 1984. **Working Group LE and Subcommission C:**  
International Workshop on Land Evaluation for Land Use Planning and Conservation in Sloping Areas – Enschede, the Netherlands.
- March 1985. **Working Group RS**  
Fourth International Symposium on Remote Sensing for Soil Survey – Wageningen/Enschede, the Netherlands
- May 1985. **Subcommission A** (co-sponsoring):  
International Symposium on the Reclamation of Salt-affected Soils – Jinan, China.
- July 1985. **Commissions IV and VI:**  
International Conference on Soil Fertility, Soil Tillage and Post-clearing Land Degradation in the Humid Tropics – Ibadan, Nigeria.
- July 1985. **Subcommission B:**  
Seventh International Working Meeting on Soil Micromorphology – Paris, France.
- August 1985. **Working Group ZO:**  
Ninth International Colloquium on Soil Zoology – Moscow, USSR.
- September 1985. **Commission I** (co-sponsoring):  
International Symposium on the Assessment of Soil Surface Sealing and Crusting – Gent, Belgium.
- November, 1985. **Subcommission C** (co-sponsoring):  
Fourth International Conference on Soil Conservation – Maracay, Venezuela.
- January 1986. **Working Group AS:**  
Third International Symposium on Acid Sulphate Soils – Dakar, Senegal.
- January 1986. **provisional Working Group DM:**  
Workshop on the Structure of a Digital International Soil Resources Map annex Data Base – Wageningen, the Netherlands.
- April 1986. **Working Group LE:**  
International Workshop on Quantified Land Evaluation Procedures – Washington DC, USA.

Short reports on all these meetings were published in the Bulletin and for most of them the Proceedings are published, or being published, by the hosting institution or national Society. Four planned meetings unfortunately had to be cancelled or postponed for a number of reasons.

Also non-ISSS meetings in soil science and related fields were announced and reported upon. This is done not only as a service to our membership, but also in an effort to avoid duplication and overlap in timing. It is felt that planning on venue, data and subject of many meetings leaves much to be desired, resulting in dissipation of sponsor funds and participants. The reasons are not only an insufficient communication but also a mistaken/unfounded notion that any ISSS involvement in development oriented meetings would result in too scientific an aura. On the other hand, ISSS should be prepared to accept or offer co-sponsoring, at short notice, of soil-related international meetings organized by other entities, especially those of the International Agricultural Research Centres and those of colleague scientific Societies or Unions.

Especially noteworthy events were:

- The founding meeting of the International Board for Soil Research and Management (IBSRAM) in Townsville, Australia (Sept. '83); followed by network research preparatory meetings Los Baños, Philippines (on Wetlands, Dec. '84), in Hyderabad, India (on Vertisols, July '85), in Yurimaguas, Peru and Brasilia, Brazil (on Acid Tropical Soils, April-May '85) and in Jakarta/Buttilinghi, Indonesia (on Land Clearing and Development, Sept. '85).
- Preparatory meetings on network research for Tropical Soil Biology and Fertility, organized by the International Union of Biological Sciences and Unesco-MAB, in respectively Lancaster, England (January '84), Fontainebleau, France (May '85), and Yurimaguas, Peru (May '86)
- Inter-Center Workshop on Agro-Ecological Characterization, Classification and Mapping, of the CGIAR group of agricultural research institutes, organized by ICARDA in Rome, Italy (April '86).
- International Soil Classification Workshops organized by USAID-SMSS on respectively Vertisols and Aridisols (Sudan, Nov. '82), Andosols (Chile and Ecuador, Jan. '84), and Oxisols (Brazil, May '86).
- The eighth and the ninth Latin American Congress of Soil Science in respectively Mar del Plata, Argentina (Oct. '85) and Cali/Palmira, Colombia (August '85), as well as the Fifth Asian Soils Conference, in Bangkok, Thailand (June '84).

Officers of the Society (the President, the Vice President, the Secretary-General, the Deputy-Secretary General or the Treasurer) were present at most of the above inter-Congress meetings and others, including a number of National Society meetings. They promoted the interest of the International Society, predominantly at no or little costs of ISSS, during visits to the following countries: Australia, Belgium (several), Brazil (several), Bulgaria (2 ×), Canada, Cameroon, Chile (2 ×), China, Colombia (2 ×), Cuba (2 ×), Czechoslovakia, Ecuador, France (several), F.R. of Germany (several), India, Japan, Kenya, Mexico, Morocco, the Netherlands (several), Nigeria, Peru, Poland, Spain (2 ×), Sudan, U.K. (2 ×), U.S.A. (2 ×), U.S.S.R., Uruguay, and Venezuela.

### **International Cooperation**

The cooperation with several of the United Nations' specialized agencies, especially Unesco, FAO and UNEP, continued as before. The precarious financial situation of these Agencies however prevented actual execution of planned joint activities and projects. Their ad-hoc support as regards sponsoring of a number of participants in ISSS-initiated workshops and meetings, including the Hamburg Congress, is however gratefully acknowledged.

Contacts with the International Council of Scientific Unions (ICSU), of which ISSS is an associate member, were strengthened considerably. This refers not only to contacts with its central secretariat in Paris, but also with several of its Unions, notably

the International Union of Biological Sciences (IUBS) and the International Geographical Union (IGU) and their Commissions and Working Groups. Our Society should be involved in the planned International Geosphere-Biosphere Programme of ICSU as regards the interphase between these two spheres which is: the soil. ISSS has already working contacts with several of ICSU's standing Committees and inter-Union Commissions: ECS (Committee on the Free Circulation of Scientists), SCOPE (Scientific Committee on Problems of Environment), COSTED (Committee on Science and Technology in Developing Countries), CODATA (Committee on the Teaching of Science), and CASAFA (Commission on the Application of Science to Agriculture, Forestry and Aquaculture). For the latter's annual meeting in September '85 the ISSS Secretariat acted as host.

Contacts were maintained or established with several regional organizations like the EEC (Western Europe) and IICA (Latin America). The former resulted in an agreement to produce a special sheet 'Middle Europe' of a soil map at 1:1 Million of Western Europe, to be demonstrated at the Hamburg Congress.

The Executive Committee of ISSS, at its mid-term meeting in September 1984, decided that such contacts should be further strengthened. For this purpose the Bulletin is now sent free-of-charge to many more institutions of international research and development than before. Also a provisional International Programmes Committee was formed, to support the Secretary-General in promoting such contacts and to ensure an active input of the ISSS membership and the affiliated national Societies in international programmes that have a soils element in one way or another.

### **The Future**

There is a growing clamour for restructuring of the Society. On the one hand the advantages of personal membership throughout the world should be maintained, on the other hand contacts at equal level with other international scientific organizations should be promoted through full membership of ICSU. Internally, the status of Sub-commissions and Working Groups should be revised, and a modum should be found to accommodate special-interest groups that have an allegiance to both soil science and another discipline (humic substances, soil colloid surfaces, soil tillage, soil conservation, desertification, soil zoology, soil microbiology, clay mineralogy, etc.). Centrifugal tendencies of such groups have been a worry for the President and the Secretary-General, and the standing Committee-on-Rules has been asked to propose a suitable restructuring (see also Bull. 67).

One field that may require special attention in the near future is the *standardization of terminology* in all branches of soil sciences, the publication of new multilingual scientific dictionaries and the uniformisation of class limits of soil units, properties and qualities. Recent contacts with the International Organization for Unification of Terminological Neologisms (IOUTN, Warsaw) and with the International Organization for Standardization (ISO, Geneva-Delft) viz. its new Technical Committee on 'soil quality', may prove to be the right vehicles to make progress in this field.

*Soil biology* has received renewed attention in the past few years, both as regards temperate zones and the tropics, and this is likely to continue. Increased attention is to be expected for *soil pollution*, especially in industrialized countries (acid rain, industrial waste, manure from the agrobiotechnology). Measurements techniques and studies on vulnerability or for contaminations and persistence per type of soil are required. Increased knowledge on the geography and spatial variability of soil properties is needed for quantitative estimates and predictions of this form of soil deterioration. They add a new element to the constant need for large and small-scale mapping the world over, for purpose of increased food security, land conservation and modell-

ing. Prospects for the development of global soil and terrain data bases – *geographic information systems* – on the basis of national mapping efforts are becoming realistic. This because of new techniques of digitalization of map information, the availability of remote sensing imagery of ever finer resolution, the lowering of prices of microcomputers, the development of adapted software packages, and the emerging of a new generation of soil scientists that have the capability to work with them. All these clean-hand tools facilitate the processing of ground truth information – the gathering of the latter remaining a soiling and toiling effort of undiminished importance, both in-depth and horizontally.

The Secretary-General wishes to acknowledge once again the pleasant and fruitful cooperation in the past period with the Deputy Secretary-General Prof. Dr. Istvan Szabolcs and the Treasurer Dr. Donald Gabriels.

He thanks also the Board of ISRIC in Wageningen and its constituent bodies at allowing him to devote substantial time to his honorary function with ISSS, without detriment to the proper functions of the Centre. Scientific and technical/administrative staff of ISRIC have been most helpful in supporting or replacing functions, often under considerable stress.

□ Wim G. Sombroek



## RAPPORT DU SECRÉTAIRE GÉNÉRAL, 1982–1986

Conformément aux Règles de l'Association, le rapport du Secrétaire Général sur la période comprise entre le dernier Congrès (New Delhi – India, 1982) et le prochain Congrès (Hambourg – RFA, Août 1986) est publié dans le Bulletin précédant immédiatement ce dernier. Les points principaux en seront mentionnés à la Session Inaugurale du Congrès de Hambourg.

### Administration

Le nombre de membres affiliés s'élevait à 7222 en Mai 1986, contre 6115 en Octobre 1981, et 7356 fin 1982, période où la liste des membres a été publiée. Une nouvelle augmentation est prévue juste avant le Congrès de Hambourg, et cela se traduira dans la nouvelle liste des membres qui sera publiée fin 1986. Depuis 1982, cette liste a été tenue à jour sur ordinateur, d'abord par l'imprimeur du Bulletin à Wageningen, et maintenant également au bureau du Trésorier à Gand. Cela facilite beaucoup l'enregistrement des affiliations et du paiement des cotisations, et cette liste est également utilisée pour l'adressage automatisé du Bulletin.

Pendant la plus grande partie de la période du rapport, le taux d'échange du Dollar US – valeur de référence pour les frais de cotisation – a été relativement élevé, comparé aux autres valeurs. Néanmoins, la collecte et le transfert des cotisations se sont améliorés. Cela a été, en grande partie, dû à une bonne coopération entre les Associations Nationales de la Science du Sol respectives et le Dr. Gabriels, Trésorier. Les membres

habitant un pays où il n'existe pas de Société Nationale ont été incités à payer immédiatement pour une période de quatre années. Du fait que cela permet une diminution des frais bancaires, une réduction de la cotisation a pu être accordée dans un certain nombre de cas.

*Le système des membres à vie*, inauguré lors du Congrès de New Delhi, a permis l'enregistrement lent mais régulier de nouveaux revenus (25 membres à vie jusqu'à aujourd'hui, à 200 \$US chacun). Une augmentation de 10% des frais d'inscription au Congrès, en compensation d'une publicité régulière dans le Bulletin, a contribué à un bilan positif. A la moitié de cette période, la décision d'une telle augmentation pour les réunions inter-Congrès a été supprimée, l'argument de cette suppression étant que ces réunions doivent être stimulées plutôt que taxées. Les ressources financières permettaient en fait l'allocation de petites subventions annuelles aux Groupes de Travail et Sous-Commission qui avaient des moyens de communications actifs tels que lettres circulaires, ateliers ou autres.

La contribution annuelle de l'Institut de Cartographie des Sols Néerlandais a été très estimée. La plupart des fonctions de soutien des membres du Bureau de l'Association ont été accomplies dans leurs institutions respectives (à Hannovre, Hambourg, Wageningen, Budapest et Gand) sans aucun frais pour l'Association Internationale.

A la moitié de cette période, un Fonds pour Aspirants (ou 'Fonds de voyage de jeunes scientifiques') a été également créé, pour stimuler la participation de jeunes pédologues des pays en voie de développement à des réunions internationales, spécialement celles se déroulant dans leur région ou sur leur continent. Ce fonds compte aujourd'hui sur les contributions des Associations Nationales des Pays-Bas, du Canada, du Royaume-Uni et des Etats-Unis, complétées par une contribution annuelle du Comité Science et Technologie des Pays en Voie de Développement (COSTED) du Conseil International des Unions Scientifiques (ICSU). Quelques-uns de ces scientifiques ont déjà été aidés par ce fonds, également pour le Congrès de Hambourg, et il est prévu qu'il devienne entièrement opérationnel après le Congrès (cf. Bulletin no 66 pour des détails sur les conditions de ce fonds).

Des avantages pour les membres en général ont été obtenus par la création des *Journaux Coopérants*, impliquant environ 50% de réduction pour les souscriptions personnelles à quatre Journaux Internationaux en Science du Sol préalablement sélectionnés (cf. détails dans le Bulletin no 68).

Durant ces quatre dernières années, un certain nombre de membres éminents de l'AISS sont décédés, et quelques-uns d'entre eux ont été mentionnés dans la rubrique In Memoriam du Bulletin. Parmi eux, deux membres honoraires: Mr. Auguste Oudin (France) et Prof. Dr. Richard Bradfield (USA).

Le nombre des Associations Nationales de la Science du Sol affiliées s'élève à 57, avec la création de nouvelles associations au Zimbabwe et à Cuba. Plusieurs des premières associations nationales ont fêté leur cinquantenaire, à savoir l'Association Indienne de la Science du Sol (en Décembre 1984), l'Association Française pour l'Etude du Sol (en Octobre 1984), et l'Association Néerlandaise de la Science du Sol (en Novembre 1985). L'Association de l'URSS a célébré le centenaire du 'Chernozem Russe' de Dokuchaev en 1983.

Neuf numéros du *Bulletin*, chacun d'environ 80 pages, ont été publiés au cours des quatre dernières années. Malgré un coût d'impression élevé, la qualité et la variété des sujets ont pu être maintenues au même niveau que pendant les périodes 1974-1978 et 1978-1982, du fait que des accords entre le Secrétariat à Wageningen, Pays-bas et la Trésorerie à Gand, Belgique, ont permis d'éviter des taxes superflues et de garder un coût d'expédition relativement bas du Bulletin aux membres (avec cependant comme conséquence que les annonces commerciales et les insertions sur feuilles volantes ne peuvent plus être acceptées). La nécessité d'une expédition par voie terrestre/mariti-

me aux 7500 membres individuels reste un inconvénient, qui est partiellement compensé par l'envoi avancé par avion des bulletins à tous les Présidents des Commissions et Groupes de Travail et tous les Secrétariats des Associations Nationales. Les rubriques du Bulletin 'Rapports des Réunions', 'Annonces des Réunions', 'Cours internationaux de formation,' et 'Nouvelles publications' sont apparemment très appréciées, spécialement par les membres demeurant dans des pays qui n'ont pas d'organisations scientifiques nationales importantes ou qui n'ont pas facilement accès à des parutions scientifiques internationales.

### Activités scientifiques

Les activités des Commissions Scientifiques, des Sous-Commissions et des Groupes de Travail varient beaucoup selon les domaines d'intérêt. Quelques-uns maintiennent une correspondance animée, aidés par les sous-titres appropriés sur le papier à entête, d'autres sont à moitié endormis.

Vingt-six réunions officielles inter-Congrès ont eu lieu. Elles ont été patronnées par les Commissions et/ou Groupes de Travail, toujours avec l'appui et les facilités d'organisation de l'Association locale, et souvent soutenues par des fonds de la FAO, de l'Unesco, de l'UNEP ou d'agences donatrices internationales. La participation à ces réunions varie de 50 à plus de 200 membres. La liste de ces réunions, présentées dans l'ordre chronologique, se trouve dans la version anglaise du Rapport, pages 7-8.

Des comptes-rendus de toutes ces réunions ont été publiés dans le Bulletin et pour la plupart, les rapports complets sont publiés, ou en cours de publication, par l'institution d'accueil ou l'Association nationale. Malheureusement, quatre réunions prévues ont dû être annulées ou reportées pour diverses raisons.

Des réunions sur la Science du Sol et les domaines s'y rapportant, mais ne dépendant pas de l'AISS, ont également été annoncées et leur compte-rendus en ont été publiés. Ceci est non seulement un service rendu à nos membres, mais permet aussi d'éviter un double-emploi ou un chevauchement des réunions. On ressent que la programmation des lieux, dates et sujets de beaucoup de réunions laisse encore à désirer, ce qui résulte en un gaspillage des fonds des sponsors et une dissipation des participants. Les raisons n'en sont pas seulement une communication insuffisante mais également une notion non-fondée que chaque implication de l'AISS dans des réunions orientées sur le développement aurait une portée trop scientifique. D'un autre côté, l'AISS devrait être prête à accepter ou à offrir un copatronage, à court terme, aux réunions internationales dans le domaine du sol, organisées par d'autres instances, spécialement celles des Centres Internationaux de Recherche Agronomique, et celles d'Associations ou d'Unions scientifiques complémentaires.

Des événements spécialement dignes d'attention ont été:

- La réunion de fondation du Conseil International pour la Recherche et la Gestion des Sols (IBSRAM) à Townsville en Australie (Sept. 1983); suivie des réunions préparatoires sur la recherche quadrillée à Los Baños aux Philippines (sur les Terrains de bas-fonds, Déc. 1984), à Hyderabad en Inde (sur les Vertisols, Juillet 1985), à Yurimaguas au Pérou et Brazilia au Brésil (sur les Sols Tropicaux Acides, Avril-Mai 1985) et à Jakarta/Bukkilingshi en Indonésie (sur le Déboisement de Terrains et le Développement, Sept, 1985).
- Les réunions préparatoires sur la recherche quadrillée pour la Biologie et la Fertilité des Sols Tropicaux, organisées par l'Union Internationale des Sciences Biologiques et l'Unesco-MAB, respectivement à Lancaster en Angleterre (Janvier 1984) et à Fontainebleau en France (Mai 1985).
- L'Atelier inter-Centre sur la Caractérisation, la Classification et la Cartographie Agro-écologique, du groupe CGIAR d'instituts de recherche agronomique, organisé par ICARDA à Rome en Italie (Avril 1986).

- Les Ateliers Internationaux de Classification des Sols organisés par USAID-SMSS, respectivement sur les Vertisols et les Aridisols (Soudan, Nov. 1982), sur les Andosols (Chili et Equateur, Janv. 1984), et sur les Oxisols (Brésil, Mai 1986).
- Les huitième et neuvième Congrès Latino-Américain de la Science du Sol, respectivement à Mar del Plata en Argentine (Oct. 1983) et Cali/Palmira en Colombie (Août 1985), ainsi que la cinquième Conférence Asiatique des Sols à Bangkok en Thaïlande (Juin 1984).

Le Bureau de l'Association (le Président, le Vice-Président, le Secrétaire Général, le Secrétaire Général Adjoint ou le Trésorier) était présent à la plupart des réunions inter-Congrès mentionnées ci-dessus, ainsi qu'à d'autres, y compris quelques réunions d'associations nationales. Ils ont encouragé les intérêts de l'association internationale, la plupart du temps sans frais ou à peu de frais pour l'AISS, au cours de visites aux pays suivants: Australie, Belgique (plusieurs fois), Brésil (plusieurs fois), Bulgarie (2 x), Canada, Cameroun, Chili (2 x), Colombie (2 x), Cuba (2 x), Tchécoslovaquie, Equateur, France (plusieurs fois), RFA (plusieurs fois), Inde, Japon, Kenya, Mexique, Maroc, Pays-Bas (plusieurs fois), Nigéria, Pérou, Pologne, Espagne (2 x), Soudan, Royaume-Uni (2 x), Etats-Unis (2 x), URSS, Uruguay et Venezuela.

### **Coopération Internationale**

La coopération avec plusieurs agences spécialisées des Nations Unies, spécialement l'Unesco, la FAO et le PNUE, continue comme par le passé. La situation financière précaire de ces Agences empêchait cependant l'exécution d'activités et de projets programmés conjointement. Leur soutien ad-hoc en ce qui concerne la sponsorship d'un certain nombre de participants à des réunions et ateliers à l'initiative de l'AISS, y compris le Congrès de Hambourg, a été reçu avec beaucoup de reconnaissance.

Les contacts avec le Conseil International des Unions Scientifiques (ICSU), duquel l'AISS est un membre associé, ont été considérablement améliorés. Cela ne se rapporte pas seulement aux contacts avec son secrétariat central à Paris, mais aussi aux contacts avec plusieurs de ses unions, notamment l'Union Internationale des Sciences Biologiques (IUBS) et l'Union Internationale Géographique (IGU) et leurs Commissions et Groupes de Travail. Notre Association devrait être impliquée dans le Programme International Géosphère-Biosphère prévu par l'ICSU en ce qui concerne la phase intermédiaire entre ces deux sphères: le sol. L'AISS a déjà travaillé avec plusieurs des Comités permanents de l'ICSU et des Commissions interunions: ECS (Comité de la libre circulation des scientifiques), SCOPE (Comité Scientifique des Problèmes de l'Environnement), COSTED (Comité de la Science et de la Recherche des Pays en Voie de Développement), et CASABA (Commission sur l'Application de la Science à l'Agriculture, la Sylviculture et l'Aquaculture). Le secrétariat de l'AISS a accueilli la réunion annuelle de CASABA en septembre 1985.

Des contacts ont été maintenus ou établis avec plusieurs organisations régionales comme la CEE (Europe) et l'IICA (Amérique Latine). Les contacts avec la CEE ont conduit à un accord pour la réalisation d'une feuille spéciale 'Centre de l'Europe' de la carte des sols de l'Europe de l'Ouest à l'échelle d'un millionième, qui sera présentée au Congrès de Hambourg.

Le Comité Exécutif de l'AISS, à sa réunion de Septembre 1984, a décidé que de tels contacts doivent être renforcés. Pour cela, le Bulletin est maintenant envoyé gratuitement à un plus grand nombre d'institutions de recherche internationale et de développement qu'auparavant. Un Comité des Programmes Internationaux a été provisoirement formé, pour soutenir le Secrétaire Général dans la promotion de tels contacts et pour s'assurer d'une participation active des membres de l'AISS et des Associations Nationales affiliées aux programmes internationaux qui ont, d'une façon ou d'une autre, un rapport avec le sol.



## Perspectives

La demande de restructuration de l'Association se fait de plus en plus grande. D'un côté, les avantages des membres individuels à travers le monde doivent être maintenus, d'un autre côté, des contacts à niveau égal avec d'autres organisations scientifiques internationales doivent être facilités par affiliation complète de l'ICSU. Dans le domaine interne, les status des Sous-Commissions et des Groupes de Travail doivent être revus, et un mode devra être trouvé pour rendre service aux groupes d'intérêts spéciaux qui sont concernés à la fois par la science du sol et par une autre discipline (substances humiques, surfaces colloïdales de sols, culture des terres, conservation des terres, désertification, zoologie du sol, microbiologie du sol, minéralogie d'argiles, etc.). Les tendances centrifuges de ces groupes ont été un souci pour le Président et le Secrétaire Général, et on a demandé au Comité du Règlement de proposer une restructuration adéquate. (Voir le Bulletin no 67).

Un domaine qui requiert une attention spéciale dans un avenir proche, est celui de la *standardisation de la terminologie* dans toutes les branches de la science du sol, la publication de dictionnaires scientifiques dans plusieurs langues et l'uniformisation des limites des classes d'unités, de propriétés et de qualités des sols. L'Organisation Internationale pour l'Unification des Néologismes Terminologiques (IOUTN, Varsovie) et l'Organisation Internationale pour la Standardisation (ISO, Genève-Delft), notamment son nouveau Comité Technique sur la 'qualité du sol', peuvent constituer les moyens adéquats pour progresser dans ce domaine.

*La biologie du sol* a bénéficié d'un regain d'intérêt au cours de ces quelques dernières années, à la fois en ce qui concerne les zones tempérées et les zones tropicales, et il semble que cela veuille continuer. On s'attend à un intérêt croissant pour la *pollution du sol*, spécialement dans les pays industrialisés (pluies acides, déchets industriels, engrais de l'industrie agro-alimentaire). Des techniques de mesures et des études sur la vulnérabilité ou les contaminations et les persistances par types de sols sont nécessaires. Une augmentation des connaissances de la géographie et de la variabilité spatiale des propriétés du sol est nécessaire pour des estimations quantitatives et des prévisions sur cette forme de détérioration du sol. Elles ajoutent un nouvel élément au besoin constant d'une cartographie du monde à petite et à grande échelle, dans le but d'accroître la suffisance alimentaire et d'améliorer la conservation des terres et le modelage. Les perspectives pour le développement d'une banque de données mondiales des sols et des terrains – *systèmes d'information géographique* – sur la base des efforts de cartographie nationale, deviennent réalistes. Ceci grâce à de nouvelles techniques de digitalisation de l'information cartographique, de la disponibilité d'images de télédétection de plus en plus précises, de l'abaissement du coût des microordinateurs, du développement de logiciels appropriés, et de l'apparition d'une nouvelle génération de pédologues qui sont capables de les utiliser. Tous ces instruments de travail propre facilitent le traitement de l'information de terrain – dont le collectage restera un effort 'salissant' d'une importance non moindre, à la fois en profondeur et en surface.

Le Secrétaire Général souhaite encore une fois exprimer sa reconnaissance pour la coopération aimable et fructueuse, au cours de cette dernière période, du Secrétaire Général Adjoint, Prof. Dr. Istvan Szabolcs, et du Trésorier, Dr. Donald Gabriels.

Il remercie également le Conseil d'Administration de l'ISRIC à Wageningen et ses institutions constituantes qui lui ont permis de consacrer une grande partie de son temps à sa fonction honorifique au sein de l'AISS, sans que cela ne nuise au fonctionnement de ce centre. Le personnel scientifique, technique et administratif de l'ISRIC a été d'une grande aide au Secrétaire Général en l'épaulant ou en le remplaçant dans ses fonctions, et cela bien souvent dans des conditions stressantes.

Wim Sombroek

## BERICHT DES GENERALSEKRETÄRS, 1982–1986

In Übereinstimmung mit der Satzung der Gesellschaft wird der Bericht des Generalsekretärs über dem Zeitraum zwischen dem letzten Kongreß (Neu Dehli, 1982) und dem nächsten (Hamburg, 1986) im letzten Heft der Mitteilungen vor dem letzteren abgedruckt. Höhepunkte werden zugleich auch in der Eröffnungssitzung genannt werden.

### Allgemeines

Die Anzahl der registrierten Mitglieder belief sich im Mai 1986 auf 7222 im Vergleich zu 6115 im Oktober 1981 und 7356 am Ende des Jahres 1982, als die letzte Mitgliederliste veröffentlicht wurde. Eine neue Zunahme wird kurz vor dem Hamburger Kongreß erwartet; dies wird dann in der neuen Mitgliederliste, die Ende 1986 erscheinen wird, zu sehen sein. Seit 1982 wird die Liste über EDV geführt, zuerst von dem Herausgebern der Mitteilungen in Wageningen und jetzt auch vom Büro des Schatzmeisters in Gent. Dadurch wird die Registrierung der Mitglieder und der Beitragszahlungen sehr erleichtert, gleichzeitig wird die EDV bei der automatisierten Adressierung der Mitteilungen eingesetzt.

Während der letzten 4 Jahre war der Wechselkurs des US-Dollars – der Bezugsbasis für die Festsetzung der Beiträge – im Vergleich zu anderen Währungen relativ hoch. Trotzdem hat sich das Sammeln und Überweisen der Mitgliedsbeiträge verbessert. Dies lag zu einem großen Teil an der guten Zusammenarbeit der einzelnen nationalen Bodenkundlichen Gesellschaften mit dem Schatzmeister Dr. Gabriëls. Mitglieder aus Staaten, in denen es so eine Gesellschaft nicht gibt, wurde angeregt, die Beiträge für 4 Jahre auf einmal zu bezahlen. Da sich hierdurch die Bankkosten verringerten, kann in vielen Fällen eine Herabsetzung der Gesamtbeiträge in Betracht gezogen werden.

Das System der *Mitgliedschaft auf Lebenszeit*, das auf dem Kongreß in Neu Dehli eingeführt wurde, hat sich zu einer langsam, aber stetig fließenden zusätzlichen Einnahmequelle entwickelt (bis jetzt 25, bei 200,- US-Dollar pro Mitglied). Die Abgabe von 10% der Aufnahmegebühr bei den Kongressen für regelmäßige Veröffentlichungen in den Mitteilungen hat ebenfalls zu einer positiven Bilanz geführt. Inzwischen wurden diese Gebühr für die zwischenzeitlich stattfindenden Kongresse mit dem Argument abgeschafft, *das solche Treffen eher gefördert als besteuert werden sollten*. Die finanzielle Situation ermöglichte sogar kleine jährliche Beihilfen für die Arbeitsgruppen und Subkommissionen, die aktiv zur Kommunikation durch Zeitschriften, Workshops etc. beigetragen haben.

Die jährliche Beitrag des niederländischen Soil Survey Instituts war ganz besonders wertvoll. Viele Aufgaben der Funktionäre der Gesellschaft wurden von ihren jeweiligen Institutionen ausgeführt, ohne unsere Gesellschaft finanziell zu belasten.

Ein 'Stipendien-Fond' (Reisefonds für junge Wissenschaftler) wurde zwischen den letzten Kongressen eingerichtet, um die Teilnahme junger Wissenschaftler aus Entwicklungsländern an internationalen Tagungen zu fördern, und zwar besonders an solchen, die in Nachbarländern oder dem eigenen Kontinent stattfinden. Dieser Fond wird durch jährliche Beiträge der nationalen Gesellschaften der Niederlande, Kanadas, Großbritanniens und der USA finanziert und durch einen jährlichen Zuschuß des 'Committee on Science and Technology in Developing Countries' (COSTED) der 'International Council of Scientific Unions' (ICSU) ergänzt. Einige junge Wissenschaftler konnten durch diesen Fond bereits gefördert werden, auch im Hinblick auf dem Hamburger Kongreß. Wir erwarten, daß der Fond nach dem Hamburger Kongreß voll wirksam werden wird. (Einzelheiten s. Bull. Nr. 68).

In den vergangenen  $4\frac{1}{2}$  Jahren starben mehrere prominente Mitglieder der IBG, einiger von ihnen wurden in der Sparte 'in memoriam' der Mitteilugen gedacht. Unter ihnen befanden sich 2 unserer Ehrenmitglieder: Dr. Auguste Oudin (Frankreich) und Dr. Richard Bradfield (USA).

Die Zahl der angegliederten nationalen Bodenkundlichen Gesellschaften stieg auf 57, einschließlich der Neugründungen im Simbabwe und Kuba. Viele der früh gegründeten nationalen Vereinigungen feierten ihr goldenes Jubiläum, so die Indian Society of Soil Science (Dezember '84), die Association Francaise pour l'Etude du Sol (Oktober '84) und die Nederlandse Bodemkundige Vereniging (November '85). Die UdSSR feierte das 100 jährige Bestehen von Dokutchaev's 'Russian Chernozem'.

In den letzten  $4\frac{1}{2}$  Jahren erschienen die *Mitteilungen* neunmal, jeweils mit einem Umfang von 80 Seiten. Trotz der hohen Druckkosten konnten Qualität und Breite des Inhaltes auf dem gleichen Niveau gehalten werden wie in den Zeiträumen 1974–78 und 1978–82, da durch Zusammenarbeit zwischen dem Sekretariat in Wageningen, Niederlande, und dem Schatzmeister in Gent, Belgien die Zahlung einer Mehrwertsteuer vermieden (allerdings war damit ein Verzicht auf Anzeigen und Werbebeilagen verbunden), und der größte Teil der Mitteilungsblätter relativ billig an der Mitglieder versandt wurde. Die Notwendigkeit, die Mitteilungen auf dem Land und Seeweg an der 7500 Mitglieder zu schicken, bleibt ein Nachteil, der nur zum Teil dadurch ausgeglichen wird, daß an alle Kommissionsvorsitzenden, Arbeitsgruppen und Sekretäre der nat. Gesellschaften ein Exemplar per Luftpost vorab geschickt wird. Ankündigungen und Berichte über den Ablauf von Tagungen und internationalen Ausbildungsreisen, neue Veröffentlichungen im Mitteilungsblatt werden offensichtlich am meisten geschätzt besonders von Mitgliedern aus Ländern, die weder große wissenschaftliche Institutionen noch leichten Zugang zu internationalen wissenschaftlichen Publikationen haben.

### **Wissenschaftliche Tätigkeiten**

Die Aktivitäten der wissenschaftlichen Kommissionen, SubKommissionen und Arbeitsgruppen erstreckten sich auf ein breites Interessensgebiet. Einige entwickelten lebhafte Korrespondenz, was durch die neu geschaffenen Briefköpfe gefördert wurde, andere waren im 'Halbschlaf'.

Insgesamt fanden 26 offizielle Interims-Tagungen statt. Sie standen unter der Schirmherrschaft der Kommissionen und/oder der Arbeitsgruppen, jedesmal mit großer Unterstützung und organisatorischer Hilfe der lokalen Gesellschaften, in vielen Fällen gefördert durch Zuschüsse der FAO, UNESCO, UNEP und nationaler und internationaler Förderungsorganisationen. Die Anzahl der Teilnehmer schwankte zwischen 50 und über 200 Mitgliedern. Für die Treffen in chronologischer Reihenfolge siehe Aufzählung in der engl. Fassung S. 7–8.

Über alle diese Veranstaltungen wurde in den Mitteilungen kurz berichtet. Von den meisten von ihnen sind seitens der gastgebenden Institutionen oder nationalen Gesellschaften Tagungsberichte erschienen bzw. befinden sich in Vorbereitung. Vier geplante Veranstaltungen mußten leider aus verschiedenen Gründen abgesagt oder verschoben werden.

Auf Tagungen über bodenkundliche Themen und verwandte Gebiete die nicht im Rahmen der IBG stattfanden, wurden ebenfalls hingewiesen und darüber berichtet. Dies ist nicht nur als Service für unsere Mitglieder gedacht, sondern es geschieht auch mit der Absicht, Doppelveranstaltungen zu dem gleichen Thema und Überschneidungen zu vermeiden. Die Planung von Ort, Termin und Thema vieler Veranstaltungen läßt zu wünschen übrig. Das führt zu Verzettelung von Fördergeldmitteln und Teilnahme möglichkeiten für Mitglieder. Die Gründe liegen nicht nur in der unzureichenden Kommunikation sondern auch in der falschen und unbegründeten Annahme, IBG-

Beteiligung an entwicklungsorientierten Tagungen würde sogleich zu höchstem wissenschaftlichen Anspruch führen. Andererseits sollte die IBG vorbereitet sein, ohne Umstände Förderung durch andere Institutionen zu akzeptieren oder sie Ihnen anzubieten, besonders wenn es sich um Internationale Forschungseinrichtungen und verwandte wissenschaftliche Gesellschaften oder Vereinigungen handelt.

Besonders erwähnenswert Ereignisse waren:

- Die Gründungsveranstaltung des 'International Board for Soil Research and Management' (IBSRAM) in Townsville, Australien (Sept. 83); gefolgt von vorbereitenden Treffen der Verbund-Forschung in Los Baños, Philippinen (Naßböden, Dez. 84), in Haiderabad, Indien (Vertisole, Juli 85), in Yurimaguas, Peru und Brasilia, Brasilien (saure Tropische Böden, April-Mai 85) und in Jakarta/Bukkilingshi, Indonesien (Rodung und Entwicklung, Sept. 85).
- Vorbereitende Treffen der Verbundforschung für Tropical Soil Biology and Fertility, veranstaltet von der 'International Union of Biological Sciences' und UNESCO-MAB in Lancaster, England (Januar 84), in Fontainebleau, Frankreich (Mai 85), und in Yurimaguas, Peru (Mai 86).
- Inter-Center Workshop über Agro-ökologische Charakterisierung, Klassifizierung und Kartierung, der CGIAR Gruppe der landwirtschaftlichen Forschungsinstitute, veranstaltet von ICARDA in Rom, Italien (April 86).
- International Soil Classification Workshops veranstaltet von USAID-SMSS über Vertisole und Aridisole (Sudan, Nov. 82), Andosole (Chile und Ecuador, Jan. 84) und Oxisole (Brasilien Mai 86).
- Der achte und neunte Lateinamerikanische Kongreß der Bodenkunde in Mar del Plata, Argentinien (Oktober 85) und in Cali/Palmira, Kolumbien (August 85), wie auch die fünfte asiatische Boden-Konferenz (Bangkok, Thailand, Juni 84).

Funktionäre der Gesellschaft (Präsident, Vize-Präsident, Generalsekretär, stellv. Generalsekretär, Schatzmeister) waren bei den meisten der o.g. Interims-Tagungen anwesend wie auch bei anderen Treffen einschließlich zahlreicher Tagungen der nationalen Gesellschaften. Sie vertraten die Interessen der IBG, meistens ohne oder doch nur mit geringen Kosten für Gesellschaft, bei Besuchen in folgenden Ländern: Australien, Belgien (mehrmals), Brasilien (mehrmals), Bulgarien (2 ×), Kuba (2 ×), Kanada, Kamerun, Chile (2 ×), China, Kolumbien (2 ×) Tschechoslowakei, Ecuador, Frankreich (mehrmals), Bundesrepublik Deutschland (mehrmals), Indien, Japan, Kenia, Mexico, Marokko, die Niederlande (mehrmals), Nigeria, Peru, Polen, Spanien (2 ×), Sudan, Großbritannien (2 ×), USA (2 ×), UdSSR, Uruguay und Venezuela.

### **Internationale Zusammenarbeit**

Die Zusammenarbeit mit verschiedenen Organisationen der Vereinten Nationen (UNO), besonders der UNESCO, FAO, und UNEP wurde wie immer fortgesetzt. Die prekäre finanzielle Situation dieser UNO-Organisationen verhinderte die Durchführung geplanter gemeinsamer Aktivitäten und Projekte. Ihre ad-hoc Hilfe, was die finanzielle Unterstützung von vielen Teilnehmern an IBG-Arbeitssitzungen und Treffen einschließlich des Hamburger Kongresses betrifft, ist daher besonders dankend zu erwähnen.

Kontakte mit dem 'International Council of Scientific Unions' (ICSU), dessen assoziiertes Mitglied die IBG ist, wurde erheblich verstärkt. Dies bezieht sich nicht nur auf Kontakte zu dem Hauptsekretariat in Paris, sondern auch auf einzelne Vereinigungen, z.B. der 'International Union of Biological Sciences' (IUBS) und der 'International Geographical Union' (IGU) mit ihren Kommissionen und Arbeitsgruppen. Unsere

Gesellschaft sollte an dem geplanten internationalen Geosphäre-Biosphäre Programm der ICSU mit beteiligt sein, und zwar den Bereich betreffend, der zwischen diesen beiden Sphären liegt: den Boden. Die IBG arbeitet bereits mit verschiedenen Komitees und Kommissionen der ICSU zusammen: ECS (Committee on the Free Circulation of Scientists), SCOPE (Scientific Committee on Problems of the Environment), COSTED (Committee on Science and Technology in Developing Countries), CODATA (Committee on the Teaching of Science) —und CASAFA (Commission on the Application of Science to Agriculture, Forestry and Aquaculture). Bei dem jährlichen Treffen der letztgenannte Organisation im September 85 fungierte die IBG als Gastgeber.

Kontakte zu verschiedenen regionalen Organisationen wie der EG (Westeuropa) und IICA (Lateinamerika) wurden aufrechterhalten oder neu aufgenommen. Mit der EG wurde vereinbart, ein Sonderblatt 'Mitteleuropa' der Bodenkarte 1:1 000 000 von Westeuropa anzufertigen, um es auf dem Kongreß in Hamburg vorzustellen.

Das Exekutivkomitee der IBG beschloß auf seiner Sitzung in September 84, daß solche Kontakte noch intensiviert werden sollen. Zu diesem Zweck werden die Mitteilungen jetzt kostenlos an wesentlich mehr internationale Forschungs- und Entwicklungseinrichtungen verschickt als früher. Ein vorläufiges internationales Programmkomitee wurde eingerichtet, um den Generalsekretär beim Knüpfen solcher Kontakte zu unterstützen und eine aktive Teilnahme der Mitgliedschaft der IBG und der angeschlossenen nationalen Gesellschaften bei internationalen Programmen mit bodenkundlichen Themen zu fördern.

### **Die Zukunft**

Die Forderungen nach einer Umstrukturierung der Gesellschaft werden immer lauter. Auf der einen Seite soll der Nutzen einer Mitgliedschaft von Einzelpersonen aus der ganzen Welt weiter bestehen bleiben, andererseits sollen Kontakte auf gleicher Ebene mit anderen internationalen wissenschaftlichen Organisationen durch eine Vollmitgliedschaft der ICSU gefördert werden. Intern soll der Status der Subkommissionen und Arbeitsgruppen überprüft werden. Außerdem muß ein Weg gefunden werden, die besonderen Interessen solcher Gruppen zu berücksichtigen, die gleichzeitig Verbindungen zur Bodenkunde und zu anderen Fachgebieten haben (Humusbestandteile, Bodenkolloidoberflächen, Bodenerhaltung, Wüstenbildung, Bodenbearbeitung, Bodenzoologie, Bodenmikrobiologie, Tonmineralogie). Zentrifugale Tendenzen dieser Gruppen haben dem Präsidenten und dem Generalsekretär Sorge bereitet und der Sitzungsausschuß wurde um Vorschläge für eine geeignete Neustrukturierung gebeten (s. auch Bull. 67).

Ein Gebiet, das zukünftig viel Aufmerksamkeit erfordern wird, ist die *Standardisierung der Terminologie* in allen Bereichen der Bodenkunde, die Veröffentlichung neuer, mehrsprachiger wissenschaftlicher Wörterbücher und die Vereinheitlichung bei der Einteilung in Bezug auf Klassifikationseinheiten, Eigenschaften und Bewertungskriterien von Böden. Bestehende Kontakte zu der IOUTN (Warschau) und der ISO (Genf-Delft) bzw. ihrer neuen technischen Kommission zur 'Bodenbewertung' sind möglicherweise die richtigen Mittel um auf diesem Gebiet Fortschritte zu erzielen.

Der *Bodenbiologie* wurde in den vergangenen Jahren wieder mehr Aufmerksamkeit zuteil, was sowohl für die gemäßigten Zonen gilt als auch für die Tropen, und so wird es wohl auch künftig bleiben. Vermehrte Beachtung der *Schadstoffproblematik* ist ebenfalls zu erwarten, besonders in den Industrieländern (saurer Regen, Industriemüll, Düngemittel von der Agrobioindustrie). Neue Meßtechniken und Untersuchungen über Anfälligkeiten gegenüber oder Kontamination und Persistenz von Schadstoffen bei den einzelnen Bodentypen sind notwendig. Verbessert Kenntnisse der Geographie und der räumlichen Variabilität der Bodeneigenschaften werden für quantitative

Schätzungen und Vorhersagen über die Art der Bodenverschlechterung besonders dringend benötigt. Sie sind ein weiterer Grund für die ständige Forderung nach weltweiten Kartierungen in verschiedenen Maßstäben, wie auch nach Sicherung der Nahrungsmittelproduktion, Landerhaltung und Neugestaltung. Die Aussicht auf Entwicklung globaler Boden- Gebietsdatensammlungen – *geographische Informationssysteme* – auf der Basis nationaler Kartierungsbemühungen wird allmählich realistisch, und zwar aufgrund neuer Techniken bei der Digitalisierung des Kartenmaterials, der Verfügbarkeit immer besserer Auflösungen beim Material der Fernerkundung, der Preissenkung bei Mikrocomputern, der Entwicklung passender Software-Angebote, und auch das Auftreten einer neuen Generation von Bodenkundlern, die in der Lage sind, damit zu arbeiten. Alle diese 'sauberen' Methoden erleichtern das Auswerten von Ausgangsinformationen. Diese letzten zu beschaffen, wird aber eine mühevoll 'Erdarbeit' bleiben müssen – die ihre Bedeutung weder in der Tiefe noch in der Breite verliert.

Der Generalsekretär bedankt sich bei dieser Gelegenheit noch einmal für die angenehme und fruchtbare Zusammenarbeit mit dem stellvertretenden Generalsekretär Prof. Dr. Istvan Szabolcs und dem Schatzmeister Dr. Donald Gabriels.

Er dankt weiterhin dem Vorstand der ISRIC in Wageningen und ihren konstituierenden Körperschaften für die Möglichkeit, der ehrenamtlichen Funktion in der IBG erhebliche Zeit zu widmen, ohne das die Tätigkeit der ISRIC darunter leiden würde. Dem wissenschaftlichen u. technischen Mitarbeiterstab der ISRIC danke ich für Unterstützung und Vertretung, die mir – oft unter anstrengenden Bedingungen – stets zuteil wurde.

Wim Sombroek



**New clean-hand tools!** (by courtesy of Mr A. H. Rachocki, author and copyright holder of 'Dr Wire's Geo-Story')

**REPORTS OF MEETINGS  
COMPTES-RENDUS DE RÉUNIONS  
BERICHTE VON TAGUNGEN**

**INTERNATIONAL SYMPOSIUM ON GLOBAL CHANGE IN AFRICA  
DURING THE QUATERNARY; PAST-PRESENT-FUTURE**

*Dakar, Senegal, April 21-28, 1986*

This symposium was organised by INQUA (International Union for the Study of the Quaternary) and ASEQUA (Association Scientifique pour l'Etude du Quaternaire Africain), with co-sponsoring of Unesco, several scientific Unions of the ICSU family, ORSTOM, CNRS and others.

There were about 180 participants, 40 of whom nationals from various African countries. Ten abstracts dealt with soils, including one by Schwartz on tropical Podzols in Congo (Brazzaville). Messrs. Ruellan, Pedro and Millot presented summaries on soil-related subjects, and Dan Yaalon reported on paleosols in general and the effect of Saharan dust on surrounding soils in particular. A field trip led to soil profiles of the mangrove areas with Acid Sulphate Soils (see report elsewhere in this Bulletin) and Sand Dune burying of these soils.

(based on notes by D. H. Yaalon, Israel)

**INTERNATIONAL SYMPOSIUM ON SULPHUR IN AGRICULTURAL SOILS**

*Dhaka, Bangladesh April 20-22, 1986*

This Symposium, sponsored by the Bangladesh Agricultural Research Council, with support from The Sulphur Institute, was well-sited and well-timed to illustrate the problems that can develop when an essential plant nutrient, in this case sulphur, is exploited without due regard for future consequence for agricultural production. It is now estimated that 80% or more of soils in Bangladesh are sulphur deficient. In fact, results of more than 4,000 field demonstrations, mostly with rice, indicated that 97% of locations fertilized with 20 kg S/ha in addition to nominal applications of NPK, yielded more than if only NPK were used.

One of the contributing factors to deficiency is increased nutrient stress resulting from unbalanced fertilization of improved varieties. Thus, the 'Green Revolution' has been thrown into reverse.

Within-country research on soil, weather, and management factors associated with deficiency were reported. The most obvious factors were: use of low sulphur fertilizers, low levels of sulphate in soils, soils poorly buffered against decline of sulphate in soil solutions, low soil organic matter constraints, domestic burning of agricultural residues, and minimal use of crop residues and animal manures. Very little Bangladesh information was presented on atmospheric sulphur and irrigation water components of the sulphur cycle, but papers on sulphur cycling, based on research from outside the region suggested that these are major factors in sulphur supply.

The program included papers on the importance of sulphur for crop production, analytical methods, field and glasshouse techniques, interactions among nutrients, crop requirements, soil sulphur contents and soil sulphate critical levels and the economics of fertilizer production and use.

Registered participants at the Symposium totalled 130. Over 15 international representatives from 10 countries and several international institutes reported on their experiences with sulphur deficiencies and appropriate treatments of problems. Although much of the data were preliminary in nature, indications are that few areas in the

Asian region are as critical as Bangladesh. However, such trends as can be observed are in the direction of more extensive and more intensive deficiency.

Sulphur deficiencies are most likely in non-industrial areas. Laboratory facilities in such areas are frequently less than adequate even for routine research of farm advisory work. A need for standard workable methods was evident throughout the Symposium.

This Symposium adequately demonstrated that successful predictions of sulphur deficiency and response to sulphur fertilizers will require that the numerous factors of the sulphur supply and demand equation be considered as components of a complex and very large system.

Robert L. Fox, Univ. of Hawaii, USA

## REGIONAL SYMPOSIUM ON PROPERTIES AND MANAGEMENT OF THE RED SOILS OF EAST AND SOUTHERN AFRICA

*Harare, Zimbabwe, February 24-27, 1986*

The Regional Symposium on Properties and Management of the Red Soils of East and Southern Africa was held at the Beit Lecture Theatre, Faculty of Engineering, University of Zimbabwe from 24th to 27th February, 1986. It was organised by the Department of Land Management of the University of Zimbabwe under the chairmanship of Dr. Kingston Nyamapfene.

Present at the symposium were 30 Scientists from Zimbabwe and 43 Scientists from Australia, Botswana, Canada, Denmark, Germany (FRG), Ghana, Kenya, Lesotho, Malawi, Republic of South Africa, Tanzania, United Kingdom, United States, Zambia and FAO.

About 30 technical papers were presented. Four of these were Keynote presentations namely: Taxonomy and Management properties of Red Soils, presented by Dr. Hari Eswaran; Red Soils of Sub-Saharan Africa, by Dr. R. Sant'Anna; Tropical Red Soils – Fertility Management and Degradation, by Dr. M. Stocking; and Nutrient cycling in tropical Soils, by Prof. M. Swift. The rest of the papers were organized under three different themes: country specific papers on occurrence, distribution and management of red soils; peculiarities of Red Soils and their management; and conservation and agronomic practices. In the afternoon of Thursday 27th February, 1986 the Symposium was divided into four working groups, on respectively Research needs in Soil Survey and Pedology; Research needs in Soil Fertility and Crop Nutrition; Erosion, Conservation and Soil Management; and Collaboration, Regional Linkages and Follow-up. Each of the working groups came out with recommendations which were discussed and adopted. These recommendations and the technical papers will be published in the proceedings of the conference.

A field trip to the Institute of Agricultural Engineering was organised in the afternoon of 25th February, 1986. The visit gave the participants an opportunity to see some useful research work being carried out by the Institute on soil physical characteristics and management aspects of the red soils of Zimbabwe. On the following day a field excursion was organised to show the participants some of the interesting and important examples of red soils in Zimbabwe. The trip led the participants to the Research and Specialist Services Research Stations in Harare, Mazowe and Banquet. Four profile pits were examined. At each site, the soils were classified according to Soil Taxonomy, the FAO Legend for its soil map of the World, and the Zimbabwean System. Lively discussions on the genesis, management and productivity of these soils were held at each site. It was remarkable to note the high management levels adopted by the large scale farms.





*Dr Hari Eswaran of USDA-SMSS trying to find his bearings in a deep red soil of Zimbabwe*

After the discussions and the fieldtrips the participants were grateful to the Department of Land Management for convening this symposium to discuss the properties and management of red soils of the subregion. It was noted that red soil occupy a significant land surface of the East and Southern Africa region. At the sametime it was also noted that these soils have their own peculiar management problems and therefore there was need to intensify research on these soils.

The meeting was closed by Zimbabwean Deputy Minister for Agriculture.

F. N. Muchena, Nairobi, Kenya.

## REGIONAL SEMINAR ON LATERITIC SOILS, MATERIALS AND ORES

*Douala, Cameroon, January 21-27, 1986*

The seminar on lateritic soils, materials and ores was jointly organized by the Cameroonian Ministry of Higher Education and Scientific Research (MESRES), the French Institute for Scientific Research in Cooperation (ORSTOM) and the International Board for Soil Research and Management Inc. (IBSRAM). It responded to a common recognition of the need to evaluate various recent contributions to the knowledge of lateritic formations and their uses in order to shape new research programs. The term laterite was chosen as a nonrestrictive word which could be used by soil scientists, civil engineers and geologists. Fifty-five scientists, representatives of fifteen countries, attended the seminar.

The seminar started with two days of presentations on the genesis, distribution and characterization of laterites, and also gave informations on survey methods. Examples

were analysed at different scales, from ultramicroscopic to landscape dimensions, and stressed the organization of these lateritic formations. This appeared clearly in soil topequence studies conducted in Cameroon, Ivory Coast and the Central African Republic. Together with these field studies the interest of such effective survey techniques as infography, radar, and remote sensing were emphasized. Professor Bocquier from the University of Paris VII, and Professor Ruellan, Director of ORSTOM, concluded with remarks on the importance of a global analysis at the different scales to conduct research and surveys on lateritic formations.

The second session, on land clearing and management of acid tropical soils, was devoted to the IBSRAM agropedologic applications of these studies. Methodology on site selection, site characterization, and the design of experiments were presented. The objectives of the two IBSRAM soil management network on tropical land clearing for sustainable agriculture and management of acid tropical soils were outlined by Dr. R. Lal of IITA and Professor Pedro Sanchez of NCSU with a view to developing an African program. Nine African countries namely Burundi, Cameroon, Congo, Ivory Coast, Madagascar, Nigeria, Rwanda, Tanzania and Zambia presented proposals to join this program. Guidelines were framed regarding: (1) morphologic, structural and taxonomic characterization, (2) physico-chemical characterization, (3) design of experiments, and (4) evaluation of cropping systems.

The third session gave a survey of lateritic materials and ores and discussed their uses. Recent results on the use and stabilization of these materials for civil engineering purposes were exemplified. Research on rubber-clay and lime-clay mixtures have underlined the importance of the nanomorphology of the clay particles in relation to the stability of the works. So the heterogeneity of the lateritic products implies a detailed characterization of these formations for geotechnical uses. Different approaches were presented for the survey of lateritic ores. Examples were given in the case of Congolese cupriferous deposits and South Cameroonian cobalt, nickel and iron accumulations.

The work of the seminar was illustrated by two days of field trips, where a road cutting showing the vertical and lateral distribution of different horizons of a lateritic formation was presented, together with a variety of Acrisols/Ultisols and their diverse agronomic uses in Southern and Western Cameroon.

The seminar concluded with a discussion of the following issues:

- \* the necessity of a global analyses at different scales to conduct research and surveys on lateritic formations.
- \* the need for a constant dialogue between fundamental and applied research in geology, soil science, agronomy, civil engineering and metallogeny.
- \* the creation of the IBSRAM African program on 'Land Clearing and Management of Acid Tropical Soils' which was joined by the nine African countries present.

The proceedings of the seminar will be jointly published by ORSTOM and IBSRAM. The report of the IBSRAM session is available upon request at IBSRAM P.O. Box 109, Bangkok, Bangkok 10900 Thailand.

Marc Latham, IBSRAM director, Bangkok, Thailand

## EUROLAT

EUROLAT unites a group of European scientists from various disciplines (geology, geomorphology, mineralogy, geochemistry, soil science, geography etc.) which was founded in 1984 and whose aim is to promote European cooperation in laterite research (Chairman Prof. Y. Tardy, Université de Strasbourg). One activity of EUROLAT is to hold annual meetings to discuss results and problems of common interest. After a first meeting at Delft, Holland in 1985, the 2nd meeting was held at Granada, Spain, March 16, 1986 in connection with a conference on 'Geochemistry of the earth surface and process of mineral formation'. About 30 people attended the meeting. Twelve papers were presented dealing among others with occurrence and formation of laterites in Africa and South America, laterites as source of chromite and gold, properties of mineral phases relevant to laterites. No proceedings will be published. The next meeting will be held at Freising, FRG, in spring 1987 (contact person: U. Schwertmann, Department of Soil Science, Technical University of Munich, 8050 Freising-Weihenstephan, FRG) and a series of state-of-the-art papers are planned with ample discussion.

U. Schwertmann, FRG

### THIRD INTERNATIONAL SEMINAR ON LATERITE

*Tokyo, Japan, October 14-17, 1985*

Resurging interest in lateritization processes has already resulted in two multi-disciplinary international seminars: one in Trivandrum, India, in December 1979 (see *ISSS Bulletin* 57, page 26) and another in Sao Paulo, Brazil in July 1982 (see *ISSS Bulletin* 62, page 12/13).

The third international Seminar on laterites was organized by the Mining and Metallurgical Institute of Japan (MMIJ). Two main topics were in focus at that meeting: (A) The behaviour of elements during tropical and sub-tropical weathering processes (Unesco's IGCP-129 project) and (B) Mineral processing and metallurgy for lateritic ores (MMIJ). Both sections run parallel with another international symposium 'Zinc 1986' (a very efficient organization!).

From 26 countries about 200 scientists were present, 150 of them from the host country.

On laterites, 46 papers were presented, subdivided into two large sections, (1) genesis of weathering processes and (2) mineral composition of weathering profiles and soil formation. The program was heterogeneous, as a reflection of the multidisciplinary character of recent laterite research. Preprints appeared before the symposium started. The schedule of sessions was perfect, and always ample time was given for discussion. The edition of the proceedings, including discussions, is in preparation.

Complementary to the sessions, several shorter and larger excursions were organized. Field trips showed some geology, the industrial development of Japan, and mainly the beauty of the host country. As for laterites only highly advanced Ni-laterite utilization (Hachinohe nickel smelter) was shown.

The Seminar demonstrated progress in laterite research. It emphasized also the importance of laterites for mankind. Continuation of a broad multidisciplinary laterite research as IGCP-project was strongly recommended. By courtesy of MMIJ and the Japanese National Committee for IGCP, the symposium fulfilled perfectly the main task: to bring people together and discuss results and programmes of research in laterites.

R. A. Kühnel, Delft, the Netherlands

## MANAGEMENT AND REHABILITATION OF SAVANNA ECOSYSTEMS

*Report of an international workshop at Harare, Zimbabwe, December 1985*

What are the ecological properties of savannas that make them stable or resilient when subjected to seasonal and other stresses and disturbances? Do savannas have critical limits (thresholds) of change from which they do not recover even after the stress or disturbance is removed? What are the mechanisms that determine the rates and manner in which savannas recover after disturbances? In which ways (both structurally and functionally), and by how much, do different types of savannas change in response to natural and anthropogenic disturbances? What is the effect of their interactions?

These were among the central questions discussed during an international workshop on the responses of savannas to stress held at the University of Zimbabwe, Harare (Zimbabwe), 9–13 December 1985. Over 60 scientists from 16 countries took part in the workshop which was sponsored by the International Union of Biological Sciences (IUBS), Unesco-MAB, the African Biosciences Network (ABN), the European Economic Community and the Scientific Council of Zimbabwe.

The workshop was designed to improve general understanding of the structure and function of savanna ecosystems, and formed part of the collaborative project of MAB and the IUBS Decade of the Tropics. By increasing the understanding of savanna ecology, it is expected that resource scientists, planners and managers will be better able to predict and improve the responses of savanna ecosystems (which cover much of the sub-humid and semi-arid tropical zones), to various stresses. The workshop addressed a series of hypotheses on savanna function related to four main determining factors of the state of savanna ecosystems: These were: i) water supplies and drought; ii) nutrient status and cycling; iii) impact of grazing animals, both domestic and wild ('herbivory') and iv) the role of fire.

Species dynamics and systems analyses of savannas were discussed and a general model of savanna function was also presented. The workshop helped define and refine the general lines of research of the MAB-IUBS collaborative programme. The refined proposal for this programme will be published in April-May 1986 in a special issue of *Biology International*. A small coordinating committee has been set up to oversee the development of the savanna programme, under the chairmanship of Dr. Brian Walker. Further information can be obtained from the MAB Secretariat or IUBS, 51 boulevard de Montmorency, 75016 Paris (France) or Dr. Brian Walker, CSIRO Division of Wildlife and Rangelands Research, P.O. Box 84, Lyneham, A.C.T. 2602, Australia.

*(from: Unesco's Info MAB no 5, Jan-March 1986)*

## INTERNATIONAL WORKSHOP ON SAND TRANSPORT AND DESERTIFICATION IN ARID LANDS

*Khartoum, Sudan, 17–26 November 1985*

In the arid and semi-arid regions of the Earth, the physical processes involving wind eroding, dust and sand transport and deposition constitute a serious hazard. In northern and central Africa, for example, several villages, oases, roads, and railway lines are invaded by mobile sand. Near the banks of the Nile in Egypt and northern Sudan, vast quantities of wind-blown sand are deposited annually into farming areas and also into the river. In ecologically fragile areas, such as the African Sahel, years of drought affected the land, which was also aggravated by human activities and has, in recent years, led to human suffering and starvation on a massive scale.

Against the above background, the International Centre for Theoretical Physics in collaboration with the University of Khartoum organized an International Workshop on 'Sand Transport and Desertification in Arid Lands.' The Workshop was held in Khartoum during the period 17–26 November 1985 and was attended by 81 scientists from Sudan, and 61 scientists from 29 other countries. It was directed by the under-signed and cosponsored by The International Centre for Theoretical Physics (ICTP), the Canadian International Development Agency (CIDA), the OPEC Fund for International Development, the United Nations University (UNU), the United Nations Environmental Programme (UNEP), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the United States Agency for International Development (US-AID), the British Council, the National Council for Research of Sudan, the Gum Arabic Company of Sudan, the Oil Seeds Company of Sudan, the University of Khartoum, and the Institute of Environmental Studies.

The purpose of the Workshop was to examine, through detailed case studies, the flow of sand in arid regions of the Earth. The Workshop was to enable an interdisciplinary team of internationally renowned experts in the field to benefit from each others' experience in combating wind erosion and sand encroachment and to forge future links of collaboration.

The specific objectives of the Workshop were:

- to identify factors (physical, ecological and human) contributing to the flow of sand;
- to investigate the effects of drifting sand on productivity, settlements, communications, and water resources in arid lands;
- to determine, through the use of remote sensing and field studies, the rate of sand movement around urban settlements in the regions considered in the case studies;
- to provide a sound understanding of the mechanism of formation, growth, and movement of sand and its effects on fertile soils;
- to provide a critical review of existing sand fixation projects in various regions of the world and investigate their effectiveness;
- to investigate the best methods to reduce (or stop) drifting sand, particularly in the region considered in the case studies;
- to establish long-term interdisciplinary research projects on 'monitoring and controlling of mobile sand', in the areas considered in the case studies.

The Workshop programme included an opening session, 12 scientific sessions conducted during the first five days, specialized working groups, a roundtable discussion, and two field excursions at the end.

The Workshop was opened by the head of Sudan's Government, General Swar El Dhab. In his opening address, he first welcomed the participants and emphasized the importance of international scientific collaboration in combating the problems of sand transport and desertification. He then stressed the significance of the Workshop to the Government's general plan of action to combat drought and desertification and expressed his appreciation to the ICTP for convening the Workshop in Khartoum.

The keynote address by Crown Prince Hassan of Jordan was read on his behalf by the Jordanian Minister of Agriculture, His Excellency A. Dakhgan. He emphasized the significance of the Workshop to the environmental difficulties facing African and Arab nations and called upon Arab scientists to do much more for the long-term alleviation of the effects of drought and desertification.

He concluded by stating that the Khartoum Workshop would be the first in a series of workshops on deserts, for example, in Jordan and Algeria.

Dr. F. Forte, Undersecretary to the Minister of Foreign Affairs of Italy, represented the Italian Government and outlined, in his opening address, several Italian programmes in Sudan and other African countries aimed at assisting in the fight against drought and desertification.

Opening addresses were also given by the Vice-Chancellor of the University of Khartoum, the Director General of Sudan's National Council for Research, the President of the Arab Organization for Agricultural Development, and the authors as Directors of the Workshop.

The programme of the first five days consisted of 12 scientific sessions during which several case studies, review papers, and contributed papers were presented. The presentations covered a wide range of topics under the general themes:

- Geomorphological Aspects of Sand Movement (classification and monitoring of wind-driven sand features based on space photographs, Landsat images, and other remote sensing techniques);
- Laboratory and Field Studies (application of modern instrumentation to air transport of sand, and determination of parameters controlling the development of various sand features);
- Theoretical Studies (modes of particle transport and rates of sand drift; formation and propagation of ripples and dunes);
- Control of Sand Transport (identification of focal points for halting sand movement).

Following the scientific sessions, two parallel working groups discussed, in detail, the mechanism of sand transport and the control of sand movement. Also a discussion was held, sponsored by The Third World Academy of Sciences, on the 'Role of a Laboratory in the Control of Erosion and Sand Transport.' This roundtable discussion was attended by 18 scientists from the North and the South, with Professor Paul Owen as Chairman, and strongly recommended the establishment in Sudan of a wind tunnel to study these problems.

Two field excursions were organized during the period 23-25 November; one to northern Sudan (around the city of Dongola), and the other to central Sudan (near the city of Wad Medani). The objective of the excursions was to give the participants the opportunity to observe regional problems caused by wind erosion and wind-driven sand, as well as the experience of Sudanese scientists in combating these problems.

Participants of the northern Sudan excursion were able to observe from the air various manifestations of sand hazard around the city of Dangola. During the two-day ground field trip, several localities were visited, including old villages and agricultural farms buried by sand in the eastern side of the Nile. This excursion was organized in cooperation with the Bonifica-Geoexpert-National Water Corporation Group.

Participants of the central Sudan excursion were able to observe riverbank sand dunes, recently formed barachan dunes and their encroachment on neighboring settlements. They were also given the chance to visit some of the agricultural schemes in the clay plains of the Sudan, including the Jazira scheme, one of the largest agricultural schemes in the World.

M. H. A. Hasan, Trieste, Italy and  
Farouk El-Baz, Boston, USA

**ACTIVITIES OF THE COMMISSIONS AND WORKING GROUPS  
ACTIVITÉS DES COMMISSIONS ET GROUPES DE TRAVAIL  
TÄTIGKEIT DER KOMMISSIONEN UND ARBEITSGRUPPEN**

**ISS Working Group AS**

**COMPTE-RENDU DU 3<sup>e</sup> SYMPOSIUM SUR LES SOLS SULFATES ACIDES**

Le 3<sup>e</sup> symposium international sur les sols sulfatés acides s'est tenu à Dakar (Sénégal) du 06 au 11 janvier 1986.

Ce symposium a bénéficié du concours financier de la Direction Générale de la Coopération internationale de la Hollande (DGIS), de l'USAID, de l'UNESCO, de l'ORSTOM et de l'Association Internationale de la Science du Sol (AISS).

Il y avait 103 participants répartis comme suit: Sénégal (25); Guinée Bissau (18); Hollande (18); Vietnam (6); Gambie (4); Finlande (2); Thaïlande (3); France (2); Belgique (2); Trinidad Tobago (1); Canada (2); Guinée-Conakry (1); RFA (2); Etats-Unis (2); Danemark (1); Espagne (2); Philippines (2); Libéria (1); ADRAO\*/WARDA (7); OMVG\* (2).

Les grands thèmes suivants ont été débattus au cours des sessions:

- Aspects géographiques, génétiques et systématiques des sols sulfatés acides;
- Identification sur le terrain, critères diagnostiques et classification des sols sulfatés acides;
- Analyse et monitoring des processus dynamiques en sols sulfatés acides. Système eau-plante, paramètres physico-chimiques, microbiologiques et physiologiques.
- Modèles de simulation des processus en sols sulfatés acides. Prévision du développement du sol suite aux changements des relations sol-eau;
- Amélioration des sols sulfatés acides pour la mise en culture. Contrôle du régime hydrique, chaulage, labour, fertilisation, etc...
- Expériences sur les méthodes traditionnelles d'aménagement et sur les méthodes récemment développées.
- Sélection des variétés à haute tolérance à la salinité et à l'acidité;
- Approches diverses pour l'utilisation des terrains et des eaux à restrictions sulfatés acides: pisciculture, sylviculture, réserves naturelles, aspects sur l'environnement et la socio-économie.

Environ 65 communications relatives à ces thèmes ont été présentées et discutées au cours du symposium. Les sessions en salle ont été entrecoupées de deux excursions:

- Une dans le Delta du Fleuve Sénégal qui a permis de visualiser la mangrove la plus septentrionale de l'Afrique de l'Ouest et de discuter sur de très anciens sols sulfatés acides actuellement recouverts par des sédiments fluviaux récents.
- La deuxième excursion a eu lieu dans les îles du Saloum et a permis l'observation d'une séquence de sols sulfatés acides développés sur du matériau sableux et soumis à une forte salinisation d'origine marine.

Les principales recommandations issues du symposium sont les suivantes:

*1 En matière d'aménagement des sols sulfatés acides*

- \* Que les recherches sur l'exploitation portent sur une utilisation intégrée comprenant l'agriculture, la sylviculture et la pêche.
- \* Que des modèles conceptuels soient développés pour les principales zones climati-

\* ADRAO: Association pour le Développement de la Riziculture en Afrique de l'Ouest (16 pays membres).

\* OMVG: Organisation pour la mise en valeur du Fleuve Gambie (Sénégal, Gambie, Guinée, Guinée-Bissau).



*Prof. Dr. Leen Pons, Chairman of the Working Group, demonstrating the soapy consistency of a potential Acid Sulphate soil to participants of the Dakar symposium*

ques où se trouvent les sols sulfatés acides, avec utilisation de sous-modèles et de données expérimentales provenant du suivi des variations saisonnières.

- \* Que les recherches s'orientent tant vers le domaine fondamental que vers le domaine pratique.
- \* Qu'une attention particulière soit accordée aux pratiques d'irrigation et de lessivage des sels;
- \* Qu'un inventaire complet des systèmes d'aménagement soit entrepris avec analyse des succès et échecs.
- \* Que les chercheurs prennent soin que les résultats de leurs recherches soient clairs et applicables pour les spécialistes et pour les non spécialistes que sont les vulgarisateurs.

## 2 *En matière de classification, d'identification et de cartographie*

- \* Que les tests de Laboratoire présentés pendant le symposium pour identifier le matériel 'sulfidie' soient entrepris dans d'autres endroits;
- \* Que la définition modifiée de l'horizon 'sulfuri' qui admet l'absence de jarosite soit testée dans des matériaux additionnels sans jarosite;
- \* Que l'épaisseur minimum de 20 cm proposée pour l'horizon 'sulfuric' soit testée sur une base géographique;
- \* Que l'indice de maturité soit inclus dans la définition de l'horizon 'sulfuric';
- \* Qu'un grand groupe de SULFOCHREPTS soit créé dans le système de classification



'Soil Taxonomy' des EEUU pour tenir compte de la spécificité de certains matériaux provenant des mines ou des grandes constructions;

- \* Que les nombreuses propositions relatives aux sous-groupes soient testées dans différents pays;
- \* Que des investigations soient menées pour tenir compte de la salinité de certains sols sulfatés acides dans la classification;
- \* Que l'application des techniques géostatistiques se fasse après analyse approfondie des relations entre les sols et leur physiographie;
- \* Que les systèmes d'enracinement et de fentes soient inclus dans les propriétés des sols pour l'interprétation du régime de l'eau dans le sol.

### 3 *En matière de fertilisation et d'amélioration variétale*

- \* Que les recherches sur la mobilité et la disponibilité des éléments nutritifs se fassent en regroupant les éléments par 2 ou plus avec étude de leurs interactions, avec une attention particulière sur le phosphore;
- \* Que les études s'orientent sur l'origine des problèmes rencontrés lors de la mise en valeur plutôt que sur les conséquences;
- \* Que plus d'information soit collectée sur le rôle de la matière organique dans la gestion des sols sulfatés acides avec référence aux basses terres;
- \* Qu'un accent particulier soit mis sur les relations plante-sol dans leur globalité en vue de développer des cultivars plus performants pour ces sols à problème;
- \* Que les criblages de cultivars pour la tolérance aux conditions adverses du sol se rapprochent autant que possible des conditions de culture en milieu paysan.
- \* Qu'un Comité de suivi de ces recommandations soit mis sur pied avec l'appui des scientifiques de Wageningen.

Une excursion post-symposium a eu lieu du 12 au 18 janvier en Casamance, Gambie et Guinée-Bissau.

Des sols sulfatés acides jeunes et évolués ont pu être observés au cours de cette excursion.

Une forte salinité combinée à l'acidité a été la caractéristique dominante de ces sols.

En Guinée-Bissau de nombreux profils sous végétation d'*Avicennia africana* ont été observés. Les sols sous *Avicennia* posent moins de problème de récupération, compte tenu de leur moins forte acidité potentielle.

De nombreux chantiers et sites de barrage anti-sel ont été visités pendant l'excursion. Ces visites ont donné lieu à de fructueux échanges de points de vue sur la nécessité d'admettre ou non de l'eau salée dans certaines vallées en fonction de la profondeur de l'horizon 'sulfidic' et du type de végétation.

### *En Conclusion*

Ce symposium, par le nombre et la diversité des participants et par la qualité des communications présentées a été incontestablement une réussite.

De nombreux scientifiques d'Afrique et d'Asie ont pu ainsi bénéficier d'un cadre idéal pour partager leur expérience avec leurs collègues d'ailleurs. Il a été aussi l'occasion d'exposer les problèmes spécifiques auxquels ils sont confrontés. La République du Vietnam s'est proposée pour accueillir le 4<sup>e</sup> symposium sur les sols sulfatés acides à HO CHI MIN VILLE en 1990.

M. Khouma, Dakar, Sénégal.

## ISSS Provisional Working Group DM

### INTERNATIONAL WORKSHOP ON THE STRUCTURE OF A DIGITAL INTERNATIONAL SOIL RESOURCES MAP ANNEX DATA BASE

*Wageningen, the Netherlands, 20–24 January, 1986*

An international workshop on the Structure of a digital International Soil Resources Map and accompanying Data Base, was held at the International Soil Reference and Information Centre ISRIC; The workshop was convened, following a note in Bulletin 67 (page 29) of the Chairman of Commission V, to discuss the aims and scope of possible international program to establish a 1:1,000,000 level digital soil resources map of the world and accompanying data base management system; the mode of acquisition and collation of data; the structure and envisaged data base; the mode of cooperation with other initiatives at establishing international Geographic Information Systems; and the identification of potential sources of funding for execution of the program. About forty scientists from 21 countries including 11 developing countries attended the workshop, which was hosted by ISRIC and co-sponsored by Unesco, the United Nations Environment Program (UNEP), the Dutch Directorate for Development Cooperation (DGIS), the British Overseas Development Administration (ODA), the Canadian International Development Research Centre (IDRC), the Dutch Soil Survey Institute (STIBOKA), and ITC-Enschede.

The initiative of attempting to establish a global soils resource inventory at scale 1:1,000,000 is summarized in a discussion paper prepared by W. G. Sombroek of the International Society of Soil Science ISSS, Provisional Working Group on Digital small-scale Mapping, entitled 'Establishment of an International Soil and Land Resource Information Base', October 1985. Effectively, there is a recognised need to collate and correlate national and regional geographical soil data bases and to bring them under a common denominator that can serve as a legend for a new and precise soil map of the world.

An intensive five day program was followed by the participants of the workshop and ad hoc sessions often continued late into the night. Following key presentations and subsequent discussions relating to the structure of digital soil resources maps with national and regional examples, the participants were sub-divided into three working groups to formulate recommendations relating to:

- 1) Proposal objectives for global digital soil and landscape resources data base and map.
- 2) Use of global digital soil and landscape resources data base and map, and
- 3 Conceptualization of the global soil and landscape resources data base and map structure.

The recommendations of the three working groups were subsequently discussed in plenary sessions.

In summary, there was wide agreement as to the need and desirability of the proposed 1:1,000,000 digitalized soils map. Consequently, it was decided that a concrete project proposal be drawn up, following the recommendations of the working groups.

The responsibility for the preparation of the proposal document was delegated to Prof. Marion Baumgardner, director of LARS, University of Purdue, USA, who fortuitously was starting a three month sabbatical at ISRIC, to be assisted by Dr. Roel Oldeman of ISRIC. This proposal document is to be supported with further technical and cost estimate data. Supporting technical data is to include a preliminary legend (with descriptor definitions) for the new soils map, to be the responsibility of a special committee including Drs. R. Arnold (SCS, USA), P. Brabant (ORSTOM, France/Cameroon), T. Cochrane (Brazil), J. Shields (LRRI, Canada), J. Sehgal (NBSS & LUP, India) and W. Sombroek (ISRIC).

It was agreed that the project proposal should be prepared and made available for scrutiny and detailed discussion and revision by Commission V of the ISSS during the Congress in Hamburg in August 1986. As currently envisaged, it will recommend specific guidelines for the 1:1,000,000 digital soil resource map and suggest a testing phase to be carried out in about 10 pre-selected 'pilot areas' throughout the world, mainly in the tropics and subtropics. Following on the experience of the pilot area studies, a definitive *modus operandi* will be established to complete the global soil map.

The workshop was a harmonious and constructive meeting of scientists from the most diverse geographical regions of the world, who were united in their enthusiasm, and perhaps wonder, with the way advances in remote sensing and computerization has speeded the evaluation of soil resources in recent years. There was virtually an unanimous accord that the 1:1,000,000 digital soil resource map and accompanying data base project will provide a sound geographical base for the interchange of agro-technology throughout the world, and promote a much greater understanding of global soil resources. Clearly, the practical benefits of the project would be substantial for all countries, but especially so for the developing countries of the tropics. The workshop was brought to a pleasant close with a kindly, stimulating address by Dr. Richard Arnold, which touched the soul of soil science, and will be remembered for many years to come.

*Resumen del Informe sobre la Reunión Internacional de Trabajo sobre la Estructura de un Mapa Internacional de Recursos de Tierra Digitalizado con su correspondiente Base de Datos.*

Una Reunión Internacional de Trabajo sobre la Estructura de un Mapa Internacional de Recursos de Tierra Digitalizado con su correspondiente Base de Datos, fué realizada en ISRIC, Centro Internacional de Referencia e Información de Suelos, entre el 20 y 24 de Enero de 1986, con la participación de más de 40 científicos de más de 21 países, incluyendo il países en vías de desarrollo. El motivo de la reunión fué de discutir los objetivos y el alcance de un posible programa internacional para establecer un mapa de recursos de tierra digitalizado en una escala de 1;1,000,000 con su base de datos, como también sus aspectos técnicos y financieros. El origen de esta iniciativa está resumido en el artículo preparado por W. G. Sombroek del ISSS, Sociedad Internacional de Ciencia de Suelos, titulado 'Establishment of an International Soil and Land Resource Information Base', Octubre de 1985.

Los participantes de la reunión siguieron un programme intensivo. Después de las presentaciones seleccionadas, ellos fueron subdivididos en 3 grupos de trabajo para formular recomendaciones relacionadas a los various aspectos del tema.

En síntesis, fué un acuerdo unánime sobre le necesidad y la practicabilidad de un Mapa Internacional Digitalizado y se decidió formular un proyecto siguiendo las recomendaciones de los 3 grupos de trabajo. Se designó al Profesor Marion Baumgardner, director de LARS, Universidad de Purdue, USA y al Dr. Roel Oldeman del ISRIC, la responsabilidad de preparar el proyecto. Éste deberá estar listo para poder ser revisado por el Comisión V de la ISSS durante sus reuniones en Hamburgo en Agosto de 1986.

Este proyecto fué considerado de un valor inmensurable para el intercambio de agro-tecnología, especialmente para los países tropicales en vías de desarrollo. La reunión fué cerrada con una charla amena del Dr. Richard Arnold, que fué una apta conclusión a una reunión exitosa y armoniosa.

Thomas T. Cochrane, IICA Brasilia, Brazil

## ISSS Commission VII: Soil Mineralogy

Planning for the Hamburg ISSS Congress and the Next Four Years.

The cancellation of the study tour on Soil Mineralogy in the Southern USA, Summer 1985, was a disappointment and a loss to both the hosts and the scientists that registered. Too few registrants made the projected costs of the long trip from Atlanta, Georgia to Dallas, Texas prohibitively expensive. When funds are very limited as they are these days, short intensive field trips of ca. \$ 300 or less are more likely to succeed. Advanced deposit and financial underwriting should be the guide to field trip preparation.

August will be here soon and the busy schedule at the Congress will restrict our interactions to some extent. Also in view of the above sad experience, comments are invited on the future activities of the Soil Mineralogy group:

1. Should we plan a separate intercongress meeting for Commission VII? I do not think we ever have done so independently. We are small in number. If we had three ingredients we could: (1) A good topic, (2) a good host and site, and (3) financial support for some of the participants. We probably could get the first two but the last would be more difficult. This option probably would strengthen the Commission most if we could do it.

One consideration may be the location of the 1990 ISSS meetings. Japanese and Mexican soil scientists have extended invitations.

2. Commission VII could continue to share sponsorship of Colloid Chemistry and Soil Micromorphology meetings. I believe the interaction would strengthen progress in all three areas. Without shared meetings each group tends to become independent in terminology and concepts which further divides our efforts.

3. A Soil Micromorphology, Subcommittee B meeting and field trip is planned for San Antonio, Texas, USA in the last two weeks of June, 1988. They are accustomed to having their own meetings but we have scheduled a joint symposium for Hamburg with them. They might be willing to share some of their plans with us if we did not overtax their facilities or field trip. Some interchange could be beneficial, of course.

Short, 1 to 3-day field trip(s) elsewhere in the USA are a possibility too, if there is enough interest. I am thinking of the soil mineralogy field trip that did not materialize due to lack of registrants last summer. Some of these plans might be brought to completion on a smaller scale.

Another possibility is a joint meeting with Commission V. Soil mineralogy and soil taxonomy have been discussed as a possible topic.

4. In the last ISSS Meeting we had a technical discussion on crystallinity of minerals. This is an important topic because the range of properties in some mineral groups is extremely wide. Layer charge and cation selectivity are other topics that merit consideration. Methods of evaluating surface properties of soil minerals need development too.

I believe our objectives should be to seek a full understanding of the problem and to develop some way to deal with it by theory and methods of obtaining data.

The objectives of our science would be advanced if the future meetings (especially intercongress ones) could be planned well in advance so that people who have the farthest distance to travel could arrange support. There may be ways to help young scientists and others from developing countries to contribute. The continued vitality of scientists in developing countries is more dependent on ISSS than are persons in strong national or regional organizations, of course.

J. B. Dixon, College Station, Texas, USA  
Chairman Commission VII

## PROPOSAL FOR AN INTERNATIONAL REGISTER OF SOIL & VEGETATION RESERVES

Soils that have been largely unmodified by man, together with their indigenous vegetation cover, provide an essential benchmark against which soil scientists can measure man-induced changes of soil biology, chemistry, morphology and physics.

Reserves are most needed on soils of high value for agriculture, horticulture or forestry as it is these soils which have been most modified by land use. In practice, protected areas in the form of National Parks, Scenic Reserves, Ecological Areas, Sites of Special Scientific Interest or similarly designated zones are mostly found on land of little economic potential, or are designed to preserve unusual natural features, rather than those which are, or were once, typical. Consequently mountainous, upland and forested areas are often well represented in reserves, but lowland areas of high agriculture potential, particularly natural grasslands, are under-, or very poorly represented.

The complex land tenure system of European countries has fortuitously preserved some lowland soils of high agricultural value in a largely unmodified state. An excellent example is the 43 km<sup>2</sup> Zonien Forest (Forêt de Soignes) near Brussels, Belgium, where lowland loessial soils (mostly Fragiudalfs and Fraglossudalfs) have been preserved under deciduous forest because until last century the land was protected as the hunting grounds of the Dukes of Brabant. Now open for public recreation, the forest also functions as a natural laboratory for soil scientists, botanists, and geomorphologist. In contrast, a country like New Zealand has only a short history of intensive agriculture, but the 'improvement' phase has been so swift and systematic that many Soil/Vegetation associations that were once common have all but disappeared. For example, lowland yellow-grey earths (chiefly Fragiochrepts and Fragiaquepts) developed in loess on rolling and flat land in the districts of Southland and Otago cover about 407 000 hectares, yet only 36 hectares of these highly productive soils are preserved in an unmodified state in a single reserve with indigenous forest cover (Lands and Surveys 1984). Compare this with over 1 million hectares of protected hill and steep-land soils under high rainfall in neighbouring Fiordland National Park.

The scientific importance of Soil/Vegetation reserves is seldom appreciated by local land users, or decision makers. Even established reserves may be threatened by activities such as excessive recreational use, roading, and tourist development, or the deleterious effects of management of neighbouring farmland, e.g. drainage. An education and publicity programme aimed at the public, schools, universities and government departments appears to be required and could be conducted as a project in the International Geosphere-Biosphere Programme (ISSS Bulletin, page 52) possibly in conjunction with the International Union of Biological Sciences and its 'Decade of the Tropics' (ISSS Bulletin 68, pages 43-44). The co-ordinators of the projects could have three additional aims: (1) the registration of Soil/Vegetation reserves and reference sites of national and international significance; (2) identification of Soil/Vegetation associations inadequately represented in reserves; (3) support of national soil science societies attempting to secure legal protection for key sites.

At the 13th International Congress of Soil Science in Hamburg an informal working group will meet to discuss possible initiatives for an international register of Soil/Vegetation reserves and reference sites. Contact Person there will be Mr. J. H. V. van Baren of ISRIC. For general reference on the matter see:

- D. F. Ball and P. A. Stevens 1981. The role of ancient woodlands in conserving 'undisturbed' soils in Britain. *Biological Conservation* 19: 163-176.
- Lands and Survey 1984. Register of Protected Natural Areas in New Zealand. De-

partment of Lands and Survey, Wellington, New Zealand, 468 p.  
– *Soil News* no 42, 1977 and no 44, 1979 of the Australian Society of Soil Science.

P. D. McIntosh, Soil Bureau DSIR, Gore, New Zealand

### **ISSS Subcommittee B**

#### **SOIL MICROMORPHOLOGY MEETINGS IN USA – 1988**

Plans are underway for the ISSS Subcommittee B Micromorphology Working Group Meetings to be hosted in San Antonio, Texas, in 1988. In concert with the ISSS, the Soil Science Society of America (SSSA) is co-sponsoring these meetings with the Soil Conservation Service and the USAID Soil Management Support Services. The date for this conference is tentatively scheduled for June 19–25, 1988. A post-conference field trip through Texas and possibly the Desert Project area near Las Cruces, New Mexico is planned for June 26–July 1, 1988.

Other possible field trips are being considered at this time – a northeastern U.S. field trip in the vicinity of Washington, D.C., a north central field trip in the vicinity of Chicago and a field trip in Hawaii. Date and arrangements for such trips are indefinite at this time. Above dates have been selected considering availability of University campus housing, probable weather conditions in Texas and calendars of those sponsoring this meeting. They are pending final concurrence with the ISSS.

The SSSA has appointed the following Organizing Committee for ISSS Subcommittee B Micromorphology Working Group Meeting:

General Chairman – L. P. Wilding  
Local Arrangements – M. H. Milford  
Program – M. C. Rabenhorst and M. L. Thompson  
Field Trips – B. L. Allen and C. T. Hallmark  
Commercial Exhibits – L. D. Norton  
Editorial – Lowell Douglas  
Financial Arrangements – E. C. A. Runge  
Publicity – Hari Eswaran (Liaison with USAID-SMSS Co-sponsor)  
Liaison with USDA-SCS Co-sponsor – R. W. Arnold  
Liaison with the Geological Society of America – Vance Holliday

Our current plans are to use University dormitory housing, cafeteria service and lecture room facilities of the University of Texas at San Antonio or St. Mary's University at San Antonio. This should help to keep expenses for meals, lodging and room facilities at a minimum. Exact costs for such arrangements will be forthcoming at a later date.

Topics that will serve as a major focus for these meetings include: Vertisols, Aridisols, hydromorphic soils, carbonate and gypsum-enriched soils, micromorphic techniques in teaching and research, degradation and synthesis of minerals, and micromorphic applications to agronomic and related earth sciences...

Further details and arrangements for these meetings will be given at the ISSS Subcommittee B Business Meetings in Hamburg, Germany this summer. Members of the organization committee look forward to hosting this workshop and hope you will plan to attend.

L. P. Wilding, College Station, Texas, USA

**I. Communications — Mitteilungen — Communiqués**

**IV. International Congress of Soil Science 1940 Preliminary Announcement**

According to the decisions taken at Oxford the IV. International Congress of Soil Science in 1940 will be held in Germany. It was resolved at a meeting of the German Organising Committee that the IV. Congress will take place at Heidelberg, followed by an excursion in Germany, at first in the Rhineland, then going through the Black Forest, and, passing Lake Constance, to Munich, the centre of South Germany. The excursion will proceed to the mountains of Central Germany (Weimar, Jena), and to South-Eastern Germany (Dresden, Breslau). It is also intended to visit the Hara (Gödar). Then the excursion will go via Berlin to East Germany (Königsberg), continue along the coast of the Baltic Sea (Rostock, Lübeck, Kiel) to the marshes on the North Sea (Urkshaven, Hamburg, Bremen), and then to the high-moor regions of North Germany (Oldenburg, Aurich). The excursion will finish at Cologne and Bonn on the Rhine.

It is intended to visit the most typical soil formations of Germany, and further to give members an opportunity of seeing the centres of German cultural and industrial life. Visits to industrial and fertilizer works are also planned.

**Communication**

The demise of Prof Marbut makes it incumbent on the Society to decide whether, and, if so, in what way, the three posts held by him are to be filled, viz., a) the post of Vice-President of the International Society of Soil Science; b) the post of President of Commission V, and c) that of President of the Sub-Commission for North America of Commission V.

In accordance with § 29 of the Statutes, the Executive Committee has the right to settle all questions that are not covered by the regulations as it sees fit, and also to give decisions in all doubtful cases as regards their interpretation.

The Executive Committee has now decided that the said Committee has to nominate successors to Prof. Marbut for these three vacancies and has appointed:

- a) as Vice-President of the International Society of Soil Science: Dr A. Demolon, Versailles;
- b) as President of Commission V: Prof D. Vilenky, Moscow;
- c) as President of the Sub-Commission for North America of Commission V: Prof. Chas. F. Shaw, Berkeley.

D. J. Hissink,  
Acting President and  
Honorary General Secretary of the  
International Society of Soil Science.

**To Members of the International Society of Soil Science**

At the Congress at Oxford Dr. H. Greene (Sudan) pointed out the desirability of comparing methods of determining exchangeable bases. Dr. E. M. Crowther (England) suggested that this object could best be attained by collecting a limited number of Standard Soil Samples at a particular place, to be sent on request to those persons who wished to make cooperative studies in the domain of exchangeable bases. The Congress charged Dr. D. J. Hissink, Groningen, to collect and distribute a series of standard soil samples for this purpose.

Up to the present, the following standard soil samples are available at the Institute of Soil Science, Groningen, Holland, for distribution.

- S. S. I Gezira (Sudan) heavy clay surface soil passing 1 mm sieve, pH between 9 and 10 (varies with change in soil-water ratio);
- S. S. II Young Dutch marine heavy clay soil with about 8% CaCO<sub>3</sub>, pH about 7.7;
- S. S. III Old Dutch marine heavy clay soil free from CaCO<sub>3</sub>, pH about 5.5.

None of these three soils contain either sulphates or chlorides soluble in water. 2½ Kilogram of any of these samples will be forwarded on request to those interested and on receipt of f. 0.75 (Dutch guilders) plus the cost of carriage varying from f. 1 to f. 4 (Dutch guilders).

It is intended that the results should be communicated to me for publication in due course in order that the samples may become standards by which members can compare their own methods or technique with those of other workers.

The main object of this cooperative work is to obtain a satisfactory expression for the exchangeable base content of the natural soils. This seems to necessitate studying the displacement of bases by a variety of methods as e.g. treatment with neutral salts or weak acids in various amounts and at various soil-water ratios.

The second objective of the cooperative work is to measure the exchangeable base content of the soils when brought to "saturation" by some specified treatment. This treatment may involve the strongly alkaline conditions produced by a hydroxide (e.g. barium hydroxide, Hissink) or less alkaline conditions such as were used by Bradfield and Allison (1933, Transactions International Society of Soil Science, Commission 2, Volume A Kjöbenhavn), or a range of pH conditions, giving a titration curve.

Determinations may be made either by recognized methods or by new ones but in every case the precise details should be given clearly. It is not sufficient merely to give the name of the original author of the method. Other determinations, mechanical analysis, humus, calcium carbonate, pH etc. may of course be included at the discretion of the investigator.

Members who may wish to send in bulk samples of soil for distribution from Groningen are requested to communicate with me before doing so.



S. S. III Old Dutch marine heavy clay soil

**NEWS FROM THE NATIONAL AND REGIONAL SOCIETIES  
NOUVELLES DES ASSOCIATIONS NATIONALES ET REGIONALES  
BERICHTE DER NATIONALEN UND REGIONALEN GESELLSCHAFTEN**

**Soil Science Society of East Africa**

The 7th Annual General Meeting was held at Arusha, Tanzania, from 16 to 19th December 1985. It took place at the Arusha International Conference Centre and was attended by 55 participants, this time also from Uganda.

The Tanzanian Minister for Agriculture and Livestock Development opened the meeting with a challenge to soil scientists to contribute to food production to match the population growth. Twenty six papers were presented, mostly on soil fertility, and an apparent lack of soil physics. Soil survey was emphasized. Catena cross-section vs benchmark scattered trails were considered and compared for future fertiliser/crop recommendations. The other factors that affect slopes make difficult the use of catena cross-sections. Therefore for practical purposes very many scattered trials should be encouraged. For economic reasons, similar catenas can be identified and a few catenas surveyed.

The business meeting elected the following office bearers for 1986:

Chairman:	Prof. J. Y. K. Kitingulu-Zake, Makerere, Uganda
Vice-Chairman:	Dr. J. M. R. Semoka, Sokoine, Tanzania
General Secretary:	Dr. D. S. Muduuli, Makerere, Uganda
General Treasurer:	Mr. C. M. Njihia, N. A. B., Kenya
(Regional Treasurer, Kenya)	
Regional Treasurers:	Dr. G. P. Msumali, Sokoine, Tanzania Mr. V. O. A. Ochwoh, Makerere, Uganda
Committee Members:	Dr. J. M. R. Salema, Sokoine, Tanzania; Mr. A. O. Moshi, T. P. R. I., Tanzania; Mr. S. Kinyali, Nairobi, Kenya; Mr. Njogu Njeru, Twiga, Kenya; Mr. J. B. Kavuma, Kawanda, Uganda; Mr. N. J. Nangoti, Serere, Uganda.

Uganda was requested to host the 8th AGM in December 1986, with Kenya as alternative. This will be an opportunity of Ugandan soil scientists and agriculturists in general who have missed these meetings outside Uganda. They will be able to present their research findings and compare notes with their counterparts.

It is needless to emphasize the central nature of soils as they serve crops including pastures for livestock. The various chemicals applied to these crops end up in the soil. Their effects on biology, structure and fertility of the soil need attention. An interesting paper presented at this meeting was the discontinuation of the application of Dieldrin and BHC (Lindane) to bananas to control weevils in Tanzania due to low absorption and hence quick wash-off. Soil compaction due to mechanisation is becoming serious, and a paper on the subject was presented at the meeting.

The 7th AGM was closed by Dr. Nelson Nyandat, a member of the Kenya Council for Science and Technology. He noted the lack of soil physics and soil physicists in general, and therefore appealed to granting agencies and people recommending officers for training to emphasize this discipline. He was happy with such good attendance and the number of technical papers presented and hoped that we would meet next year in Uganda.

D. S. Muduuli, Makerere, Uganda

*Address of the Secretariat SSSEA: Department of Soil Science, Makerere University, P.O. Box 7062, Kampala, Uganda.*



### **Hellenic Society of Soil Science**

The new administrative board of the Greek Society of Soil Science is as follows:

President:	Dr. Costas Apostolakis, Nuclear Research Center, Aghia Paraskevi, Attikis.
Vice President:	Dr. Asterios Simonis, Soil Science Institute, Thessaloniki.
Secretary General:	Prodromos Koukoulakis, M. Sc., Soil Science Institute, Thessaloniki.
Treasurer:	Dr. Sotirios Alexandris, Forest Research Institute, Vasilika, Thessaloniki.
Members:	Dr. Demetrios Analogidis, Sugar beet Research Station, Thessaloniki; Dr. Ioannis Mitsios, Soil Science Institute of Athens, Lykovryssi, Attikis; Athanasios Moschos, M. Sc., Thessaloniki.

*Address of the Secretariat:* Prodromos H. Koukoulakis, Soil Science Institute, GR 54110 Thessaloniki, Greece.

### **Korean Association of Soil**

The Group of Soil Scientists of (North) Korea was accepted as an Association of the Korean General Federation of Science and Technology. Mr Jem Song Hwan, vice-chairman of the Agriculture Committee, was elected Chairman of the Association and Mr Bak Sok Ju, a councillor of the Academy of Agricultural Science, as its Secretary (*Address:* Pyongyang, P.D.R. of Korea).

### **Österreichische Bodenkundliche Gesellschaft**

Die Zusammensetzung des am 29.1.1986 neu gewählten Vorstandes der Österreichischen Gesellschaft ist folgendes:

Geschäftsführender Vorstand:

Präsident:	Uni.-Prof. Dipl.-Ing. Dr. Othmar Nestroy
Vizepräsident:	HR. Dipl.-Ing. Dr. Walter Kilian
Altpräsident:	Univ.-Prof. Dipl.-Ing. Dr. Winfried E. H. Blum
Generalsekretär:	OR. Dipl.-Ing. Peter Nelhiesel
Schatzmeister:	Univ.-Doz. Dipl.-Ing. Dr. Eduard Klaghofer
1. Schriftleiter:	HR. Dipl.-Ing. Heinrich Hacker
2. Schriftleiter:	Univ.-Prof. Dipl.-Ing. Dr. Othmar Nestroy
Beisitzer:	MR. Dipl.-Ing. Alois Gessl; HR. Dr. Josef Gusenleitner.

Erweiterter Vorstand: HR. Prof. Dipl.-Ing. Dr. Walter Beck; Univ.-Prof. Dipl.-Ing. Dr. Otto Danneberg; Univ.-Prof. Dipl.-Ing. Dr. Gerhard Glatzel; Univ.-Doz. Dipl.-Ing. Dr. Petrus Gruber; OR. Dipl.-Ing. Arnold Köchl; HR. Dipl.-Ing. Dr. Fritz Ornig; Univ.-Doz. Dipl.-Ing. Dr. Franz Solar.

*Adresse des Sekretariats:* Gregor-Mendel-Strasse 33, 1180 Wien, Österreich.

### **Some quotations from the New Zealand Soil Science on popularizing Soil Science**

'Soil may not be beautiful, but it does beautiful things'.

'Never treat soil like dirt'.

'We dig soil'.

'Where there is dirt there is system'.

### **Persatuan Sains Tanah Malaysia**

The Malaysian Society of Soil Science (MSSS) elected its new Board members on March 20, 1986. The Board now has the following members:

President:	Dr. Hj. Noordin Hj. Wan Daud
Vice President (Peninsular):	Dr. Chan Yik Kuan
Vice President (Sabah):	Mr. Kong Hon Hyen
Vice President (Sarawak):	Mr. Ahmad Hj. Ebon
Hon. Secretary:	Dr. Zaharah Abdul Rahman
Asst. Hon. Secretary:	Mr. Eddy Chew Keong Lye
Hon. Treasurer:	Dr. Mohd Noor Sudin
Asst. Hon. Treasurer:	Dr. Ghulam Mohd Hashim
Immediate Past President:	Dr. Mok Chak Kum
Committee Members:	Mr. Peter Lim Kim Huan; Dr. Abu Talib Bachik; Dr. Razley Mohd Nordin; Dr. Lim Chin Huat.

*Address of the Secretariat:* P.O. Box 12644, 50784 Kuala Lumpur, Malaysia. For international symposia being organized by the Society see Meetings listing elsewhere in this Bulletin.

### **NEW/NOTEWORTHY**

'What is Soil Science? Is it nothing more than an integral part of the agricultural sciences or does it exist in its own right? No geologist would accept for a moment that his subject amounted to little more than mining geology and prospecting geochemistry: the tail does not wag that dog. Is it not time we collectively promoted our image of a subject that has its own integrity, that is comprehensive and in which agricultural interests while economically valuable, are of no greater intellectual importance than soil science applied to ecology or pollution or geochemistry?'

(Dr. Brian E. Davies, in a letter to the Editor of the **British Society of Soil Science's** Newsletter).

### **WORLD PHOSPHATE INSTITUTE SPONSORS AGRONOMY AWARD**

The World Phosphate Institute is sponsoring the 1985-1986 Agronomic Study Competition Program with the theme: 'Crop Production Techniques and Fertilizer Management in Semi-Arid and Sub-Humid Countries of the Mediterranean, Sub-Tropical and Inter-Tropical Zones' (reference FAO-Unesco map for zone delimitation).

Individual researchers, research teams and research and development organizations are encouraged to compete for a first place award of \$ 10,000 and second place award of \$ 5,000. Studies submitted for competition must have been published from 1981-1985. A 6000-word summary of the study must be submitted by Oct. 31, 1986, for evaluation by an international jury.

Regulations may be obtained from: Institut Mondial du Phosphate; Boîte Postale: Maarif 5196, Casablanca, Morocco.

## IN MEMORIAM



### **Dr. S. P. Raychaudhuri (1904–1986)**

The International fraternity of Soil Scientists suffered a grievous loss on January 3, 1986 when Dr. Satya Prasad Raychudhuri breathed his last after a brief illness in New Delhi at the age of 82 years. Born in April 1904 in Calcutta, Dr. S. P. Raychaudhuri after a brilliant academic career, obtained his M. Sc. degree in Chemistry in 1927 from the University of Calcutta. In 1932 the same University awarded him the coveted D. Sc. degree for his pioneering research in electro-chemistry of colloids. After continuing his excellent investigations in different aspects of colloid science, soil acidity, base exchange, etc. for a couple of years in India, Dr. Raychaudhuri had an opportunity to pursue his studies on soils in the Rothamsted Experimental Station, Harpenden, England. During this period he was admitted to the Ph.D. degree of London University (1936). Sub-

sequently, the same University conferred on him its D. Sc. degree in 1945 in recognition of his series of research papers on 'Red and Laterite Soils of India'. Since 1937, he held various teaching and research assignments in the Dacca University (now in Bangladesh) and the Indian Agricultural Research Institute (IARI) New Delhi. He was an excellent teacher and guided the research work of nearly 60 post-graduate students, a third of which were recipients of the doctorate degree of different Universities. Among the most significant contributions of Dr. Raychaudhuri mention may be made of his work on soil survey and soil classification, soil fertility and fertilizer use in the IARI as Soil Survey Officer and then as Head of the Division of Soil Science and Agricultural Chemistry and later as Chief Soil Survey Officer. On retirement in 1961 he contributed significantly as Senior Specialist (Land Resources) in the Planning Commission serving up to 1969. The Final Report of the All India Soil Survey Scheme prepared by Dr. Raychaudhuri and published by the Indian Council of Agricultural research (ICAR) as its Bulletin No. 72 (in 1953) was the first comprehensive account of the soils in different states of India. The same was considerably enlarged as 'Soils of India' and published by the ICAR, New Delhi in 1961. The other important publication on 'Land Resources of India' was brought out by the Planning Commission.

Dr. Raychaudhuri was associated with a large number of learned and professional societies in India and abroad. Particular mention may be made of his most valuable contribution to the Indian Society of Soil Science. He took the burden of the Society as its Honorary Secretary in 1952 when it was struggling for its existence, and was instrumental in transforming it as one of the largest and most active national Societies in India. He was its President during 1960 and 1961 and the Editor in Chief for long many years. The members of the Society showed their deep appreciation by electing him as its Honorary Member.

Of the large number of honoured positions he held, only a few mentioned, namely, President, Agricultural Sciences Section of the 43th Indian Science Congress (1955), Vice-President, Commission II of the International Society of Soil Science (1952–56), Honorary Member, USSR Society of Soil Science (since 1981); Member, Advisory Panel for preparing Soil Map of the World under FAO/UNESCO Project (1961–64); Fellow, Indian National Science Academy as well as National Academy of Sciences, India.

He has been associated with numerous national and International conferences on various aspects of soils. He took part in the 3rd International Congress of Soil Science (Oxford, England in 1935), Annual Convention on Soil Conservation in Ithaca (USA), FAO/UNESCO Soil Map Panel Meeting at Rome (1961), UNESCO Seminar on Soil Salinity at Tashkent, USSR (1962), International Symposium on Sodic Soils at Budapest, Hungary (1964), International Seminar on Chemicalization of Plant Production at Leipzig GDR (1972), International Training on Biogas and Biofertilizers, sponsored by UNESCO at Mymensingh, Bangladesh (1980), First National Congress of Soil Science (Pakistan) at Lahore in October 1985, and in several other meetings and seminars.

His simple way of life style, amiable disposition and sweet and affectionate behaviour will be remembered by his host of students, colleagues and admirers who have always found him easily approachable.

N. N. Goswami, New Delhi, India

### **Academician M. S. Ghilarov (1912–1985)**

Mercurii S. Ghilarov was a wonderful man, an eminent zoologist, founder of soil zoology in the USSR, and author of more than 600 publications on different aspects of biology.

His diverse scientific activity was aimed at studying the problems of phylogenesis, the invasion of terrestrial environments by arthropods, evaluation of the role of invertebrates in soil formation, in biological amelioration of soils and their zoological diagnostics.

He was a biologist of a very board profile, had wide knowledge in many areas of biology and adjacent disciplines, knew perfectly both Russian and world classical literature, and had an intimate understanding of nature and of its reflection in painting and music.

M. S. Ghilarov was born on 22nd February 1912. In 1929 Mercurii Sergeevich entered the biological department of the Kiev State University and graduated in 1934. His first publication dealt with the comparative anatomy of teleostean fishes and he preserved his interest in comparative anatomy and evolutionary morphology throughout his life.

After he graduated from the university he began work as an entomologist at one of the experimental stations in the Ukraine. During these first years he formulated his ideas on the role of soil as a specific environment of invertebrates and the role of invertebrates in soil formation.

In 1947 M. S. Ghilarov defended his doctoral thesis 'The role of soil in insect evolution' and was awarded the A.N. Severtzov prize of the USSR Academy of Sciences for his work. In 1949 he published his monograph 'Peculiarities of Soil as an Environment and its Role in Insect Evolution' which became widely known and highly recognised by specialists all over the world.

From the fifties he directed soil-zoological studies of various institutions in the USSR. His international scientific activity started during this period as well: he made a great contribution to studies and organisation of research pertaining to the development of the methods of control of the Colorado beetle. In 1956 he was elected to the Permanent Committee of Entomological Congresses, in 1968–1982 he acted as a Vice-President and in 1984 he was unanimously elected as an Honorary member of this committee.

In the sixties he worked fruitfully on various aspects of applied soil zoology, organised a number of expeditions in different regions of the USSR, and conducted many field experiments.

In 1966 he was elected as a corresponding member and in 1974 as a full member (academician) of the USSR Academy of Sciences. In 1975–1985 he headed the Division of General Biology and was a member of the Presidium of the USSR Academy of Sciences. For many years (since 1968) he was the President of the USSR Entomological Society.

Since 1956, when the USSR entered the International Union of Biological Sciences, M.S. Ghilarov has taken an active part in the activity of the National Committee of Soviet Biologists, first as a scientific secretary and then as its chairman (from 1965). In 1968 he was elected as a member of the IUBS Executive Committee and in 1976–1982 he served as a Vice-President of IUBS.

Academician M. S. Ghilarov always actively supported the development and strengthening of international scientific relations and made a great contribution to scientific co-operation between biologists all over the world.

He was elected to many national and international societies and academies: Zoological Committee of the International Soil Society (1958), Academy of Zoology in Agra, India (1961), Entomological Societies of France (1960), Czechoslovakia (1965), Finland (1968), Sweden and Hungary (1972), Austria (1970), Poland (1978), INTECOL (1964), Museum of Natural History in Paris (1973), International Society of Social Insects (1974), MAB (1976), Royal Society of London (1979), etc.

He was awarded many prizes both in the USSR and abroad and was also awarded high orders and medals by the Soviet Government.

Over 40 years he was working as a professor and headed chairs of invertebrate zoology at the Moscow State Pedagogical Institute and during the last decade at the Moscow State University.

M. S. Ghilarov took an active part in the activities of many national and international scientific journals, and was also a member of the Editorial Board of 'Biology International'.

He actively participated in the activities of IUBS for more than 20 years and contributed to the strengthening of scientific co-operation, friendship and mutual understanding among biologists of various countries.

M.S. Ghilarov was a scientist with a world-wide reputation, a wonderful man, and he will be warmly remembered by his numerous colleagues and friends all over the world.

B. R. Striganova, Moscow, USSR

### **Paul J. Zwerman (1911–1985)**

Paul J. Zwerman, professor emeritus of soil conservation, Cornell University, died on Dec. 24, 1985. He was 74.

Dr. Zwerman's early career alternated between study at The Ohio State University, professional positions in the Department of Agriculture and service in the Navy during World War II. Ohio State awarded his B.S. degree in 1931, M.S. in 1938 and Ph.D. in 1949. He joined the Cornell faculty in 1950. He retired in 1976, but then spent three more years in government service with the Bureau of Land Management.

Although a soil scientist by profession, he was also a practical engineer. Most of his research and teaching were joint ventures with colleagues in engineering. He was a member of the Soil Science Society of America, American Society of Agronomy, American Society of Agricultural Engineers and Soil Conservation Society of America. In 1970, the New York State Conservation Council recognized him with their Soil Conservationist Award; ASA named him a Fellow in 1975; he served a chair of the Empire State Chapter of the Soil Conservation Society and was a Fulbright Fellow (Netherlands) in 1972.

**APPOINTMENTS, HONOURS  
NOMINATIONS, DISTINCTIONS  
ERNENNUNGEN, AUSZEICHNUNGEN**

Prof. Dr. **Donald R. Nielsen**, soil physicist at Davis, CA, USA, received a Honorary Doctorate from the University of Ghent, Belgium at its Dies Natalis in March 1986.

Dr. **Pan Ming Huang** of the Soil Science Department of the University of Saskatchewan, Canada, has been given the 1985 Canadian Society of Soil Science Fellowship Award.

Dr. **James M. Tiedje**, soil microbiologist of the Department of Crop and Soil Science of Michigan State University, USA, received a 1986 Distinguished Faculty Award of that University.

Dr. **Russell Ballard**, forest soils scientist, has been appointed assistant director of research of the New Zealand Forest Service in Wellington.

Dr. **Donald McCune**, managing director of the International Fertilizer Development Centre (IFDC) in Muscle Shoals, AL, USA, received a 1986 US Public Service Award.

Mr. **Robert W. Fri** was appointed the new president of the 'Resources for the Future' institute in Washington, USA, which engages in research and analysis on public policy issues concerning natural resources, food and agriculture, energy and environmental quality (*address*: RFF, 161 P Street NW, Washington, DC 20036, USA).

Dr. **Keith Syers** of New Zealand was appointed Professor and Head of the Department of Soil Science at the University of Newcastle-upon-Tyne, England.

Dr. **Colin Chartres** of the CSIRO Division of Soils, Australia became an instant film-star while attending the International Loess Symposium in Xian, China, through participation in a BBC series 'Follow me to Science' for an english-language course on Chinese television.

Dr. **J. P. Quirk** from the Waite Agricultural Research Institute has been awarded the civil honour of an Officer of the Order of Australia, for 'services to agriculture and agricultural research in Australia'.

**INTERNATIONAL RELATIONS  
RELATIONS INTERNATIONALES  
INTERNATIONALE VERBINDUNGEN**

**CGIAR WORKSHOP ON AGRO-ECOLOGICAL CHARACTERIZATION,  
CLASSIFICATION AND MAPPING (Rome, Italy, 14-18th April, 1986)**

The major thrust of work of the research centres belonging to the Consultative Group on International Agricultural Research (CGIAR) is towards the development of improved crop varieties together with a range of technologies, such as pest control and tillage methods, needed for their successful utilization. In the early stages, it was assumed that the development of technical innovations would in itself be sufficient to enable farmers to raise productively.... a kind of 'Laputa\* syndrome', to generate scientific advances and pour them down on the grateful people below.

Changes to this attitude have taken place, and the Centres now recognize that much needs to be done before a technical innovation can be taken up by farmers. For this to happen, there are two major prerequisites: the crop cultivars and other technologies must be adapted to local environments, and they must meet the needs, and be applicable within the constraints, of the farmers.

It was recognition of the need to relate agricultural technology to environment, primarily climate and soils, that led to this meeting. Organized by ICARDA on behalf of the CGIAR, it was held at FAO Headquarters, Rome, with 60 nominal participants and an active attendance (people regularly present after the first day) of about 52. Of the latter, 19 came from CGIAR Centres (IRRI, ICRISAT, IITA, CIMMIT, CIAT etc.), 9 from other international organizations and the rest from universities and national research centres. The objective was to review the needs of the Centres in the field of agro-ecological studies, and recommend action to meet those needs. Twenty papers were presented and discussed, covering needs and recent activities of the Centres, previous methods of agro-ecological study, the nature, sources and quality of data, geographical information systems and crop production models; these will be published as proceedings. There was a session on the needs of national agricultural research organizations. Unusually for such a large meeting, there was no dispersal into working groups, to hammer out details and clarify recommendations.

The main needs of the Centres in this field are:

- I to assist in identification of research priorities, by estimating the extent and importance of different environmentally-related problems.
- II to characterize sites of experimental work in a standard way, as a guide to the environmental applicability of results.
- III to identify and map recommendation domains for new technologies.
- IV to establish means for describing variability, sustainability and environmental impact, e.g. drought hazard, effects of land use on soils.

To these may be added a negative aim, to avoid the anarchy that would be caused by each Centre going it alone, with different and incompatible methods of characterization.

The meeting was clearly in favour of acting through computerized environmental data bases and geographical information systems, and for this to be possible there must clearly be standardization in methods of data recording. Recommendations related to this aspect were that the Centres should maintain and update an inventory of their existing data bases, combine efforts in future development of them, and compile

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\* *The mythical country of Jonathen Swift's 'Gulliver's Travels'.*

a glossary of terms for description of environmental variables. The next key issue was whether assembly and standardization of data should be done in-house, or how much of this initial task should be left in the hands of outside agencies which specialize in it, such as FAO, ISRIC, ICITY (Institut de la Carte internationale du Tapis végétal, Toulouse) and WMO. Given the magnitude and cost of data assembly (measurable in gigabytes of storage and millions of dollars), the gist of the recommendations was to make substantial use of external data sets and agencies.

Recommendations from the workshop are to be presented to the annual meeting of the Centres in June 1986.

Anthony Young, ICRAF, Nairobi, Kenya

## LARS

After operating out of offices in the Purdue Research Park for nearly 20 years, Purdue's Laboratory for Applications of Remote Sensing (LARS, West Lafayette, Indiana, USA) is moving onto the campus, with C. J. Johannsen as acting director. Marion Baumgardner, who has been director of LARS the past three years, will serve as faculty participant.

Organized in 1966 as an interdisciplinary, team-oriented research laboratory, with the aims of learning to use sensors carried by aerospace platforms and to assess the state of the world's land resources, LARS made extensive use of multispectral image from the Landsat series of satellites. Because of recent changes in priorities of the national earth resources program, LARS has been reorganized to reinforce its dual role in research and graduate education. Its research projects are now distributed among the various departments having faculty and students involved. Primary departments are Agronomy, Forestry and Natural Resources, Geosciences, and Electrical Engineering.

External education activities, including periodic short courses and the visiting scientist programme, have been discontinued, as these types of programmes proved very expensive. Future educational efforts by LARS-associated faculty will be through more than 25 undergraduate and graduate courses taught on the campus. Important research areas are certain to include optical and microwave sensors and measurements, information systems, image and data processing techniques, and applications of remote sensing in the earth sciences.

*(from: FAO's Land & Water 24)*

## ICOMOX

The VIII International Soil Classification Workshop of the Soil Management Support Services, USA, (SMSS) was held in Brazil from 12 to 23 May 1986 and was co-sponsored by Serviço Nacional de Levantamento e Conservação de Solos, of the Empresa Brasileira de Pesquisa Agropecuária (SNLCS-EMBRAPA) Brazil, the University of Puerto Rico and the U.S. Agency for International Development. The Workshop was attended by 100 participants of whom 25 were from abroad and from 12 countries. There were about 4 days of indoor technical sessions and 8 days of field trips during which the participants evaluated 23 pedons. Soils for the pedons were described and analysed by the staff of both the SNLCS and the Soil Conservation Service (SCS) of the U.S. Department of Agriculture. The Workshop was designed to address the taxonomy, management and utilization of Oxisols in general and the mandate of the International Committee of Oxisols (ICOMOX) in particular.

The proceedings of the Workshop are scheduled to be published by the middle of 1987 (normally one free copy is given to scientists in developing countries; purchase arrangements for others will be announced in this bulletin at a later date). Anyone interested to receive the draft proposal for testing are requested to write to: Dr. Hari Eswaran, Soil Management Support Services, P.O. Box 2890, Washington DC, 20013, USA.



## SCOPE

ICSU's Scientific Committee on Problems of the Environment organises a series of regional meetings on element cycles in the forthcoming four years, as follows:

- Heavy Metals Cycling, at Rio de Janeiro, Brazil, August 1986; New Delhi, India, November 1986.
- Carbon Transport in Rivers, Lakes and Estuaries: Fairbanks, USA, August 1986; Bukavu, Zaïre, November 1987; India, June 1989; Hamburg, FRG, February and August 1990.
- Phosphorus Cycle: Hamburg, FRG, August 1986; Poland, June 1987; Brazil, November 1987; Malaysia, February 1988; Morocco, February 1989; India, February 1990.
- Sulphur Cycle: Moscow, USSR, October 1986; Moscow, USSR, September 1987; Canada/USSR, October 1987.
- Carbon and Sulphur Cycles: Irkutsk, USSR, August/September 1987.

Details can be obtained from/SCOPE Secretariat, 51 Bd de Montmorency, 75916 Paris, France (this secretariat also issues a Newsletter).

Over the past 15 years, SCOPE has produced a series of substantive reports on environmental problems. Most of them are still available:

- 2: Man-made Lakes as Modified Ecosystems, 1972, 76 pp., \$ 8.30.
- 4: Environmental Sciences in Developing Countries, 1974, 72 pp., \$ 8.30.
- 5: Environmental Impact Assessment: Principles and Procedures, second edition, 1979, 208 pp., \$ 22.60.
- 7: Nitrogen, Phosphorus and Sulphur: Global Cycles, 1975, 192 pp., (available from the Publishing House, Swedish Natural Science Research Council, Wenner-Gren Center, Box 6710, S-11385 Stockholm Sweden)
- 8: Risk Assessment of Environmental Hazard, 1978, 132 pp., \$ 21.45.
- 9: Simulation Modelling of Environmental problems, 1978, 128 pp., \$ 16.30.
- 10: Environmental Issues, 1979, 242 pp., \$ 31.25.
- 11: Shelter Provision in Developing Countries, 1978, 112 pp., \$ 15.75.
- 12: Principles of Ecotoxicology, 1979, 372 pp., \$ 45.90.
- 13: The Global Carbon Cycle, 1979, 528 pp., \$ 57.40.
- 14: Saharan Dust: Mobilization, Transport, Deposition, 1979, 320 pp., \$ 43.45.
- 15: Environmental Risk Assessment, 1980, 184 pp., \$ 31.35.
- 16: Carbon Cycle Modelling, 1981, 390 pp., \$ 44.90.
- 17: Some Perspectives of the Major Biogeochemical Cycles, 1981, 175 pp., \$ 27.45.
- 18: The Role of Fire in Northern Circumpolar Ecosystems, 1983, 322 pp., \$ 54.95.
- 19: The Global Biogeochemical Sulphur Cycle, 1984, 470 pp., \$ 59.95.
- 20: Methods for Assessing the Effects of Chemicals on Reproductive Functions (SGOMSEC 1), 1983, 541 pp., \$ 44.00.
- 21: The Major Biogeochemical Cycles and their Interactions, 1983, 532 pp., \$ 72.50.
- 22: Effects of Pollutants at the Ecosystem level, 1984, 443 pp.
- 23: The Role of Terrestrial Vegetation in the Global Carbon Cycle: Remote Sensing, 1984, 247 pp.
- 25: Appraisal of Tests to predict the Environmental Behaviour of Chemicals, 1985, 380 pp.
- 26: Methods for Estimating Risk of Chemical Injury: Human and Non Human Biota and Ecosystems (SGOMSEC 2), 1985, 680 pp.
- 27: Climate Impact Assessment, 1985, 625 pp.

All these SCOPE Reports, except No. 7, can be obtained from: John Wiley and Sons Ltd, 605 Third Avenue, New York NY 10158, USA.

**MEETINGS, CONFERENCES, SYMPOSIA  
REUNIONS, CONFERENCES, SYMPOSIUMS  
TAGUNGEN, KONFERENZEN, SYMPOSIEN**

Meetings etc., marked with \*, are organized or sponsored by the ISSS  
*Les Réunions etc., indiquées avec \*, sont organisées ou sponsorisées par l'AISS*  
Tagungen usw., angezeigt mit \*, werden organisiert oder unterstützt von der IBG

**1986**

**International Symposium on Ecology and Management of Wetlands**, Charleston SC, USA, June 16–20, 1986.

*Information:* Dr. D. D. Hook, c/o Dept. of Forestry, Clemson University, 2730 Savannah Highway, Charleston, SC 29407, USA.

**IBSRAM Regional Seminar on Management of Vertisols under Semi-arid Conditions in Africa and Southwest Asia**, Damascus, Syria, June 16–20, 1986.

*Information:* Dr. Marc Latham, P.O. Box 109, Bankhen, Bangkok 10900, Thailand.

**International Symposium on Research in Trace Elements and Analytical Problems**, Budapest, Hungary, June 30–July 2, 1986.

*Information:* Dr. Istvan Pais, Univ. of Horticulture, Villanyi ul. 37–43, Budapest 11, Hungary.

**14th General Meeting of the International Mineralogical Association of IUGS**, Stanford, CA, USA, July 13–18, 1986.

*Information:* IMA 1986, Dept. of Geology, Stanford University, Stanford, CA 94305, USA.

**3rd Meeting of the International Humic Substances Society**, Oslo, Norway, August 4–5, 1986.

*Information:* Oddny Selck, Norwegian Institute for Water Research P.O. Box 333, Blindern 0314, Oslo 3, Norway

**10th International Plant Nutrition Colloquium**, College Park, Maryland USA, August 4–9, 1986.

*Information:* M. Faust, ARS, Room 120, Bldg 004, Beltsville Agricultural Research Centre – West, Beltsville MD 20705, USA.

**International Symposium 'Plant and Soil: Interfaces and Interactions'** (at the occasion of the forthcoming 100th Volume of 'Plant and Soil'), Wageningen, the Netherlands, August 6–8, 1986.

*Information:* Prof. Dr. A. van Diest, Dept. of Soil Science and Plant Nutrition, Agric. University, De Dreyen 3, 6703 BC Wageningen, The Netherlands.

**4th Congress of the International Association for Ecologists**, Syracuse NY, USA, August 10–16, 1986.

*Information:* Prof. F. B. Golley, Institute of Ecology, University of Georgia, Athens, GA 30602, USA.

**\* 13TH INTERNATIONAL CONGRESS OF SOIL SCIENCE, HAMBURG, FED. REP. OF GERMANY, AUGUST 13–20, 1986.**

*Information:* Prof. Dr. K. H. Hartge, Inst. f. Bodenkunde, Univ. Hannover, Herrenhäuserstrasse 2, D-3000 Hannover 21, F. R. Germany, or M. Rieger Hamburg Messe u. Kongress GmbH, Jungiusstrasse 13, 2000 Hamburg 36, F. R. Germany.

**13th International Conference on Water Pollution Research & Control**, Rio de Janeiro, Brazil, August 17–22, 1986.

*Information:* IAWPR Secretariat, Alliance House, 29–30 High Holborn, London WC1V 6BA, U.K.

**4th International Symposium on Microbial Ecology**, Ljubljana, Yugoslavia, August 24–29, 1986.

*Information:* France Megusar, Biotechnical Faculty, E. Kardelj University of Ljubljana, Jamnikarjeva 101, 61600 Ljubljana, Yugoslavia, *or:* S. W. Glover, Department of Genetics, The University of Newcastle, Ridley Building, Claremont Place, Newcastle upon Tyne, NE1 7RU, U.K.

**\* International Workshop on the Interactions at the Soil Colloid – Soil Solution Interface**, Ghent, Belgium, August 24–30, 1986 (ISSS Working Group CO).

*Information:* Prof. M. F. L. de Boodt, Dept of Soil Physics, University of Ghent, Coupure Links 653, 9000 Ghent, Belgium.

**International Workshop on Soil Laboratory Sample and Methods Exchange**, Wageningen, the Netherlands, August 25–29, 1986.

*Information:* L. Pleijzier, ISRIC-LABEX, P.O. Box 353, 6700 AJ Wageningen, the Netherlands.

**International Symposium on Remote Sensing for Resources Development and Environmental Management (ISPRS)** Enschede, the Netherlands, August 25–29, 1986.

*Information:* Symposium Secretariat Commission VII, ISPRS, c/o ITC, P.O. Box 6, 7500 AA Enschede, the Netherlands.

**Regional Conference on the Mediterranean Countries of the International Geographical Union**, Madrid and elsewhere in Spain, August 25–September 12, 1986, With Symposia on Cartography of the Environment and of Environmental Dynamics; Bioclimatology; Landscape Synthesis; Changing Rural Systems; Comparative Research in Food-systems of the World; Geomorphology of River and Coastal Plains; Geomorphological Survey and Mapping; Recent Climate Change in areas with Mediterranean type Climate; Topoclimatological Investment and Mapping; Farming and Rural Settlement in Highlands and High-Latitude Zones; Fluvial and Slope Processes in a Mediterranean Environment; Mediterranean Mountain Ecosystems; etc.

*Information:* L. A. Kosinski, Secretary General IGU, Dept. of Geography, Univ. of Alberta, Edmonton T6G 2H4, Canada.

**Symposium on Mineral Nutrients in Savanna & Tropical Forest Ecosystems**, Stirling, Scotland, U.K., August 26–28, 1986.

*Information:* J. Proctor, Dept. of Biological Science, Univ. of Stirling, Stirling FK9 4LA, U.K.

**Regional Symposium on Biotechnology of Nitrogen Fixation in the Tropics**, Kuala Lumpur, Malaysia, August 25–29, 1986.

*Information:* Dr. Z. Abdul Rahman, Malaysian Society of Soil Science, P.O. Box 12644, 50784 Kuala Lumpur, Malaysia.

**International Conference on Landscape of the Southern Hemisphere**, Adelaide, Australia, August–September 1986.

*Information:* John Firman, C/-S.A. Dept. of Mines and Energy, P.O. Box 151, Eastwood, S. A. 5063, Australia.

**International Conference on Phosphorus Chemistry**, Bonn, FRG, August 31–September 6, 1986 and Spala Nr. Lodz, Poland, September 7–12, 1986.

*Information:* Dr. T. S. West, Secretary General IUPAC, Macaulay Institute of Soil Research, Craigiebuckler, Aberdeen, AB9 2QJ, Scotland.

**International Conference Agricultural Engineering 86**, Noordwijkerhout, the Netherlands, September 1–4, 1986.

*Information:* Mr. A. P. S. de Jong, IMAG, P.O. Box 43, 6700 AA Wageningen, the Netherlands.

**International Symposium on Geomorphic Processes in Environments with Strong Seasonal Contrasts**, Barcelona, Murcia, Spain, September 5–14, 1986.

*Information:* Prof. Dr. J. de Ploey, Secretary COMTAG, Lab. of Experimental Geomorphology, Catholic Univ. of Leuven, 16 bis Redingenstraat, 3000 Leuven, Belgium.

**International Conference on the Management and Fertilization of Upland Soils**, Nanjing, China, September 7–11, 1986.

*Information:* Prof. Xie Jian-Chang, Organizing Committee ICMFUS meeting, Institute of Soil Science of the Academia Sinica, P.O. Box 821, Nanjing, People's Republic of China.

**14th International Congress of Microbiology**, Manchester, England, September 7–13, 1986.

*Information:* Dr. J. A. Coole, Dept. of Biochemistry, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, England (programme); *or:* Mr. A. F. Yates, Trading Services, UMIST, P.O. Box 88, Jackville Street, Manchester M60 1YD, England (registration).

**18th World Congress of the International Union of Forestry Research Organisations (IUFRO)**, Ljubljana, Yugoslavia, September 7–25, 1986.

*Information:* O. Bein, Schönbrunn, A-1131 Vienna, Austria.

**International Meeting on Remote Sensing and Geographic Information Systems**, Madrid, Spain, September 8–10, 1986 (Commission on Geographical Data Sensing and Processing of IGU/ICA).

*Information:* Dr. Duane F. Marble, Madrid Symposium, P.O. 571, Williamsville, NY 14221, USA.

**International Symposium on Mapping from Modern Imagery**, acquisition and revision of spatial information, Edinburgh, Scotland, September 8–12, 1986 (International Society for Photogrammetry and Remote Sensing, Commission IV).

*Information:* Dr. A. S. Walker, Dept. of Land Surveying, North East London Polytechnic, Longbridge Road, Dagenham, Essex RM8 2AS, England.

**19th International Congress of the International Association of Hydrogeologists**, with a Symposium on integrated Land Use Planning and Groundwater Pollution, Karlovy Vary, Czechoslovakia, September 8–15, 1986.

*Information:* Dr. E. Romijn, Secretary IAM, P.O. Box 9090, 6800 GX Arnhem, the Netherlands; *or:* Stavebni Geologie, Praha, Gorkého namesti 7, 11309 Praha 1, Czechoslovakia.

**21st General Assembly of the International Council of Scientific Unions**, with Symposia on Environmental Consequences of Nuclear War and on Global Change, Bern, Switzerland, September 14–19, 1986.

*Information:* Dr. F. W. G. Baker, Executive Secretary ICSU, 51 Bd de Montmorency, 75016 Paris, France.

**International Symposium on Problems of Reconstruction on Landscape Types and Climate during the Quaternary (INQUA)**, Bratislava, Czechoslovakia, September 15–20, 1986.

*Information:* J. Hornis, Mlynska dolina 1, CS-81704 Bratislava, Czechoslovakia.

**International Symposium on Drought: Prediction, Detection, Impacts Assessment and Response;** Lincoln, Nebraska, USA, September 29-October 1, 1986.

*Information:* Dr. D. Wilthite, 241 LW Chase Hall, Univ. of Nebraska, Lincoln, NE 68583-0728, USA.

**IBSRAM Regional Seminar on Soil Management under Humid Conditions in Asia,** Khon Kaen, Thailand, October 13-20, 1986

*Information:* Dr. Marc Latham, Director IBSRAM, P.O. Box 109, Bangkok, Bangkok 10900, Thailand.

**Workshop on African Mountains and Highlands; Ecodevelopment, Resource Management and Food Security,** Addis Abeba, Ethiopia, October 18-27, 1986.

*Information:* Prof. B. Messerli, Geogr. Inst. der Universität, Hallerstrasse 12, 3012 Bern, Switzerland; *or:* Secretariat African Mountains Workshop, P.O. Box 2597 Addis Abeba, Ethiopia.

**International Symposium on New Sensors and Methods for Environmental Characterisation (IUPAC),** Kyoto, Japan, 10-12 November, 1986.

*Information:* T. Fujinara, Nara Univ. of Education, Takabatake, Nara 630, Japan.

**Australian-New Zealand Joint Soils Conference,** Rotorua-Hamilton, November 20-27, 1986.

*Information:* Dr. L. A. Douglas, Faculty of Agriculture and Forestry, Grattan Street, Parkville, VIC 3052, Australia; *or:* Dr. R. Lee, NZ Soil Bureau, DSIR, Private Bag, Lower Hutt, New Zealand.

**50th Anniversary Meeting of the Soil Science Society of America,** New Orleans, Louisiana, USA December 1-5, 1986.

*Information:* Secretariat SSSA, 677 South Segoe Road, Madison, WI 53711, USA.

**20th International Symposium on Remote Sensing of Environment,** Nairobi, Kenya, December 4-10, 1986. (Environmental Research Institute of Michigan ERIM, in cooperation with UNEP-GEMS and Regional Centre for Services in Surveying, Mapping and Remote Sensing of Nairobi).

*Information:* Dr. R. H. Rogers, Remote Sensing Center, ERIM, P.O. Box 8618, Ann Arbor, MI 48107-8618, USA.

## 1987

**International Conference on Infiltration Development and Application,** Honolulu, Hawaii, USA, January 6-8, 1987.

*Information:* Prof. Yu-Si Fok, Water Resources Research Center, University of Hawaii at Manoa, 2540 Dole Street, Honolulu, Hawaii 96822, USA.

**First Regional Conference on Geographic Information Systems in Asia,** Bangkok, Thailand, January 19-23, 1987.

*Information:* D. F. Marble, Dept of Geography, SUNY at Buffalo, Amherst, NY 14260, USA.

**\* International Symposium on Tropical Peats and Peatlands for Development,** Yogyakarta, Indonesia, February 9-14, 1987 (International Peat Society).

*Information:* Dr. B. Radjagukguk, Dept of Soil Science, Fac. of Agriculture, Gadjah Mada University, Sekip, Yogyakarta, Indonesia.

**4th International Congress of Ecology (Intecol/IUBS)**, Syracuse, USA, February 10–16, 1987.

*Information:* E. S. Ayensu, 9200 Wilmett Court, Bethesda, MD 20817, USA.

**International Symposium on Loess**, Taita, New Zealand, February 13–21, 1987. (Western Pacific Working Group of the INQUA Loess Commission).

*Information:* Dr. D. N. Eden, N. Z. Soil Bureau, Private Bag, Lower Hutt, New Zealand.

**\* International Symposium on Aforestation of Salt-affected Soils**, Karnal-Haryana, India, February 16–20, 1987. (Indian Society of Soil Science, ICAR and ISSS Subcommittee A).

*Information:* Dr. I. P. Abrol, Director, Central Soil Salinity Research Institute, Karnal 132001, India.

**International Symposium on Groundwater Monitoring and Management**, Dresden, GDR, March 23–28, 1987. (IHP Nat. Committee, with Unesco, WMO and IAHS).

*Information:* Dr. P. Lösel, Institut für Wasserwissenschaft, Schnellerstrasse 140, 1190 Berlin, German Democratic Republic.

**International Symposium on Elemental Sulphur in Agriculture**, Nice, France, March 25–27, 1987.

*Information:* Secr. Symposium le Soufre Élémentaire en Agriculture, 23 La Canebière, 13201 Marseille Cedex 1, France.

**Workshop on Erosion Transport and Deposition Processes**, with emphasis on Semi-arid and Arid areas, and including a session on Desert Loess; Jerusalem-Sede Boqer-Elat, Israel, March 28–April 3, 1987. (IAHS Commission on Continental Erosion and IGU Commission on Measurement Theory and Application in Geomorphology).

*Information:* Prof. A. Yair, Physical Geography, Institute of Earth Sciences, HUJ, 91904 Jerusalem, Israel.

**\* International Conference on the Vulnerability of Soil and Groundwater to Pollutants**, Noordwijk, the Netherlands, March 30–April 3, 1987. (Organized by the Dutch National Institute of Public Health and Environmental Hygiene RIVM, with co-sponsoring of IAH, IAHS, and ISSS).

*Information:* Ir. W. van Duijvenbooden, RIVM, Postbus 150, 2260 AD Leidsendam, the Netherlands.

**International Symposium on Hydrology in Perspective; Lessons from the past: Prospects for the future**, Rome, Italy, April 6–10, 1987. (International Association of Hydrological Sciences-IAHS).

*Information:* Dr. J. C. Rodda, Secretary General IAHS, Institute of Hydrology, Wallingford, Oxon OX10 8BB, England; *or:* GIBI, s.a.s. Studio Congressi, Via Marco Beso 40, 00191 Roma, Italy.

**International Symposium on the Fertilization of Vegetables under protected cultivation**, Naaldwijk, The Netherlands, April 6–12, 1987. (Working Group of the International Society for Horticultural Science).

*Information:* Dr. J. Roorda van Eysinga, Glasshouse Corps Research and Experiment Station, P.O. Box 8, 2670 AA Naaldwijk, the Netherlands.

**\* International Symposium on Advances in Nitrogen Cycling in Agricultural Ecosystems**, Brisbane, Australia, May 11–15, 1987 (Co-sponsorship of ISSS Commission III).

*Information:* Mr. Keith Weier, Symposium Secretary, Div. of Tropical Crops and Pastures CSIRO, Cunningham Laboratory, St Lucia, Brisbane, Queensland, 4067 Australia.

**Symposium on Coastal Lowlands; Geology and Geotechnology, the Hague, the Netherlands, May 25–27, 1987.**

*Information:* Coastal Lowlands Symposium, c/o Congrex, Keizersgracht 610, 1017 EP Amsterdam, the Netherlands.

**International Conference on Measurement of Soil and Plant Water Status, Logan, Utah, USA, July 6–10, 1987**

*Information:* R. J. Hanks, Department of Soil Science and Biometeorology, Utah State University, UT 84322-4840, USA.

**31st Congress of the International Union of Pure and Applied Chemistry (IUPAC), Sofia, Bulgaria, July 13–18, 1987.**

*Information:* Dr. T. West, Secretary General IUPAC, Macaulay Inst. for Soil Research, Craigiebuckler, Aberdeen AB9 2QJ, Scotland.

**14th International Botanical Congress, West Berlin, FRG, July 24–August 1, 1987.**

*Information:* Dr. W. Greuter, Köningin-Luise-Strasse 6–8, D-1000 Berlin (West) 33, FRG.

**12th International Congress of the International Union of Quarternary Research (INQUA), Ottawa, Canada, July 31–August 9, 1987.**

*Information:* Dr. Alan V. Morgan, Dept. of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1.

**International Symposium on Steepland Agriculture in the Humid Tropics, Kuala Lumpur, Malaysia, 17–20 August 1987. (Malaysian Society of Soil Science, with Malaysian Agricultural Research & Development Institute MARDI).**

*Information:* Dr. Ghulam Mohd. Hashim, Secretary, Conference STEEPLAND '87, MARDI, P.O. Box 12301, 50774 Kuala Lumpur, Malaysia.

**13th International Congress of the International Commission on Irrigation & Drainage (ICID), Rabat, Morocco, August 1987.**

*Information:* Secretariat ICID, 48 Nyaya Marg. Chanakyapuri, New-Delhi 11, India.

**19th General Assembly of the International Union of Geodesy and Geophysics, (IUGG), Vancouver, Canada, August 9–22, 1987, with Symposia and Workshops by the International Association of Hydrological Sciences (IAHS) on Forest Hydrology and Watershed Management; Irrigation and Water Allocation; Methods of Runoff and Stream Slow Simulation; Estimation of Areal Evapotranspiration; Origin and Evolution of Sedimentary Basins, etc.**

*Information:* G. D. Young, CNC/IAHS, Inlands Water Directorate, Environment Canada, Ottawa, Ontario, K1A OE7, Canada.

**9th International Biophysics Congress, Jerusalem, Israel, August 23–28, 1987.**

*Information:* Dr. J. Tigyí, Secretary general IUPAB, Inst. of Biophysics, Medical University, Izigeti ul 12, 7640 Pécs, Hungary.

**22nd Congress of the International Association of Hydraulic Research (IAHR), Lausanne, Switzerland, August 31–September 4, 1987.**

*Information:* Mr. W. H. Graf, EPFL Laboratoire d'Hydraulique, 1015 Lausanne, Switzerland,

**14th International Congress of Biochemistry (IUB), Prague, Czechoslovakia, October 1987.**

*Information:* R. L. Hill, Biochemistry Department, Duke University Medical Center, Durham, NC 27710, USA.

**International Symposium on Interaction between Ground Water and Surface Water**, Lund, Sweden, October 1987.

*Information:* Dr. J. C. Rodda, Secretary General IAHS, Inst. of Hydrology, Maclean Building, Crowmarsh Gifford, Walling Lord, Oxfordshire, OX10, 8BB, England.

## 1988

**6th IWRA World Congress on Water Resources: Water for World Development**, Ottawa, Ont., Canada, May 29–June 3, 1988.

*Information:* P. J. Reynolds, Inland Waters Directorate, Environment Canada, Ottawa, Ontario, Canada K1 A-0E7.

**\*8th International Meeting on Soil Micromorphology**, San Antonio, Texas, USA, June 19–25, 1988 (ISSS Subcommittee B).

*Information:* L. P. Wilding, Department of Soil and Crop Science, Texas A & M University, College Station, TX 77843, USA.

**11th Conference of the International Soil Tillage Research Organization (ISTRO)**, Edinburgh, Scotland, July 11–15, 1988. Theme: Tillage and Traffic in Crop Production.

*Information:* Dr. B. D. Soane, President of ISTRO, Scottish Institute of Agricultural Engineering (SIAE), Bush Estate, Penicuik, Midlothian EH26, OPH, Scotland.

**26th International Geographical Congress**, Sydney, Australia, August 22–26, 1988.

*Information:* B. Thom, Dept of Geography, Institute Building, University of Sydney, Sydney 2006, Australia.

**\*10th International Soil Zoology Colloquium**, Bangalore, India, August 1988 (ISSS Working Group ZO, and IUBS).

*Information:* Dr. G. K. Veeresh, Dept. of Entomology, University of Agricultural Sciences, Hebbal, Bangalore 560 024, India



## NEW PUBLICATIONS NOUVELLES PUBLICATIONS NEUE VERÖFFENTLICHUNGEN

Titles of new publications are listed here for information. Orders can not be handled by the ISSS Secretariat but should be placed through a bookstore or directly with the publishers. Nearly all publications mentioned can however be viewed at the seat of the Society, c/o the International Soil Reference and Information Centre (ISRIC) in Wageningen, the Netherlands.

*Les titres des nouvelles publications sont mentionnés à titre d'information. Le Secrétariat de l'AISS ne peut pas se charger de commandes, celles-ci devant être adressées à une librairie ou directement aux éditeurs. Presque toutes les publications mentionnées peuvent toutefois être consultées au siège de l'AISS, p/a Centre International de Référence et d'Information Pédologique (ISRIC) à Wageningen, Pays-Bas.*

Die Titel neuer Veröffentlichungen sind hier zu Information angeführt. Bitte richten Sie Ihre Bestellungen nicht an das IBG Sekretariat sondern an den Buchhandel oder direkt an die Verlage. Fast alle Veröffentlichungen sind jedoch zu besichtigen an der Stelle der IBG, p/A Internationales Bodenreferenz und Informations Zentrum (ISRIC) im Wageningen, Holland.

**Volcanic Soils, Weathering and landscape relationships of soils on tephra and basalt.** Catena Supplement 7. E. Fernandez Caldas and D. H. Yaalon, editors. Catena Verlag, Cremlingen, 1985, 151 p. ISBN 3-923381-06-9. ISSN 0722-0723.

This Catena Supplement contains twelve selected papers presented at the International Meeting on Volcanic Soils held in Tenerife, July 1984. The meeting brought together over 80 scientists with interest in the origin, nature and properties of soils on tephra and basaltic parent materials and their management. Some 51 papers and 8 posters were presented on a wide range of subjects related to volcanic soils, many of them dealing with weathering and landscape relationships.

Because volcanic soils are not a common occurrence in regions where pedology developed and progressed during its early stages, recognition of their specific properties made an impact only in the late forties. The name Ando soils, now recognized as a special entity in most comprehensive soil classification systems, was coined in 1947 during reconnaissance soil surveys in Japan made by American soil scientists. Subsequently many national and international meetings have been held on the improvement and revision of their classification and correlation. These continuous efforts are also reflected in some of the papers in this volume.

While Andosols or Andisols formed on tephra (volcanic ash), essentially characterized by low bulk density and a surface complex dominated by active Al, cover worldwide an area of about 100 million hectares (0.8% of the total land area), the vast basaltic plateaus and their associated soils cover worldwide an even greater area, frequently with complex age and landscape relationships. While these soils do not generally belong to the ando group, their pedogenetic pathways are also strongly influenced by the nature and physical properties of the basalt rock. The papers in this volume cannot cover the wide variety of properties of the soils in all these areas, some of which have been reviewed at previous meetings. In this volume there is a certain emphasis on some of the less frequently studied environments and on methods of study and characterization as a means to advance the recognition and classification of these soils.

*Price:* DM 128.00

*Orders to:* Catena Verlag, Brockenblick 8, D-3302 Cremlingen 4, Fed. Rep. of Germany.

**Sample Areas from the Soil Map of the Netherlands 1:50,000.** H. de Bakker, W. Heijink and G. G. L. Steur, editors. Netherlands Soil Survey Institute, Wageningen, 1984. 1 sheet 60 × 87 cm.

This interesting map contains sixteen fragments of 10 × 12.5 cm each with the accompanying legend. Together, they present a nearly complete picture of the Dutch soils and their geographical interrelationships. Also given is the full legend of the soil map at 1:50,000. The map is especially prepared for persons wishing to have a concise, but rather complete picture of the soils of the Netherlands and their geography.

*Price:* Dfl. 15.00, including postage.

*Orders to:* Mrs. M. Rijks, Stiboka, P.O. Box 98, 6700 AB Wageningen, The Netherlands.

**Los Suelos del Uruguay.** A. Duran. Editorial Agropecuaria Hemisferio Sur, Montevideo, 1985, 398 p.

This overview of the soils of Uruguay starts with a description of the geology, geomorphology, climate and vegetation of the country. The second and main part discusses soil classification, based upon the FAO-Unesco Soil Map of the World legend, the characteristics of the soil units and their actual and potential use. In the third part a regional impression of the present land use is given, followed by a short chapter on the capacity of the soils to sustain different forms of agriculture. In the annex, information on the extent of present and potential soil erosion is given.

The publication contains many small-scale maps, tables and figures.

*Orders to:* Editorial Agropecuaria Hemisferio Sur, S.R.L., Alzáibar 1328, Montevideo, Uruguay.

**Klasifikacija Zemljišta Jugoslavije (Classification of Yugoslav Soils).** A. Skoric, G. Filipovski and M. Ciric. Academy of Sciences and Arts of Bosnia and Hercegovina, Sarajevo, 1985, 72 p.

The soil classification presented in this book has maintained the basic principles of the earlier systems, in which soil genesis plays a prominent role. The system has six taxonomic categories. It is a morphogenetical system based on soil properties which are morphologically identifiable or measurable.

*Requests to:* Prof. M. Ciric, Sumarski Fakultat, Zagrebacka 20, 71000 Sarajevo, Yugoslavia.

**Lake Gardsjön, An Acid Forest Lake and its Catchment.** Ecological Bulletins 37. F. Andersson and B. Olsson, editors. Publ. House of the Swedish Research Councils, Stockholm, 1985, 336 p. ISBN 91-86344-25-0; ISSN 0346-6868.

This volume gives a comprehensive documentation of an ecosystem approach in investigating the effects of acid deposition on soils and water. It also contains an analysis of the ecological conditions in an acidified lake prior to liming.

The causes of acidification of soils and surface water are often discussed. The mechanisms behind acidification are not fully understood. In particular, the processes are not always quantified sufficiently. In this study an attempt has been made to give as detailed an account as possible. Understanding the acidification of a lake requires knowledge of previous conditions in terms of land history, use and management. The present-day situation has been interpreted in a quantitative study of the flow of biogeochemical elements of catchments.

In explaining water and soil acidification a weak link has been the lack of information on pathways and residence time of water passing through the soil. The time available for a state of chemical equilibrium to occur between the soil solution and the soil colloids is of the utmost importance for determining the results of the acidification. Information on the type of buffering systems operating in the soil is equally important. Of particular interest is the role of aluminium as a soil buffering agent. The different forms of aluminium leaching from the soil to the lake is another area of importance as this affects the organisms in the lake.

A strongly acidified lake has often been considered as dead, an opinion which is to some extent a misinterpretation. Changes in the foodwebs will result in another relative distribution of primary and secondary production of a lake. These alterations may also contribute to the changes in lake chemistry.

An area which has long been incompletely studied in connection with acidification is the role of lake sediments. Considering that the Lake Gardsjön project also focuses on the effects of lake liming, it is obvious that changes occurring in the sediments must be analyzed and quantified.

The present volume contains mainly original publications which should be read as independent contributions. Some papers deviate from this theme. They might be considered as less 'exciting' but put into the context of this volume they make a contribution to the understanding of the acidification history and the acidification status of the area.

*Price:* US\$ 44.00.

*Orders to:* Publishing House of the Swedish Research Councils, Box 6710, S-11385 Stockholm, Sweden.

**Cycles of Soil Carbon, Nitrogen, Phosphorus, Sulfur, Micronutrients.** F. J. Stevenson. John Wiley & Sons, New York, Chichester, 1986, 380 p. ISBN 0-471-82218-3.

Transformations caused by microorganisms have a profound effect on the ability of soils to provide food and fiber for an expanding world population. Of paramount importance is the cycling of carbon, nitrogen, phosphorus, sulfur, and the micronutrient cations. A knowledge of the various cycles and their interactions is essential for the intelligent use of soil as a medium for plant growth and for the rational use of natural and synthetic fertilizers. Since the biochemical cycles constitute the life-line of the planet earth, information relative to their functioning in terrestrial soils has direct application to other ecosystems.

This reference text is a comprehensive treatment of the biochemical cycles in soil. It covers all major aspects of nutrient cycling, including fluxes with other ecosystems, biochemical pathways and transformations, gains and losses, chemical fixation reactions, and plant availability. Environmental issues are integrated into the classical treatment of cycling processes. Two chapters are devoted exclusively to pollution of the environment.

A broad range of timely, pertinent topics are treated here, including: management of crop residues and maintenance of soil organic matter; use of soil for disposal of organic wastes; biological nitrogen fixation; denitrification; efficiency of fertilizer nitrogen use by plants; nitrates in food and water; chemistry and fate of phosphorus and sulfur; and behavior of trace elements. Supplementing the discussion are 81 tables and 118 figures.

This book is recommended as a reference text for graduate and advanced undergraduate course in Soil Microbiology and Soil Biochemistry. Its emphasis on basic principles and reactions occurring naturally in soils makes it valuable reference for researchers in soil science, microbiology, sanitary engineering, environmental science, and a host of related disciplines.

*Price:* £ 56.20.

*Orders to:* John Wiley & Sons, Baffins Lane, Chichester, West Sussex, England P019 1UD; or: 605 Third Avenue, New York, NY 10016, U.S.A.

**Economic Methods for Multipollutant Analysis and Evaluation.** Pollution Engineering and Technology 25. W. D. Baasel. Marcel Dekker, New York and Basel, 1985, xi + 339 p. ISBN 0-8247-7318-7.

Industry, government, and the people all want to protect humans and the environment from harmful pollutants. Toward this end, all three sectors have looked at substances in effluents from industries, commercial businesses, and homes to determine what streams need to be controlled. As a result, a number of pollutant abatement procedures have been instituted.

Some of these required controls are inadequate and some currently uncontrolled streams need to be controlled. The problem confronting the world is how to determine which streams need to be controlled and how stringent these controls need to be. The method presented here allows one to make such a determination at a reasonable cost.

This book will aid in the preparation of environmental impact statements. It is not, however, meant to replace other books on the subject, since a number of topics which are important elements of any impact statement are not covered here, including social, legal, and cultural factors. Nor are the various types of pollution abatement schemes discussed and their costs compared, although a method for evaluating these schemes is presented. This book focuses solely upon the presentation of a method for determining whether damage is likely to occur to human health or the environment as a result of discharges into the environment.

Presenting a tested, economically feasible method for evaluating and determining danger levels in effluents and other pollutants, this book aids in the preparation of environmental impact statements. The Multimedia Environmental Assessment System permits pollution and environmental engineers to identify, rank, and clean up those streams that are dangerous – within strict budgetary limits.

The author describes sampling techniques, source and ambient analysis methods, risks assessment, and much more. It presents a comprehensive overview of the subject's complexities, comparing various pollution abatement schemes and providing a method for contrasting multicomponent streams (gaseous, liquid, and solid) and their effect in different media (water, air, land).

Price: US\$ 65.00 in U.S.A. and Canada, US\$ 78.00 elsewhere.

Orders to: Marcel Dekker Inc., 270 Madison Avenue, New York, NY 10016, U.S.A.

**Mountain Development 2000: Challenges and Opportunities.** International Centre for Integrated Mountain Development (ICIMOD), Kathmandu, 1984, 123 p.

This publication contains the proceedings of the First International Symposium and Inauguration of ICIMOD, Kathmandu, December 1983. It is the primary objective of this newly established centre to promote economically and environmentally sound development in the Hindu Kush-Himalayas. This region includes Afghanistan, Bangladesh, Bhutan, China, India, Nepal and Pakistan.

The contents of the report are: opening statements, country reports, the nine symposium papers; contributions on the concept and role of ICIMOD. The inaugural programme consisted of addresses and country and donor statements.

Price: US\$ 10.00

Orders to: ICIMOD, P.O. Box 3226, Kathmandu, Nepal.

**Loess Letter Supplements 8–19,** Geography Dept., Leicester University, Leicester, 1986.

These supplement are part of the Loess Letter publishing programme for the 12th INQUA Congress in Ottawa, in 1987. One of the aims is to publish some of the classic Russian and East European literature on loess.

Loess Letter Supplement 8. Charles Lyell, 1835. Loess of the valley of the Rhine.

Loess Letter Supplement 9. I. J. Smalley, 1978. Dokuchaev and the Russian Approach to the Study of Loess.

Loess Letter Supplement 12. A. Ronai, 1985. The Quaternary of the Great Hungarian Plain.

Loess Letter Supplement 13. N. L. Kriger, 1965. Loess, its characteristics and relation to the geographical environment. (extensive bibliography).

Loess Letter Supplement 14. V.I. Yeliseyev, 1973. On the loess soils of Middle Asia and Kazakhstan.

Loess Letter Supplement 15. I. Vaskovsky, 1977. Quaternary of Slovakia.

Loess Letter Supplement 16. A Tutkovskii Sampler (in English, German and Russian).

Loess Letter Supplement 17. A. M. Kondratov, 1983. Stories of Arctic Lands (in Russian).

Loess Letter Supplement 18. M. P. Lysenko, 1973. Particle-size as basic criteria for distinguishing between loess and loess-like deposits (in Russian and English).

Loess Letter Supplement 19. Two papers by J. Pelisek on loess in Czechoslovakia and Siberia (in English).

Orders to: Loess Letter, Geography Dept., Leicester University, Leicester, England LE1 7RH.

**Earthworms**, Synopsis of the British Fauna (New Series) No. 31. R. W. Sims and B. M. Gérard. E. J. Brill/Dr. W. Backhuys, London, Leiden, Köln, 1985, viii + 171 p. ISBN 90-04-07582-8.

This synopsis of the earthworms is published for The Linnean Society of London and The Estuarine and Brackish-Water Sciences Association. It is a well-illustrated field and laboratory pocket-book designed to meet the needs of amateur and professional naturalists, bridging the gap between the popular guide and more specialist monographs. It contains keys and notes for the identification and study of the species, forming the dominant component in the animal biomass of the soil.

About half of the 6000 or more described species of Oligochaeta are earthworms. The majority of the earthworms of Europe belong to the family Lumbricidae but only about two dozen species are found in the British Isles although another half-a-dozen or so species of other families have successfully survived adventitious introduction into these islands from other continents. The small number of British species is in sharp contrast to tropical countries where the earthworm faunas may be large, and even nearby in France where some 180 species have been recognized.

Price: £ 12.50 or Dfl. 56.00

Orders to: E. J. Brill Publ. Comp., Plantijnstraat 2, 2321 JC Leiden, The Netherlands.

**Earthworms, their ecology and relationships with soils and land use.** K. E. Lee. Academic Press, Sydney, Orlando, London, 1985, xiii + 411 p. ISBN 0-12-440860-5.

This is a synthesis and an evaluation of contemporary knowledge of a group of animals whose significance is little appreciated.

Earthworms are found in all but the driest and the coldest land areas of the world. They include about 3000 species of the subclass Oligochaeta. Most earthworms are inhabitants of soils, including litter layers and above-ground habitats such as animal dung, rubbish heaps, rotting logs on the ground surface, moss-covered and fern-covered tree trunks, under the bark of standing trees and in organic material accumulated at the bases of epiphytes or in leaf bases of subcanopy forest trees. A few species inhabit the intertidal zone.

The book comprises two principal parts. Part I describes the more basic and theoretical aspects of the ecology of earthworms, their limitations and environmental requirements, demography, ecological strategies, energy relationships, and some special aspects of their relationships with predators, parasites and pathogens.

Part II, on the relationships with soils and land use, discusses more applied aspects of earthworms on soils and plant growths, their relationships to patterns of land use, their use as agents of waste disposal and for protein production. It contains comprehensive chapters on the physical and chemical effects on soils and the effects of earthworms on soil formation. The subject index is a helpful aid.

Price: US\$ 65 or £ 55.

Orders to: Academic Press, Orlando, FL 32887, U.S.A.; 24/28 Oval Road, London, England NW1 7DX; or: Centrecourt, 25-27 Paul Street North, North Ryde, NSW 2113, Australia.

**Acid sulphate soils: a baseline for research and development.** ILRI Publication 39. D. Dent. International Institute for Land Reclamation and Improvement, Wageningen, 1986, 204 p. ISBN 90-70260-980.

Acid sulphate soils suffer extreme acidity as a result of oxidation of pyrite. Often they are also unripe; sometimes also saline. Some occur naturally but most have developed as a result of drainage of previously waterlogged coastal alluvium and peat.

Acid sulphate soils pose a range of problems for communities dependent on the reclaimed land – including low crop yields, a restricted range of alternative uses, soil engineering hazards, water pollution, and other environmental risks. These difficulties are not always anticipated, or recognised when they occur, or tackled with up-to-date information. There is a fund of expertise on the causes of, and the solutions to, the problems of these severely acid soils. Drawing together this information will be of benefit to many people, especially in the developing countries of the tropics.

A range of people have to deal with acid sulphate soils: farmers, agricultural and forestry advisory staff, civil engineers, planning agencies, international development agencies and, last but not least, soil specialists.

It is obvious that there is a need for communication between all these people. Indeed, one of the recommendations of the Symposium on Acid Sulphate Soils held at Bangkok in 1981 was that the available knowledge on acid sulphate soils be published in a brief and easily understandable form.

Following a wide-ranging introduction, the book reviews the processes responsible for acid sulphate soils, methods of identification and mapping, agronomic, engineering, and environmental problems, and management experience. Where principles are well established and easily accessible elsewhere a condensed treatment has been possible, as in the case of soil chemistry; where information is scattered or still in embryo, more extended treatment has been needed. The further important aims of the book are to establish a useful, widely-understood terminology and to provide ground rules for management within the framework of alternative management strategies and contrasting physical environments.

The author presents a series of recommendations to those who are in a position to influence the course of land development and research. These provide a strategy for land reclamation and conservation that has been developed through consultation and detailed study. This important contribution to the knowledge on these soils is very well illustrated with tables, figures and a series of colour plates.

Price: Dfl. 95.00.

Orders to: ILRI, P.O. Box 45, 6700 AA Wageningen, The Netherlands.

**Fight against Hunger through Improved Plant Nutrition.** Proceedings 9th World Fertilizer Congress. Budapest, June 1984. Three volumes. E. Welte and I. Szabolcs, editors. CIEC and Hungarian Academy of Sciences, 1985. Volume 1, 285 p. ISBN 3-88452-614-16; Volume 2, 505 p. ISBN 3-88452-612-1; Volume 3, 551 p., ISBN 3-88452-612-X.

The present proceedings are published within a relatively short time after the Congress. Volume 1 contains the plenary lectures, the contributions to them and the general conclusions. Volume 2 contains the papers and poster presentations of the working groups 1-5 on (1) Water resources for plant production. Interactions between water, irrigation, and nutrient supply, fertilization; (2) Biological nitrogen fixation. Applications in agriculture and forestry; (3) Use of nitrogen in agriculture and forestry in relation to yield improvement and environmental pollution; (4) Phosphorus supply in agriculture and forestry. Raw materials, fertilizer production and use, fixation; and (5) Potassium supply in agriculture. Raw materials, fertilizer production and use, fixation and recycling. Volume 3 has papers presented in working groups 6-11 on (6) Problems involving mineral elements in plant production other than N, P and K; (7) Nutrient supply and plant health; (8) Plant nutrient supply and crop quality. Technical and nutritional requirements; (9) Methods of planning plant nutrient supply. Soil testing; and (10) Plant nutrient application. Inorganic and organic fertilizers and plant bioregulators. Lectures and discussions in all working groups are summarized. The whole text is in English.

*Prices:* Volume 1 DM 98.00; Volumes 2 and 3 DM 56.00 each. All volumes DM 196.00.

*Orders to:* Verlag Erich Goltze, Postfach 1944, D-3400 Göttingen, Fed. Rep. of Germany.

**Trace-element Contamination of the Environment.** D. Purves. Elsevier Science Publ., Amsterdam, Oxford, New York, Tokyo, 1985, 234 p. ISBN 0-444-42503-9 (this volume); 444-41611-0 (series).

The second enlarged edition of this book published in 1977 is intended to contribute to a better understanding of changing cycles of trace elements in agroecosystems. The book provides up-to-date information on factors affecting the trace-element composition of soils due to both agricultural and industrial managements. An emphasis is made on effects of waste materials deliberately added to the soil.

The book is arranged under the following topics: (1) factors affecting the trace-element composition and contamination of soils; (2) contamination of the atmosphere; (3) contamination of the hydrosphere; (4) availability of trace elements in the soil, B, Cu, Pb, Zn, Ni, Cr, Co and Hg; (5) effects of application of sewage sludge to soil on plant composition; (6) general ecological consequences of trace-elements contamination of soils; and (7) prevention of dispersion of metals in the environment.

This volume considers the problems of slow changing trace-elements composition of the biosphere and its implications to human health and survival. It should be of interest not only to those who investigate biogeochemistry of the environment, but also to those dealing with anthropogenic cycles of metals in the biosphere.

*Price:* Dfl. 150.00

*Orders to:* Elsevier Science Publ. P.O. Box 211, 1000 AE Amsterdam, The Netherlands. In U.S.A. and Canada: Elsevier Science Publ. Comp., P.O. Box 1663, Grand Central Station, New York, NY 10163, U.S.A.

A. Kabata-Pendias, Pulawy, Poland.

**Nitrogen Management in Farming Systems in Humid and Subhumid Tropics.** B. T. Kang and J. van der Heide, editors. Institute for Soil Fertility (IB), Haren, The Netherlands and IITA, Ibadan, Nigeria. IB, Haren, 1985, 362 p.

This publication contains the Proceedings of the Symposium on 'Nitrogen Management in Farming Systems in Humid and Subhumid Tropics', held at IITA, Ibadan, Nigeria, in October 1984. It has the following papers: keynote paper on contribution of biologically fixed-N and fertilizer-N to foodcrop production, three papers on the dynamics of the soil nitrogen, two papers on nitrogen cycling in different ecologies, and eight papers on nitrogen sources and crop responses. The publication concludes with short summaries of the discussion and recommendations.

*Price:* Dfl. 35.00, including surface mailing.

*Orders to:* Institute for Soil Fertility (IB), P.O. Box 30003, 9750 RA Haren, The Netherlands.

**Comportement et effets secondaires des pesticides dans le sol/Behaviour and side-effects of pesticides in the soil.** Les Colloques de l'INRA 31. M. Hascout, H. Schuepp et E. Steen, éditeurs, Institut National de la Recherche Agronomique, Paris, 1985, 330 p. ISBN 2-85340-682-2. ISSN 0293-1915.

This Bulletin contains the papers presented at a meeting in Versailles in June 1984, which was held within the framework of the FAO European Cooperative Network on Pesticides with Special Reference to their Impact on the Environment.

After two introductory papers, the following sessions are dealt with: behaviour of pesticides in the soil (11 papers), effects of pesticides on turnover and biomass (5 papers), side-effects of pesticides on population dynamics and interactions with microorganisms (4 papers), side-effects of pesticides and interaction with soil animals (4 papers). Papers are partly in English, partly in French.

*Price:* FF 145.00

*Orders to:* Service des Publications, INRA, Route de Saint-Cyr, F-78000 Versailles, France.

**Plant Resources of Arid and Semiarid Lands. A Global Perspective.** J. R. Goodin and D. K. Northington, editors. Academic Press, Orlando, London, 1985, 338 p.

It was the editors' intent to develop a reference work that would assess the existing native plant resources in all arid and semiarid regions of the world. This inventory was to include potential food, forage, fiber, fuel, medicinal and industrial uses. No such inventory is currently available for the world as a whole, and since the dry areas comprise one-third of the earth's land surface, such a resource should provide a stimulating focal point for human developmental efforts in these regions.

Every effort was made to have the chapters as uniform as possible in organization and as complete as possible in content. Because of a lack of available information in given areas, however, some of the authors were unable to include parallel data on all topics. Nonetheless, the result is a very valuable compilation of worldwide plant resource data for the arid zone.

The following outline was used in the preparation of all chapters: short introductory paragraph, brief information about the total size and the amount of area treated as arid and semiarid, and the location of these dry areas, including stability and rate and direction of change; climatic data; soil types and their origin, with special reference to problems such as gypsum outcrops, high salinity or alkalinity, as well as comments on water penetration, water holding capacity, and runoff.

The availability of surface and subsurface water, including any past or planned modification of usage by humans, such as dam building, irrigation from diverted and underground sources, and other factors, and comments on water quality, socioeconomic factors; plant resources (food, forage, medicinal and industrial plants); discussion of the degree of habitat stability, water availability, and other factors that must be considered in developing native 'crop' plants in arid and semiarid regions; a consideration of the balance among population pressures, ecological stability, potential of the plant resources, and economic or local needs. What, philosophically, should be our overview of arid land development?; and a summary of the native plants having the greatest potential as new resources from the dry regions of each continent or sub-continent.

This interesting compilation of worldwide plant resource data for the arid zones has many illustrative figures and tables.

*Price:* US\$ 55.00 or £ 48.00 in the U.K.

*Orders to:* Academic Press Inc., Orlando, FL 32887, U.S.A.; or: Academic Press Inc., 24-28 Oval Road, London, England NW1 7DX.

**Bibliography of Repeat Photography for Evaluating Landscape Change.** Compiled and annotated, with an introduction by G. F. Rogers, H. E. Malde and R. M. Turner. University of Utah Press, Salt Lake City, 1984, xxxvi + 179 p. ISBN 0-87480-239-3.

Repeat photography is the practice of finding the site of a previous photograph, reoccupying the original camera position, and making a new photograph of the same scene. For the three authors, repeat photography has been a means of evaluating landscape change as perceived in their respective fields of research: geography, geology, and botany. Beginning in March 1982, they decided to pool their resources and compile this bibliography on repeat photography of landscapes. The goals have been to consolidate the published contributions to the subject, to provide perspective on the ways in which repeat photography has been used, and to make this body of knowledge available to others.

The value of photographs as documents was probably recognized almost immediately after photography was invented in 1839. Since then, photographs have become increasingly familiar as precise and revealing records of the physical and biological world. Photographs are also often used in the social sciences, such as anthropology and history.

Any previous photograph, when it is repeated, becomes part of a record of change with the passage of time. In this bibliography, the authors refer to the combined old and new images as a pair of matched photographs. Their particular concern is the use of matched photographs for the study of changes in vegetation and landforms, including changes caused by human activities.

Matched photographs show the same subject at two or more times, ideally from the same spot and with the same angle of view and direction of lighting. In the introductory chapter to the bibliographical information some matched photographs are presented. Furthermore the methods employed in repeat photography are given. The publication has an index, indicating that most references are American.

*Price:* US\$ 12.50.

*Orders to:* University of Utah Press, Salt Lake City, Utah 84112, U.S.A.

**Science du Sol, 1986, no. 1.** Bulletin de l'Association Française pour l'Etude du Sol (AFES). M.-C. Girard, directeur de la publication. AFES, Plaisir, 1986, 162 p. ISSN 0335-1653.

This issue of the Bulletin of the Soil Science Society of France contains abstracts in English of all articles published between 1982 and 1986. The publication is issued on the occasion of the Congress in Hamburg to inform a much wider circle of scientists on French activities in the field of soil science. The abstracts are grouped in commissions. The titles of the papers are given in English, French and German. A very useful compilation!

*Price:* FF 65.

*Orders to:* AFES, 4, rue Redon, F-78370 Plaisir, France.

**Minéraux Argileux – Clay Minerals.** Sciences Géologiques Bulletin, 1984, Tome 37, Fasc. 4. Institut de Géologie, Univ. Louis Pasteur, Strassbourg. ISSN 0302-2692.

This special issue of Sciences Géologiques Bulletin contains eight papers on several matters related to clay minerals: e.g. genesis, interactions of clay and water, and analytical methods. It also reports on regional studies carried out in Spain and Tunisia. Papers are in French and have English summaries.

*Orders to:* Université Louis Pasteur, Bibliothèque de l'Institut de Géologie, 1, rue Blessig, F-67084 Strassbourg, France.

**Chronobibliographie des Sols à Allophane 1982–1984.** J. and M. Gautheyrou. ORSTOM, Bondy, 1985, 154 p.

This new supplement to the bibliography on soils with allophane and other amorphous products contains papers of 1982–1984 and some additional entries of earlier years.

The bibliography was compiled on the basis of information received from 250 scientists and has information on 110 countries. A final printing of the complete bibliography and its availability in a data base is foreseen.

*Requests to:* Dr. J. Gautheyrou, ORSTOM, 70–74 route d'Aulnay, F-93140 Bondy, France.

**Hillslope Stability and Land Use.** R. C. Sidle, A. J. Pearce and C. L. O'Loughlin. Water Resources Monograph 11. American Geophysical Union, Washington, 1985, 140 p. ISBN 0-87590-315-0.

This book, intended for resource managers and students of erosion, emphasizes the natural factors affecting slope stability, including geomorphic, soils, hydrologic, vegetative, and seismic, and provides basic information on landslide classification, global damage, and analytical methods. The effects of various extensive and intensive land management practices on slope stability are discussed, together with methods for prediction, avoidance, and control. Examples of terrain evaluation procedures and land management practices are presented.

*Price:* US\$ 16.00, prepayment required.

*Orders to:* American Geophysical Union, 2000 Florida Avenue, N.W., Washington, DC 20009, U.S.A.

**Environmental Geochemistry and Health.** Geo-Journal Library Series Volume 2. S.H.U. Bowie and I. Thornton, editors. D. Reidel Publ. Comp., Dordrecht, 1985, 114 p. ISBN 90-277-1879-2.

The relationship between environmental geochemistry and health has long been recognised, for example, in associations between iodine deficiency and endemic goitre in Man, and molybdenum excess and molybdenosis in cattle. Cause and effect are however, difficult to establish, and it is only with the recent introduction of rapid multi-element analytical methods that new impetus has been given to the links between regional geochemistry and the health of plants, animal, and humans. Recent research has shown that this is a complex matter requiring not only interdisciplinary studies, but detailed research into element speciation, uptake and transmission as well as total elemental abundances. The present report, which is the first of its kind, recognises many of the problems involved and makes recommendations for avenues of research that are not only important but likely to prove fruitful.

*Price:* Dfl. 75.00 or £ 19.25.

*Orders to:* In U.S.A. and Canada: Kluwer Acad. Publ. Group, 190 Old Derby Street, Hingham, MA 02043, U.S.A.; in U.K. and Ireland: Falcon House, Queen Square, Lancaster, England LA1 1RN; elsewhere P.O. Box 989, 3300 AZ Dordrecht, The Netherlands.

**Global Ecology.** C. H. Southwick, editor. Sinauer Associates Inc., Sunderland. Blackwell Scientific Publications, Oxford, 1985, xi + 323 p. ISBN 0-87893-810-9 (paperback).

Global ecology is the study of ecological principles and problems on a worldwide basis. It has many components – some are simply the accumulation of local and regional events until they assume global importance, as may true for acid rain, soil erosion, and coastal pollution, for example.

Global ecology may be approached from many directions. One approach involves the physics and chemistry of the atmosphere and the interactions of the atmosphere with the oceans, land, and biota. Another is a more humanistic approach involving a look at our own populations and resources, our food supplies, our states of health and economics, and the conditions of our fellow travelers on planet Earth – a look at the condition of all the living organisms with which we share life support systems.

The book begins on the theme of the biosphere, its nature, extent, and some of its functional properties. This is followed by chapters with opposing views on the state of the world – pessimistic projections of Global 2000 and optimistic views. The second section deals with ecological principles and trends – topics such as biogeochemical cycles, interactions of the atmosphere and hydrosphere, and measurable trends in global ecology. The third section deals with human impacts on the biosphere – air and water pollution, land degradation, soil erosion, world food supplies, tropical deforestation, and desertification. These topics illustrate both ecologic and economic effects of human activities. The fourth section focuses on human populations – demography, population trends, poverty, and world health, all representing a directly humanistic approach to global ecology. The book ends with a discussion of human prospects, biological diversity, environmental consequences of war, nuclear winter, and the roles of science and technology in guiding global futures.

*Price:* £ 14.80.

*Orders to:* Blackwell Scientific Publications, Osney Mead, Oxford, England OX2 0EL.

**Criteria for Differentiating Soil Series.** Soil Survey Technical Monograph 17. B. Clayden and J. M. Hollis. Soil Survey of England and Wales, Harpenden, 1984, 159 p. ISBN 0-7084-0360-3.

The classification used by the Soil Survey of England and Wales since 1973 is a hierarchical system with classes in four categories – major soil groups, soil groups, soil subgroups and soil series – defined by progressive division. The definitions and properties needed to apply the classification to subgroup level were detailed in Soil Survey Technical Monograph No. 14, published in 1980, but details of the criteria used to differentiate soil series within subgroups were not included.

Work on the properties and criteria needed to define soil series has been in progress since the publication of B.W. Avery's 1973 classification paper in the *Journal of Soil Science*. These criteria were tested and finalized during a three year reconnaissance survey of the soils of England and Wales, when all previous mapping was integrated into a comprehensive 1:250,000 soil map of the two countries and the 1,080 established soil series were correlated (see *Bulletins* 64, p. 44 and 68, p. 72).

This monograph sets out the differentiating criteria for soil series and gives the results of the series correlation exercise. An historical background to soil survey and the development of the soil series concept in Britain is given in an introductory chapter. The differentiating criteria for soil series are then dealt with, including the nature of the parent material, textural characterization and mineralogical differentiae. A final chapter discusses the definition of soil series in each parent material type and subtype and gives a key to rationalized soil series.

An index to all the soil series recognized by the Soil Survey of England and Wales up to the end of 1983 is given in an Appendix. The index lists the Soil Survey publication in which each series was first described, gives its present subgroup classification, the publication, if any, in which the subgroup was first used and where necessary the series name that has now replaced it.

*Price:* £ 5.00, including postage.

*Orders to:* Publications Officer, Soil Survey of England and Wales, Rothamsted Experimental Station, Harpenden, Herts, England AL5 2JQ.

**The Political Economy of Soil Erosion in Developing Countries.** P. Blaikie. Longman Development Studies. Longman, London and New York, 1985, 188 p. ISBN 0-582-30089-4.

This book appeared in a new series of concise, introductory texts dealing with development issues, which is designed for use in courses in colleges and universities in the developing world. The present study is the first to use the tools of social analysis to consider why most soil conservation programmes in developing countries do not succeed. Most of the origins and ideological assumptions behind these policies date back to the colonial period.

This book constitutes a whole new approach which embraces the entire range of political economic relations of the land-users themselves, both with each other and with the state. It discusses peoples strategies in the face of these conservation policies, and therefore why they are unpopular. The range of analysis covers far more than soil erosion alone: it takes into account land tenure, rents, prices of agricultural inputs and outputs, and relations of production in agriculture and the flow of surpluses in any social system, all of which can bring about soil erosion.

*Price:* £ 6.95, net in U.K.

*Orders to:* Longman, Longman House, Burnt Mill, Harlow, Essex, England CM20 2JE.

**Public Administration Series: Bibliography.** Vance Bibliographies, Monticello. ISSN 0193-970X.

**Soil Erosion: Monographs.** M. Vance. Bibliography P 1540, October 1984, 20 p.

*Price:* US\$ 3.00, plus postage.

**Soil Conservation: Monographs.** M. Vance. Bibliography P 1541, October 1984, 56 p.

*Price:* US\$ 8.25, plus postage.

**Desertification and Deforestation:** A Selected Bibliography of English Language Sources, E. H. Cook. Bibliography P 1641, March 1985, 25 p.

*Price:* US\$ 3.75, plus postage.

These bibliographies contain titles of books, mainly of the United States, on the subjects mentioned above. The entries are relatively recent in these reports. Criteria for the inclusion are not given.

*Orders to:* Vance Bibliographies, P.O. Box 229, Monticello, IL 61856, U.S.A.

**Proceedings International Workshop on Salt-Affected Soils of Latin America,** Maracay, October 1983. I. Pla Sentis and A. Florentino de Andreu, editors. Univ. Central de Venezuela, Maracay, 1984, vi + 282 p.

This publication contains the three lectures and twenty papers presented at the workshop, the first in Latin America on salt-affected soils. It was sponsored by the ISSS and the Sociedad Venezolana de la Ciencia del Suelo. For a report on the meeting see *Bulletin* 66, p. 23.

The book contains papers on genesis, and physical, chemical and mineralogical characteristics of salt-affected soils, water management, salt tolerance of crops, and reclamation. It also has a list of eight recommendations. Papers are in Spanish and English.

*Orders to:* Sociedad Venezolana de la Ciencia del Suelo, Apartado 1208, Sta. Rosa, Maracay, Venezuela.



**Proceedings International Savanna Symposium 1984.** J. C. Tothill and J. C. Mott, editors. Commonwealth Agricultural Bureaux, Farnham Royal, 1985, xii + 384 p. ISBN 0-85198-535-1.

The International Savanna Symposium was held in Brisbane in May, 1984. Taking advantage of the occasion of the Symposium, the savanna component of the 'Decade of the Tropics', which is being sponsored by the International Union of Biological Sciences (IUBS), was launched at a workshop on the 1st of June.

The theme – the World's savannas – are tropical and subtropical grassy open forests, woodlands, shrublands and grasslands, representing vast areas of the world's surface. However, much research is still needed to gain scientific knowledge and understanding of these systems. They are presently the most important regions of extensive livestock production in the tropics and sub-tropics. Crop production is also important in suitable areas, while National Parks, game parks, forests, watershed management areas and extractive industries must also be considered. Frequently these uses are competitive in their demands on the natural resources with varying social and ecological consequences.

This Symposium aimed to interrelate, in both structural and functional terms, the savanna ecosystems of the world and to examine the potential and problems arising from their utilisation. Particular emphasis was placed on the relative significance of ecological and social forces in determining their use and resultant problems. The relative impacts of modern, ancient and primitive cultures are of considerable significance.

Key international speakers were invited to contribute overview papers which provided a framework for the program and basis for discussion. Other participants submitted contributions of short papers or poster displays.

The present proceedings is being published as a benchmark volume designed to help relate Australian research and experience with that of other savanna regions of the world and at the same time advance the consensus of understanding of this important region internationally.

This book is mainly for the technical and academic readers in biology, agriculture and land management.

*Price:* in U.K. £ 25.00, North America US\$ 47.50, elsewhere £ 27.50, inclusive of postage.

*Orders to:* C.A.B. International, Farnham House, Farnham Royal, Slough., England SL2 3BN.

**Fertilizer and Plant Nutrition Guide.** FAO Fertilizer and Plant Nutrition Bulletin 9. FAO, Rome, 1984, xiv + 176 p. ISBN 92-5-102-160-0.

The need is well-recognized for the efficient and integrated use of mineral fertilizers and other sources of plant nutrients, like organic materials, biologically fixed atmospheric nitrogen, etc., in order to achieve self-sufficiency in food production in developing countries.

FAO, through its Fertilizer Programme, has been engaged in field activities for more than 20 years. Its aim is to assist in increasing crop production, particularly of food crops grown by small farmers, through the development and application of appropriate fertilizer use and plant nutrition technology. One of FAO's earliest and most well-known publications entitled 'Efficient Fertilizer Use' by V. Ignatieff and H. J. Page, first printed in 1950, served as a useful reference for many years. It has now been out of print for some time. Since then many countries have expressed concern at the lack of a single, handy reference source which treated all aspects of plant nutrition and fertilizer use in relatively simple language, to meet the requirements of a wide range of users.

*Orders to:* authorized FAO Sales Agents, or, in case of difficulties, Distribution and Sales Section, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

**Traditional Irrigation Schemes and Potential for their Improvement.** Irrigation Symposium 1985. DVWK Bulletin 9. J. F. Mock, editor. Verlag Paul Parey, Hamburg, Berlin, 1985, 229 p. ISBN 3-490-00990-8. ISSN 0174-3422.

The topic of this 8th Irrigation Symposium 'Traditional Irrigation Schemes and Possibilities of their Improvement' may suggest – at a first glance – to expect mainly historical or archaeological treatises. However, the real subject is of a very practical nature: what is the natural and social environment for the evolution of traditional irrigation?; which agricultural, operational and economical interdependencies have guaranteed their long existence and success?; is there potential to improve, supplement or extend technical facilities or to adapt their methods of agricultural production to changed conditions without endangering their very existence?; and which methods and experiences from traditional irrigation systems could be adopted for planning, construction, operation, maintenance and management of modern systems?

Undesirable developments in many irrigation projects, as discussed in these papers, are due to an undervaluation of the human being in the technical system of irrigation. It is explained that irrigation is only one of many factors in the farming system for livelihood, which importance is often grossly overestimated by the irrigation professionals. Other examples discuss difficulties arising from the disrapture of the social structure or from interference with inherited distribution of responsibilities in existing or new systems. Further cases exemplify the evolution of indigenous irrigation in the best suited locations while new irrigation expanded into less favoured habitats. These difficulties arose, because the traditional methods could not simply be transferred.

Many case studies from Eurasia and Africa are presented by authors with various professional background. The advantages of different points of view are obvious and the exchange of experience between professions benefits all readers and participants.

*Price:* DM 42.00.

*Orders to:* Verlagsbuchhandlung Paul Parey, Postfach 106304, D-2000 Hamburg 1, Fed. Rep. of Germany.

**Mangroves du Sénégal et de la Gambie.** Collection Travaux et Documents No. 193. C. Marius. ORSTOM, Paris, 1985, 357 p. ISBN 2-7099-0780-1. Thèse de l'Université Louis Pasteur, Paris.

Cette étude est consacrée aux mangroves du Sénégal et de la Gambie qui sont des mangroves d'estuaires, situées dans une région à climats très contrastés et caractérisées par la présence, en arrière des paléotiers de zones nues, sursalées, les tannes. Après avoir étudié l'écologie de ce milieu, notamment le climat, la végétation et sa zonation, l'hydrologie, l'hydrochimie, la géomorphologie et la faune, on aborde l'étude des caractères morphologiques, physiques et chimiques des sols en ayant choisi six chronoséquences, comme exemples. L'accent est mis sur les principaux facteurs de la pédogenèse de ces sols, à savoir le soufre qui est responsable de l'acidité et les sels solubles responsables de la salinité. On montre que le fonctionnement des tannes est, en grande partie, indépendant de celui des mangroves dont ils sont issus. L'étude minéralogique et géochimique des sols permet de mettre en évidence la néogenèse de certains minéraux (gypse) et la transformation des argiles dans la séquence mangrove-tanne. Une attention particulière a été accordée aux effets de la sécheresse climatique de ces dernières années sur l'évolution des sols et des paysages. Par des exemples choisis dans différentes parties du monde, on montre que la séquence mangrove-tanne caractérise des milieux littoraux tropicaux à climats aussi variés que le Gabon, Madagascar, l'Inde, l'Australie...

Dans le dernier chapitre consacré à la mise en valeur et l'aménagement des mangroves, on passe en revue les principales contraintes des sols liées à l'hydrologie, à l'acidité et à la salinité, on étudie les modes d'aménagements de ces sols dans différentes parties du monde et on propose, pour les mangroves de Casamance, utilisées en grande partie pour la riziculture, de nouveaux schémas d'aménagements.

A l'encontre de la plupart des mangroves de zones tropicales humides, celles du Sénégal, présentent un équilibre très fragile. L'étude de leur évolution permet de saisir les transformations géochimiques rapides et brutales de cet écosystème qui est sans aucun doute l'un des plus riches des régions tropicales.

Prix: FF 135.00.

Commandes à: Editions de l'ORSTOM, 70, route d'Aulnay, F-93140 Bondy, France.

**Land in Tropical America.** 3 Volumes. T. T. Cochrane, L. G. Sanchez, L. G. de Azevedo, J. A. Porras and C. L. Garver. CIAT and EMBRAPA-CPAC. Centro Internacional de Agricultural Tropical (CIAT), Cali, 1985, various pagings. ISBN Vol. 1 84-89206-39-2; Vol. 2 84-89206-37-6; Vol. 3 84-89206-38-4.

Latin America, particularly South America, is known as the region of the world with the most abundant land resources in relation to its population. At present the region has the lowest population density per hectare of arable land, as well as the lowest percentage of arable land under cultivation. Comparisons of potentially arable land in Latin America with that under tillage show that only 18 to 35 percent is presently utilized for agriculture. These figures are considerably lower than estimates for other regions of the world; however, there is a fairly wide range in figures as a result of variations in the information base utilized and the criteria used for the different studies.

Within the present land use pattern, extensive areas of land are underutilized or left fallow as most of the agricultural production takes place in the more fertile areas close to urban markets, where large mechanized farms coexist with a sizable small farm sector. In order to design an agricultural growth strategy that would utilize land, labor and capital resources efficiently, the countries in the region need to assess the following complementary development strategies and their trade-offs: 1. intensify production by large farmers who control the more fertile areas, primarily through mechanization and greater use of inputs; 2. intensify small-scale production through the use of improved germplasm, combined with appropriate use of inputs, to achieve higher, more stable yields; 3. expand crop and livestock production onto the less fertile frontier lands through the use of adapted germplasm and appropriate use of inputs.

As a first step toward providing the necessary information to design such a strategy, CIAT and EMBRAPA have collaborated in the systematization of existing information on the central lowlands of tropical South America, which constitute the major frontier area of the continent. Although there is abundant information on the area, much of it is contained in unpublished technical reports from diverse sources and is not necessarily compatible. An attempt has been made to systematize all this information in this report, complementing it where necessary with primary data, within the framework of a 'land systems approach', where information on climate, soils, topography and vegetation is reported systematically for purposes of comparison. The data base has been computerized to facilitate information retrieval and analysis of aggregates. The data are presented here in the form of maps and tables, with text in English, Spanish and Portuguese, to permit broad access by individuals from research or rural development programs who might not have computer facilities available to them.

**Volume 1** presents a description of the project's objectives, methodology, and procedures, and then provides interpretations and guidelines for local, seed-based agrotechnology transfer using the map and land-systems data.

**Volume 2** includes the Land Systems Map on a scale of 1:5,000,000, and the Legend to the Map, which provides a concise summary of the soil constraints by land system. A booklet of individual zone maps, on a scale of 1:2,000,000, is also included.

**Volume 3**, a more complete summary of the land systems, includes computer printouts of generalized land information, specific land facet and landform descriptions, and meteorological station data; in addition, soil profile descriptions of many land systems are provided.

Price: US\$ 53.00, including postage.

Orders to: Distribution and Marketing Office, CIAT, Apartado Aereo 6713, Cali, Colombia.

**Jordbunnskart, Nasjonalatlas for Norge Kartblad 2.3.1. Soil Map of Norway. 1:2 million.** J. Lag, 1983.

This new soil map of Norway has 24 mapping units. Each unit has a dominant soil, one or more associated soils and inclusions. The soil classification system is not given.

*Enquiries:* Prof. O. O. Hvatum, Dept. of Soil Science, Agricultural University of Norway, N-1432 As-NLH, Norway.

**Resource Atlas of Kerala, India.** Centre for Earth Science Studies, Trivandrum, India, 1984, 58 maps and explanatory notes.

Kerala is a state of India on the southwestern edge of the subcontinent bordering the Indian Ocean. Most of the area consists of rolling to hilly uplands upto 100 m elevation, some highlands are over 1300 m. A small area has less than 100 m annual rainfall, most of the area receives over 3000 mm upto 5000 mm. With annual temperatures ranging from 18 to 30 degrees, the ecological conditions favour the growth of a large variety of crops and forest types. Their distribution is given in 14 maps. This atlas of the state of Kerala provides a wealth of data.

*Price:* US \$ 125.00

*Orders to:* Centre for Earth Science Studies, P.B. 2235, Trivandrum, 695010, India.

**Soil Chemistry, 2nd edition.** H. Bohn, B. McNeal and G. O'Connor. A Wiley-Interscience Publication. John Wiley & Sons, New York, Chichester, 1985, xiv + 341 p. ISBN 0-471-82217-5.

This clearly written textbook is a thoroughly updated expansion of the authors' earlier book (1979), linking basic solution and colloidal chemistry, clay mineralogy, and the soil chemistry literature. It describes the major processes of change that soils undergo, including weathering, clay mineral formation, cation retention, and anion and molecular retention. The authors examine the relationships between these processes and the major problems of soil acidity, salinity, and flooded soils, and provide complete coverage of how these processes and problems interact with, and are affected by, the biosphere, atmosphere, and hydrosphere.

This second edition includes a new chapter on soil organic matter, providing greater balance between organic and inorganic soil chemistry; a chapter of relevant background chemical data to provide a uniform starting point; repeated reference to associations from the periodic table and to grouping of elements exhibiting similar properties in soils; and a list of study questions and annotated bibliography following each chapter.

The book offers a broad-based view in which the authors express their opinions on a variety of historical and current areas. It is a comprehensive introduction to the subject for science students needing a thorough grounding in soil chemistry, and a valuable reference to the latest scientific data for researchers in agronomy, ecology, and soil science.

*Price:* £ 30.60.

*Orders to:* John Wiley & Sons, Baffins Lane, Chichester, West Sussex, England PO19 1 UD; or: 605 Third Avenue, New York, NY 10016, U.S.A.

**Assessment of Soil Surface Sealing and Crusting.** Proceedings of the ISSS Symposium, held in Ghent, 1985. F. Callebaut, D. Gabriels and M. de Boodt, editors. Flanders Research Centre for Soil Erosion and Soil Conservation, 1986, 374 p. ISBN 90-9001289-3.

Soil surface sealing and crusting is a complex process in a particular soil under a given set of circumstances. Soil crusts or seals are a major structural feature of soils with a low natural stability. One of the most adverse effects of soil crusting is the prevention or reduction of seedling emergence, resulting in non-uniform stands and reduced crop yields.

Sealing has always been a problem on a number of temperate zone soils with humid-climate where it occurs on some of the alluvial and polder-clay soils, and on the low uplands that are covered with loess or fine coversands. In the arid and semi-arid subtropics, crusting is well known in irrigation projects on sodic soils, Planosols or Vertisols. In the subhumid to semi-arid tropics the problem of sealing, or hard setting, or capping seems to be the most serious, especially the Sudan-Sahelian zone of West-Africa, but also large parts of Eastern and Southern Africa, India, Thailand. In the humid tropics, soil sealing or surface compaction was never considered much of a problem on the stable aggregated soils. But quite a few soils with low iron content, high silt content or high activity clay minerals are susceptible to compaction.

Geomorphologists, soil physicists, agricultural engineers, micromorphologists, all concerned with the problem, have already devoted a lot of research work on it. The symposium was the first real opportunity for all the researchers to get together and exchange ideas. The papers presented provided background data and syntheses of different approaches for assessing the sealing and crusting phenomena.

The following topics were covered during the symposium: genesis and morphology of soil surface sealing and crusting; effect of soil surface sealing and crusting on water erosion; methodology to characterize soil surface sealing and crusting; mechanical resistance of soil surface seals and crusts; effect of soil surface sealing and crusting on water- and gas transfer; quantifying the impact of soil surface sealing and crusting on seedling emergence; and management of soil surface sealing and crusting.

*Price:* BF 1350, DM 75 or Dfl. 80.

*Orders to:* Dept. of Soil Physics, State University Ghent, Coupure Links 653, B-9000 Ghent, Belgium.

**Methods in Plant Ecology, 2nd edition.** P. D. Moore and S. B. Chapman, editors. Blackwell Scientific Publications, Oxford, London, 1986, xiii + 589 p. ISBN 0-632-00989-6 (hardback); 0-632-00996-9 (paperback).

The last century has seen the gestation, birth and rapid evolution of the discipline of ecology. Concern for the environment and the recognition that man is not merely a factor influencing his surroundings, but also suffers the consequences of environmental mismanagement, has led to changing attitudes on the part of scientists and society. Ecology is no longer merely quantitative natural history, it is becoming an increasingly rigorous discipline as more specific (and more general) questions are being asked of it by concerned members of society.

The demands made upon ecologists as a consequence of problems ranging from pesticide misuse to acid rain, from nuclear winter projections to carbon dioxide accumulation, have placed the ecologist in an increasingly difficult dilemma. He now has the technical capacity to construct elegant analogue models of ecological systems, but often he lacks the raw data to feed into them. Some 10 years ago, when the first edition of this book was being prepared, the situation was quite different. Practical field and laboratory methods in ecology were developing rapidly, but the limitation on ecological advance lay in the area of data logging and analysis. The development of computer science and, in particular, the current universal availability of quite sophisticated microcomputers, has broken this particular log jam and has left us in a position where more extensive and more accurate field and laboratory data are the major requirements for further advancement of the science. It is an awareness of this need which has stimulated the preparation of this book.

The present completely revised edition covers the variety of techniques which plant ecologists use, ranging from those requiring the minimum of equipment to those requiring more sophisticated apparatus. In the second edition physiological ecology has been divided into its component parts, and there are new sections on population dynamics, local site history and data analysis. Each chapter has been written by an expert or group of specialists in that particular field with the overall aim of producing laboratory/field manual which is as comprehensive and complete as possible in its coverage.

The authors have aimed the book at a fairly broad spectrum of ecologists, from the specialist to the generalist, from the professional research worker to the undergraduate project student, from the field conservationist to the laboratory technician. For soil scientists, too, this is a stimulating book, since they are confronted with developments and problems beyond, but related to their own usual fields of activity.

*Price:* £ 34.80, hardback; £23.80 paperback.

*Orders to:* Blackwell Scientific Publications, Osney Mead, Oxford, England OX2 0EL; P.O. Box 50009, Palo Alto, CA 94303, U.S.A.; or: 107 Barry Street, Carlton, Victoria 3053, Australia.

**Potassium in Agriculture.** R. D. Munson, editor. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, Madison, 1985, xxiv + 1223 p. ISBN 0-89118-086-9.

This comprehensive book on potassium is a greatly expanded revision of the *Role of Potassium in Agriculture*, published by the tri-societies in 1968. It covers the practical aspects of potassium, starting with world reserves, mining, refining, technology, marketing, sources, and current and future use. Basic and practical aspects of potassium soil chemistry and potassium status of soils important to crop production are discussed, as well as the fundamentals of potassium absorption by plants and its roles in enzyme catalysis, photosynthesis and respiration, assimilate transport, and metabolism. The interaction of potassium with diseases, other essential elements, varieties and hybrids, and cultural and management practices is addressed. Human and animal nutrition and medical and clinical aspects of potassium are discussed in three chapters. The use of potassium in maximum economic yield systems, which will be part of the wave of the future, is included, followed by specific chapters on potassium nutrition of major crops of the world, both temperate and tropical.

Major planning for this book and the resulting symposium were undertaken by the Potash & Phosphate Institute. The symposium was held in Atlanta, Georgia, in July 1985. Portions of the chapters were presented by the authors. The symposium and its sponsorship are part of the Potash & Phosphate Institute's 50th anniversary celebration.

This very valuable book on potassium and its vital roles in agricultural production around the world will serve as a reference for many years to come.

*Price:* US\$ 58.00, plus 75 cents per book for orders outside the U.S.A. Prepayment required.

*Orders to:* ASA, CSSA, SSSA, Att. Book Order Dept., 677 South Segoe Road, Madison, WI 53711, U.S.A.

**Publications of the International Agricultural Research and Development Centers.** International Rice Research Institute, Los Banos, 1985, 691 p. ISBN 971-104-145-6.

The present book was published for the 1985 exhibition at the Frankfurt Book Fair, and was sponsored by GTZ, CGIAR and IRRI. It contains an annotated bibliography of publications published by 13 international agricultural research institutes supported by the CGIAR, five non CGIAR-supported centres and five other organizations.

An in-depth index helps the reader locate all publications in certain fields. In all, this valuable compilation contains over 1000 entries.

*Price:* US\$ 10.20, including airmail postage.

*Orders to:* The Communications and Publications Dept., IRRI, P.O. Box 933, Manila, Philippines.

**Environmental Chemistry.** P. O'Neill. George Allen & Unwin, London, Boston and Sydney, 1985, xi + 232 p. ISBN 0-04-551085-7 (hardback); 0-04-551086-5 (paperback).

The two terms 'environmental chemistry' and 'pollution' often seem to go together, yet environmental chemistry is much more than the study of the chemical effects of pollution. In this book the author has attempted to emphasise the natural mobility of the elements and their compounds. Only by understanding these normal movements can we begin to appreciate the changes – good or bad – that human activities can bring about.

One possible definition of environmental chemistry is the study of the role of chemical elements in the synthesis and decomposition of natural materials of all kinds, including the changes specifically brought about by human actions.

The guiding principle in the preparation of the book has been the provision of a broad survey illustrating the operation of natural systems, with some diversions to show how human activities can modify these systems. Related environmental topics are grouped together in a four-part structure and theoretical concepts are introduced as required in order to illustrate the relevance of theory to environmental problems. The first part introduces geochemical cycles and emphasises the importance of oxygen to the chemistry of reactions near the Earth's surface. This importance applies to both these reaction types are discussed in Parts B and C. Differences and similarities between animate and inanimate systems are reviewed, and the application of general chemical concepts to seemingly very different reactions is illustrated. In the fourth part there is a brief examination of the effects of human activities on elements that usually cycle naturally in small quantities. Also in this part, the perturbation of natural cycles by agricultural, industrial and social developments is highlighted in terms of the consequent problems of environmental management.

*Price:* £ 18.00 or US\$ 25.00 (hardback); £ 8.95 or US\$ 13.95 (paperback).

*Orders to:* Allen & Unwin, Park Lane, Hemel Hempstead, Herts., England HP4 4TE; 9, Winchester Terrace, Winchester, MA 01890, U.S.A.; or: P.O. Box 764, North Sydney, NSW 2060, Australia.

**Soil Erosion and Crop Productivity.** R. F. Follett and B. A. Stewart, editors. American Society of Agronomy, Crop Science Society of America and Soil Science Society of America, Madison, 1985, xxiv + 533 p. ISBN 0-89118-087-7.

The value of soil is rarely appreciated because of its seemingly universal abundance. Except where covered with buildings and roads, or in rocky places in spectacular parks, the entire land surface appears to be covered with soil. Only a small fraction of soils, however, is suited for cultivation. It is this small fraction upon which an ever-expanding civilization must depend most for food and fiber. Preservation and wise stewardship of our soil resources must be among our highest priorities.

Soil is a product of physical and chemical weathering. Some of the soil may be carried by winds and deposited as loess, or carried by streams and deposited along their course or in lakes and seas to form deltas. These same erosional processes carry away good soil from farmland that is producing crops. However, the time frames of soil formation and soil destruction differ. The first takes place over centuries and millennia, while the second takes place in days, months, and years.

Erosion caused by violent flooding, inundating rains, or high winds can devastate a productive farm in a short time. Erosion, at a seemingly low but continuous rate, can destroy a productive field in a few generations. However with modern agronomic science crop production per unit area has increased in the USA, even in the face of continued erosion. As the authors discuss in this volume, modern agronomic practices increase while erosion decreases production. These relationships must be clearly understood if we are to manage our soil resources optimally.

Topics discussed result from extensive research by qualified agricultural scientists, economists, sociologists, and historians. The three societies invited them to present their results at a symposium on the impacts of soil erosion on crop productivity. The book is an outgrowth of the symposium and recommended to those who must advise on and develop private practices and public policy dealing with soil conservation, land use, and crop production.

*Price:* US\$ 36.00, plus 75 cents per book for orders outside the U.S.A. Prepayment required.

*Orders to:* ASA, CSSA, SSSA, Attn. Book Order Dept., 677 South Segoe Road, Madison, WI 53711, U.S.A.

**Soil Resources of China.** Slide set with explanatory notes. Inst. of Soil Science, Nanjing.

Being the third largest country in the world, China spreads from the 'Roof of the World' in the West down to the Pacific coast in the East, from the frigid zone in the North to the tropics in the South. In such a vast territory, China cherishes in her reserve an abundance of natural resources, one of which is the soil resources of enormous variety.

The present set of 120 colour slides contains pictures of the major soils of the whole of China, with their landscape, vegetation and land use. The slides were taken between 1979 and 1984.

*Price:* US\$ 200, including explanation and airmail charges.

*Orders to:* Foreign Affairs Office, Institute of Soil Science, Academia Sinica, P.O. Box 821, People's Rep. of China.

**Insights of Outstanding Farmers.** International Rice Research Institute, Los Banos, 1985, 114 p. ISBN 971-104-143-X.

'Before you teach the farmers,' a Chinese peasant proverb advises, 'listen to them'. *Insights of Outstanding Farmers* contains a narration of the experiences of 14 outstanding rice farmers from 10 Asian nations who have developed packages of technology appropriate to their ecological environments and institutional settings. The farmers were honored at IRRI during the 1985 celebration of IRRI's 25th Anniversary.

One message that all of the farmers clearly conveyed is the need for additional opportunities for on- and off-farm employment and income in rural areas. These farmers' insights are useful not only to scientists and policy makers working on rice but to all who are interested in increasing food production.

*Price:* US\$ 8.30 plus \$ 3.00 airmail or \$ 1.00 surface mail postage.

*Orders to:* see below.

**Education for Agriculture.** International Rice Research Institute, Los Banos, 1985, 204 p. ISBN 971-104-126-X.

In November 1984 the Symposium on Education for Agriculture was held at IRRI. Its purpose was to review the present state of agricultural education in the context of the opportunities now existing for a learning revolution. Participants were from leading agricultural universities as well as from ministries of agriculture and education, international and national research centers, funding agencies, agribusiness entities, and farmers' organizations.

The objectives were to assess present needs of agricultural education and training and to suggest methods for bringing together the resources and capabilities of all sectors involved in this great endeavor.

This volume includes 19 papers presented at the symposium.

*Price:* US\$ 14.70 plus \$ 4.00 airmail or \$ 1.00 surface mail postage.

*Orders to:* Communication and Publications Dept., IRRI, P.O. Box 933, Manila, Philippines.

**Nitrogen in Crop Production.** R. D. Hauck, editor-in-chief. American Society of Agronomy, Crop Science Society of America, Soil Science Society of America, Madison, 1984, xxv + 804 p. ISBN 0-89118-081-8.

The realization of this book stems from a national symposium, held in Sheffield, May 1982. The symposium was organized to provide a comprehensive summary of current knowledge about nitrogen as it relates to crop production. Each of the presentations had a practical orientation that focused on alternative means to improve plant use of nitrogen in different cropping systems. Those presentations as well as several additional closely related topics the chapters of this volume.

It was planned as a companion work to *Nitrogen in Agricultural Soils* (Agronomy no. 22, 1982), with focus on the interrelationships of nitrogen and other crop production factors. Topics discussed include (i) how plants use nitrogen, (ii) sources and supply of plant-available nitrogen, and (iii) the management of crops, fertilizers and fertilizer amendments, manures and other waste products, plant residues, and soils for maximum, economic crop production. Other topics discussed are the relationship between nitrogen use and plant diseases, insect invasion, water stress, and weed infestation. Separate chapters are devoted to crop quality and the quality of the environment, as affected by nitrogen use. The last section of the book describes recommended nitrogen management practices for regions of the United States differing in climate, soils, and cropping systems.

Our understanding of the role of nitrogen and the continual improvement of management alternatives for its optimal use in crop production as documented here represents an integrated effort of nearly 100 scientists and technologists.

*Price:* US\$ 48.00, plus 75 cents per book for orders outside the U.S.A. Prepayment required.

*Orders to:* ASA, CSSA, SSSA, Attn. Book Order Dept., 677 South Segoe Road, Madison, WI 53711, U.S.A.

**Altération et Pédogenèse sur Roches Ultrabasiques en Nouvelle-Calédonie.** Genèse et évolution des accumulations de fer et de silice en relation avec la formation du modelé. Collection Etudes et Thèses. M. Latham. ORSTOM, Paris, 1986, 331 p. ISBN 2-7099-0789-5 (ce volume); ISSN 0767-2888 (Coll. Etudes et Thèses).

Ce travail traite de l'altération et de la pédogenèse sur roches ultrabasiques en Nouvelle-Calédonie et des relations qui existent entre les formations superficielles et le modelé.

Pour cela deux ensembles de massifs ont été étudiés à l'aide de toposéquences: (1) dans le centre de l'île, des massifs d'altitude élevée formés de péridotites très pauvres en aluminium et soumis à de fortes variations climatiques. Une importante différenciation pédogénétique s'y est produite allant de la ferritisation directe, avec formation de goethite et de quartz, suivie d'une podzolisation à haute altitude, à une fersimitation avec formation de smectites ferrifères et d'opale, à faible altitude; (2) dans le nord, des massifs d'altitude moyenne à faible soumis à des variations climatiques modérées sur des péridotites relativement riches en aluminium. La différenciation pédogénétique y est moins marquée que précédemment. L'aluminium s'individualise sous forme de gibbsite sous cuirasse sommitale protégeant de très épaisses formations d'altération.

Dans ces deux ensembles de massif, un étagement de sept surfaces d'aplanissement, couvertes par des formations superficielles comparables on été reconnues. Des datations stratigraphiques, paléomagnétiques et isotopiques ont permis de montrer que ces surfaces se sont développées de l'Oligocène supérieur-Miocène inférieur à l'actuel.

*Ordres à:* Editions de l'ORSTOM, 70-74, route d'Aulnay, F-93140, Bondy, France.

**Les Sols et les Ressources en Terres du Nord-Cameroun.** P. Brabant et M. Gavaud. ORSTOM Notice Explicative No. 103 et Cartes. ORSTOM, Paris, 1985. 285 p. et cartes. ISBN 2-7099-0776-3.

La carte des sols à 1:500000 du Nord-Cameroun couvre 82.500 km<sup>2</sup> au nord du 8° parallèle. Elle fait la synthèse de 30 années de cartographie d'inventaire à moyenne échelle, qui a été complétée par des études détaillées de toposéquences et par des travaux extensifs de corrélation dans le bassin tchadien.

Elle répond à la nécessité de préserver et de systématiser une information pédologique abondante mais diffuse, de constituer de façon rigoureuse un ensemble de données nécessaire à l'inventaire des sols et à l'évaluation des terres tant au niveau national que régional.

La Carte des Sols est commentée dans une notice qui décrit l'environnement, la nature des horizons, les catégories de sols, la géographie des sols et les 160 unités cartographiques.

La description de la couverture pédologique est basée sur le principe suivant: un sol est une association ordonnée de volumes de matériaux qui ont des propriétés relativement constantes et qui existent en nombre limité. Ces volumes sont emboîtés ou juxtaposés de façon définie. Ce principe est particulièrement bien adapté au Nord-Cameroun où les régularités d'organisation des sols peuvent être reliées à celles du milieu.

La description s'effectue à 4 niveaux successifs:

1. Les horizons. On a défini 23 types d'horizons.
2. Les Sols. Les horizons s'associent en nombre et en ordre relativement constants. Les diverses combinaisons observées se limitent à 12 qui sont dénommées 'catégories de sols', représentées chacune par une coupe schématique de dimension variable et regroupées sur une planche en couleurs.

La plupart des catégories de sols sont découpées en compartiments verticaux dits 'séries cartographiques'. Celles-ci sont dénommées dans un langage qui utilise la terminologie de la classification CPCS ou du système FAO. C'est cette dénomination qui est reportée sur la légende de la carte des sols en fonction de l'extension spatiale relative des séries dans les catégories de sols.

3. Les unités cartographiques. Les 60 unités cartographiques de la légende de la carte des sols sont définies d'abord par le nombre de catégories de sols qui les constituent. Ce nombre est souvent limité à 2, parfois à 1 seul. Ensuite elles sont caractérisées par le modelé, ce matériau originel et la végétation, par la situation climatique et topographique générale (donc par l'histoire), par des précisions sur l'organisation et la constitution des horizons, ainsi que sur l'extension spatiale des séries cartographiques.

Ces unités cartographiques constituent la base concrète de cet ouvrage: chacune d'entre elles est décrite dans une fiche monographique complète: référence, identification, milieu, sols, régime hydrique, contraintes, aptitudes et occupation actuelle.

4. Les paysages pédologiques. Ce niveau d'analyse est nécessaire pour exprimer la distribution géographique des sols; mais il n'est que brièvement traité parce que les découpages effectués sont tributaires des hypothèses retenues sur la genèse des sols.

La Carte de Ressources en Terres (et sa légende) valorise les données de la carte des sols en les interprétant, en les quantifiant et en répartissant les terres dans 24 classes, constituant 5 groupes de qualité décroissante.

Le classement des terres est établi surtout à partir des propriétés physiques des sols, de leur régime hydrique, de leur état actuel de conservation et du risque de dégradation s'ils sont cultivés.

La légende indique la superficie, en hectares, de chaque classe, les principaux facteurs limitants pour la mise en valeur et le type d'utilisation le mieux adapté aux conditions actuelles: agriculture pluviale ou irriguée, élevage, arboriculture, reboisement, etc. D'autres indications sont données sur l'extension des zones agroclimatiques, sur la répartition des glossines, sur les surfaces cultivées et actuellement dégradées.

Les Contraintes et les Aptitudes des Terres sont définies dans un fascicule où chaque classe de terre est traitée de manière détaillée: précision sur les localisations et les surfaces, sur les contraintes physiques, chimiques et hydriques; aptitude pour l'agriculture pluviale et irriguée, pour le pâturage ou d'autres aménagements.

*Ordres à:* Editions de l'ORSTOM, 70-74, route d'Aulnay, F-93140, Bondy, France.

**Humus Acids of Soils.** D. S. Orlov. Russian Translation Series 35. A. A. Balkema, Rotterdam, 1985, 378 p. ISBN 90-6191-453-1. Translation of Gumusovye Kisloty Pochv, Moscow Univ. Publ., 1972, by Dr. V. Kothekekar.

Humus acids (Humussäure in German) are known to occur widely in soils, peats, and natural waters. Soil fertility, migration and accumulation of minerals in natural landscapes, and mineral nutrition of plants are all associated with these acids. In recent times they have been used in industry and medicine.

This book provides a survey of numerous experimental studies by the author in the Laboratory of Biochemistry of Soil Organic Matter, in Moscow. It also covers the most important Soviet and foreign studies on the subject.

*Price:* Dfl. 85.00; US\$ 28.50; £ 21.00.

*Orders to:* A. A. Balkema, P. O. Box 1675, 3000 BR Rotterdam, The Netherlands; or: A. A. Balkema, P. O. Box 230, Accord, MA 02018, U.S.A.

**Soil Physics and Rice.** International Rice Research Institute, Los Banos, 1985, 430 p. ISBN 971-104-146-4.

Asian lowlands have for many centuries produced enough rice for very large populations. Recently, food production has increased slightly more rapidly than population growth. Increases were through combinations of expanded irrigation, high yielding varieties, chemical fertilizers, and cropping intensification. However, they will not necessarily continue. The recent increases were primarily from lands with fertile soil and favorable climate. There are few opportunities for developing new land. Rice and other crops must now be grown where water is not well controlled, soils are less fertile, or there are physical constraints such as compacted soil layers. To increase production in these areas will be difficult.

In Africa and parts of South America, population growth exceeds increases in food production. Governments in those continents are looking increasingly to rice and rice-based cropping systems for the extra food that they need now and shall need more pressingly in the future. As in Asia, there are soil physical constraints to rapid, large-scale expansion of production from rice-based systems.

Thus, with a world demand for rice that is expected to grow by an annual 3% for the next 15 years, it is essential that improved soil and water management methods be developed and adopted for ricelands, both to increase food production and to avoid soil erosion and degradation.

These issues and problems were addressed in a workshop at IRRRI, in December 1984. This book has 26 papers and a number of poster presentations.

The participants concluded that there is substantial potential for developing practical technologies to increase yields from lowlands. Applied research on physical aspects of soil management that now limit food production is a key component in developing those technologies. A series of recommendations conclude this timely book.

*Price:* US \$ 16.70 plus postage; lower for developing countries.

*Orders to:* IRRRI, P.O. Box 933, Manila, Philippines.

**Recent Investigations in the Zone of Aeration.** Two volumes. P. Udfluft, B. Merkel and K. -H. Prösl, editors, Dept. of Hydrogeology and Hydrochemistry, Technical University of Munich, Fed. Rep. of Germany, 1984, 892 p.

These volumes contain the Proceedings of the International Symposium, held in Munich in October 1984. All groundwater has its origin in the precipitation which partly percolates through the unsaturated zone down towards aquifers. During this seepage process evident changes in the water composition take place.

In the last few years has the unsaturated zone began to play an increasingly important role in water research. This thin layer varies in thickness between a few decimeters and tens of meters and its composition is dependant on climate, geology and vegetation as well on the biological, physical and chemical processes which take place within it. All reactions which occur in this system are dominated by the interaction between the three phases solid, liquid and gas. Changes in any one phase have a direct or indirect effect on the other phases. These reactions determine the composition of the arising groundwater and its usability in the vital functions as drinking water and as the basis of plan growth.

The balance in the natural system has been seriously impaired by human influences through agriculture and forestry as well as urban and industrial development. The population growth in many areas of the earth is increasing this threat to the quality of groundwater reserves. Therefore ever more often conflicts occur between agricultural and industrial measures and the unquestionable need for water protection.

The conflicts are especially important in semi-arid regions where water is already a limiting factor for any further development. About 85% of all soil on the earth is either too dry for use in agriculture or is threatened by salinization and erosion.

By contrast, in regions with a temperate climate, seepage is directed towards the groundwater surface. Here scientific studies deal mainly with sorption phenomena of soil and protection from inorganic and organic contaminants which after passing through the unsaturated zone either infiltrate into the groundwater or are expelled directly into surface water.

A look at the large number of scientific presentations at this symposium gives a good idea of the present problems with which the interdisciplinary research in this field deals with. The wide range of problems in environmental protection will continue to receive increasing attention in the future.

The volumes contain papers in the following sections: principles (3 papers), investigations on regional problems (12 papers), water movement (22 papers), microbiology (6 papers), hydrochemical and transport phenomena (16 papers), and land use and irrigation (22 papers).

*Orders to:* Department of Hydrogeology and Hydrochemistry, Technical University of Munich, Marchioninistrasse 17, D-8000 München 70, Fed. Rep. of Germany.



**The Mangrove Ecosystem: Research Methods.** Monographs on Oceanographic Methodology. S. C. Snedaker and J. G. Snedaker, editors. Unesco, Paris, 1984, xiii + 251 p. ISBN 92-3-102181-8.

Mangroves and mangrove forests along most tropical shorelines have attracted man's curiosity from the earliest times and the literature now exceeds 7,000 titles. In spite of this long history and abundant recorded knowledge, it was not until the 1970s that man began to understand and appreciate the role of this unique vegetation. Now in the 1980s we see mangroves being protected or managed in many areas of the world, for the fisheries they support, the forest products they yield and the stability they contribute to the coastal zone. Yet, at the same time, mangroves and mangrove forests are being destroyed for reasons which are frequently illogical.

Because of the rapidly developing interest in mangroves, scientists throughout the world in universities, government agencies and philanthropic institutions are making an increasing commitment to broaden our knowledge of this biological community. Unesco and the Scientific Committee on Oceanic Research (SCOR) have made a similar commitment to support the scientific community by assisting it in the pursuit of this goal. One of the key steps is the creation of this volume, which has been prepared to provide a general understanding of the mangrove ecosystem and to review and recommend basic research procedures in the study of the ecosystem. The volume represents a current consensus of worldwide scientific opinion on the relevant directions for new research, and on the methods and techniques which might be helpful in acquiring new knowledge. Furthermore, it is hoped that the worldwide availability of this volume will encourage scientific communication and co-operation.

*Orders to:* see below.

**Biotechnologies: challenges and promises.** A. Sasson. Unesco, Paris, 1984, 315 p. ISBN 92-3-102091-9.

Biotechnologies include all the processes of transformation of renewable raw materials as well as those of production by microbial, animal and plant-cell cultures of a wide variety of substances useful to man. The perfecting of these biotechnologies and their development as a result of recent discoveries in molecular biology, will induce profound changes at the economic and social levels because the bio-industrial applications foreseen involve agricultural production and nutrition, the cure and prevention of diseases, the meeting of energy needs and environmental preservation.

The spectacular progress of biotechnologies in the numerous areas of use for the benefit of mankind is full of promises, and international co-operation will play a major role in realizing these promises. Such co-operation does contribute to the development and dissemination of new knowledge in the basic disciplines that support the progress of biotechnologies, as well as to the dissemination of technological innovations. Unesco's activities aim at developing such co-operation and at strengthening national programmes of research, training, and application in the field of biotechnologies.

This book, written to appeal to a wide audience, brings valuable information to all those who wish to be informed about the various aspects of a dynamic and promising area of science and technology. It also endeavours to present the conflicting interests, problems and challenges which, as is the case for other rapidly evolving technologies, are raised by biotechnologies in their industrial development, their transfer to less privileged countries and their adaptation to various economic, social and cultural situations.

*Price:* FF 85.00

*Orders to:* Unesco National Distributors around the world, or, in case of difficulties: Unesco Press, 7 place de Fontenoy, F-75700 Paris, France.

**An overview of Upland Rice Research.** Proceedings of the 1982 Bouaké, Ivory Coast Upland Rice Workshop. International Rice Research Institute, Los Banos, 1984, 566 p. ISBN 971-104-121-9.

In Africa and Latin America, most rice is grown in upland culture similar to other cereals. In Asia, although rice is predominantly produced in wetland conditions and flooded for most of the growth period, 11 million hectares of upland rice is grown. This hectareage, and the 2 million hectares in Africa and 6 million hectares in Latin America total 19 million hectares of about 12% of the world's rice area. Upland rice yields are low, they account for only 5% of world production. Even so, upland rice is important because for upland rice growers, mostly subsistence farmers, among the poorest of the poor, and with few alternate sources of food, rice constitutes a significant part of their diet.

In the last 15 years, lowland rice yields have improved substantially while those of upland rice have remained about the same. Less research has been done on upland rice which has more diverse production problems although not necessarily more difficult ones.

To review the present state of knowledge and current research activities, base line papers on upland rice production in all continent were produced. Furthermore, the book contains papers on environmental characterization and classification (8 papers), plant protection (6 papers), soil and crop management (4 papers), varietal improvement (7 papers), cropping systems (6 papers); and a paper on an international network for rice testing and evaluation.

*Price:* US \$ 31.30 plus postage, lower for developing countries.

*Orders to:* IRRRI, P.O. Box 933, Manila, Philippines.

**Solute Processes.** S. T. Trudgill, editor. John Wiley & Sons, Chichester, New York, Brisbane, 1986, xv + 509 p. ISBN 0-471-90819-3.

This is the fifth book in the present series on Landscape Systems. Each is intended to present the state of the art in a topic related to the earth's surface, in its natural state and as modified by man. Like other volumes in the series, the present one has been written by a number of authors, each of whom is contributing within his own specialist field, but within the context of an overall editorial framework to guarantee proper coverage of the subject at the current research level. This approach provides a comprehensive high level textbook written by acknowledged experts, revealing current controversy and current research directions without needless duplication. The series covers topics in geomorphology, but is almost equally relevant to hydrology, soil science, agriculture and forestry.

The concern of the present volume is with solute processes in the environment with special emphasis on the geomorphological context. In the existing literature there is a noticeable gap between the treatments of aqueous chemistry from a chemist's point of view and the work of those who study solute movements and losses in the field. The chemist's work tends to be more rigorous but it is not always applicable to the understanding of field situations. On the other hand, field data on solute mobility at the catchment scale may reflect the operation of natural processes but the data may not always be easy to interpret in terms of theory or in terms of discriminating between the complexities of the sources. In addition, there is also a gap between short-term field studies of solute movement and studies of longer-term landform evolution. The aims of this book are to consider the fundamental models of solute movement, to review the work on field observations and to assess the attempts at applying both of these to the study of landforms. The bringing together of these aspects represents a substantial challenge: the book is not able to provide comprehensive, definitive answers in many cases, but it is able to review the problems and the state of the art.

The focus of the book is a geomorphological one, concerned ultimately with the way in which solute processes interact with and help to produce landforms. The interactions with the wider aspects of environmental and biological systems are also considered. Fundamental theory is considered, and there are assessments of solute processes in rock, soil, vegetation, atmospheric, runoff and fluvial systems. The points of view include assessments of overall budgets, biological regulation of solute flow, soil processes, groundwater processes and models of landform evolution, together with assessments of possibilities and requirements for future work.

*Price:* £ 40.00.

*Orders to:* John Wiley & Sons, Baffins Lane, Chichester, West Sussex, England P019 1UD; or: 605 Third Avenue, New York, NY 10016, U.S.A.

**Water Quality for Agriculture.** FAO Irrigation and Drainage Paper 29, Revision I. R.S. Ayers and D. W. Westcot. FAO, Rome, 1985, 174 p. ISBN 92-5-1022-63-1.

The same title was first published in 1976 as Irrigation and Drainage Paper 29. Although many of the basic concepts of salinity control and dealing with poor quality water remain the same, new data and experience have prompted to revise the 1976 paper in order to keep the user up-to-date.

The document is now presented as a field guide for evaluating the suitability of water for irrigation. Included are suggestions for obtaining maximum utilization of an existing or potential supply. Guideline values given identify a potential problem water based on possible restrictions in use related to 1) salinity, 2) rate of water infiltration into the soil, 3) a specific ion toxicity, or 4) to some other miscellaneous effects. Discussions and examples are given along with possible management alternatives to deal with these potential problems.

This paper is intended to provide guidance to farm and project managers, consultants and engineers in evaluating and identifying potential problems related to water quality. It discusses possible restrictions on the use of the water and presents management options which may assist in farm or project management, planning and operation. The guidelines and discussions are based on reported experiences gained from many farm areas throughout the world, mostly in arid and semi-arid areas. The guidelines can indicate potential problems and possible restrictions on use of the water but the true suitability of a given water depends on the specific conditions of use and on the management capability of the user. The guidelines should be useful in placing water quality effects in perspective with the other factors affecting crop production, the ultimate goal being to obtain maximum production per unit of available water.

*Orders to:* authorized FAO Sales Agent, or, in case of difficulties, Distribution and Sales Section, FAO,

**Assessment of Nitrogen Fertilizer Requirement.** J. J. Neeteson and K. Ditz, editors. Institute for Soil Fertility, Haren and Netherlands Fertilizer Institute, The Hague. Institute for Soil Fertility, Haren, 1985, 168 p.

This publication contains the proceedings of the Second Meeting of the NW European Study Group for the Assessment of Nitrogen Fertilizer Requirement, held at Haren, May 1984. In all, 15 papers are included, preceded by a report on the meeting, in which the progress and changes in the emphasis in research in the two years since the first meeting are outlined.

*Price:* Dfl. 40.00

*Orders to:* Institute for Soil Fertility (IB), P.O. Box 30003, 9750 RA Haren, The Netherlands.

**Indigenous Agricultural Revolution. Ecology and food production in West Africa.** P. Richards. Westview, Boulder/Hutchinson, London, 1985, 192 p. ISBN 0-8133-0266-8 (cased, U.S.A. ed.) 0-09-161320-5 (cased, U.K. ed.); 0-09-161321-3 (paperback, U.K. ed.).

This book argues forcefully and practically for a new relationship between science and the small farmer.

Current agricultural research operates on the basis of a 'top-down' approach. Improved methods are developed according to first principles, and agricultural extension workers teach farmers how they might best approximate in their farming practice to the ideal 'best method'. This plan breaks down for logistical reasons. The farmers are too numerous, the extension workers too few. Transport difficulties are great. Local conditions vary enormously. 'Improved' inputs are scarce, expensive, and often unavailable when needed.

Instead we should start with what is there already. Scientific research should seek out changes already taking place within the smallholder farming sector and aim to build upon the best of these local initiatives.

Drawing on his experience of West Africa, the author demonstrates that many of the most successful *innovation in food-crop production over the last fifty years or so have indigenous roots. There should be less emphasis on 'teaching' farmers how to farm and supplying 'improved' inputs, and more emphasis on how to foster and support local adaptation and inventiveness.*

This publication is central reading for students of agriculture, agricultural extension, environmental studies and rural development, and for practitioners and researchers working for relief and development agencies. Although the immediate frame of reference is West Africa, many of the issues raised are of crucial relevance to everyone concerned in and by Third World rural development.

Price: £ 12.95.

Orders to: Hutchinson Education, Brookmount House, 62/65 Chandos Place, Covent Garden, London, England WC2N 4HG; or: Westview Press, 5500 Central Avenue, Boulder, CO 80301, U.S.A.

**Remote Sensing Manual of Tanzania.** R. B. King. Land Resources Development Centre, Tolworth Tower in association with the Institute of Resource Assessment, University of Dar es Salaam. LRDC, Tolworth Tower, 1984, x + 206 p. ISBN 0-86182-005-3.

Remote sensing is a fast-moving technology, of which most of the literature is primarily about and originates from America and Europe.

During a remote sensing teaching workshop at the Bureau of Resource Assessment and Land Use Planning of the University of Dar es Salaam in 1979, delegates decided that Tanzania needed a manual specifically related to local conditions. The manual would concentrate on the Tanzanian environment, both with regard to imagery and the means of obtaining such imagery, but would have a much wider value than for Tanzania alone. Although all the examples in the manual would be of Tanzania, environmental scientists in other parts of the tropics, particularly in African countries, would find the examples and discussion more relevant to their physical and socioeconomic environment than many current textbooks.

The present manual begins with a brief introduction to the various aspects of remote sensing to give the reader an indication of the breadth of the subject, but the main parts of the manual concentrate on aerial photography and satellite imagery. Part 2 explains the basic principles of aerial photography, how it can be obtained, and how information can be interpreted from it. Part 3 details the basic principles of the Landsat satellite series, what imagery is available of Tanzania, how Tanzanian Landsat imagery can be interpreted, and a review of its practical uses. It concludes with a section on image processing. Both Parts 2 and 3 contain examples of Tanzanian annotated imagery. Part 4 describes the present state of satellite technology as it affects Tanzania, and Part 5 discussed future remote sensing satellites.

The manual ends with a detailed glossary of all technical terms used in it, but it will also be of use to readers confronted with remote sensing terminology from other sources.

Price £ 15.00.

Orders to: Publications Unit, LRDC, Tolworth Tower, Surbiton, Surrey, England KT6 7DY.

**Advances in Soil Research in Malaysia.** A. M. Mokhtaruddin, J. Shamshuddin, H. Aminuddin and W. T. Chow, editors. Pernebit Univ. Pertanian Malaysia, 1985, 361 p. ISBN 967-9952-25-8.

This publication presents the proceedings of the Technical Workshop on Soil Science held in Serdang in November 1983. The workshop was jointly organised by Universiti Pertanian Malaysia, Department of Agriculture and the Technical Co-operation Section of the Belgian Embassy in conjunction with the termination of the UPM-Belgium Technical Co-operation Programme. The workshop marked the end of a long period of collaborative research between the State University of Ghent and UPM's Soil Science Department that had extended over nine years.

Articles in this book summarise an indepth study of some of the current physico-chemical problems taking place in soils affecting crop growth. Aspects of soil science covered in the book include soil physics (4 papers), soil chemistry and soil fertility (6 papers), soil mineralogy (4 papers) and soil survey and classification (3 papers). Thus the book is of great value to everyone involved and/or interested in the problems of tropical soils.

Orders to: UPM Press, attn. Ms. S. Pillai, Serdang, Selangor, Malaysia.

**Soil Cutting and Tillage.** Developments in Agricultural Engineering 7. E. McKyes. Elsevier Science Publishers, Amsterdam, Oxford, New York, Tokyo, 1985, vii + 217 p. ISBN 0-444-42548-9 (this volume); 0-444-41940-3 (series).

After giving a brief history of tillage practices and implements used throughout the world dating back to ancient times, this book goes on to describe the basic soil mechanics techniques needed to calculate the forces developed in soil by simple-shaped cutting tools. The methods of measuring soil mechanical properties, water pressure in soil and shear rate effects are touched upon. A review is given of two and three dimensional soil cutting mathematical mechanics models to predict soil cutting forces and soil volumes disturbed by cutting and tillage tools, as well as the state of the art of soil loosening, structural rearrangement and plant growth as affected by tillage tools.

There are many numerical examples of mechanical analyses and predictions worked out in the various sections of the book as well as numerous unsolved problems at the end of a number of the chapters.

Written in a textbook style, this monograph is ideal for anyone wanting to learn modern techniques for the mechanical description of soil cutting and tillage forces and soil volumes disturbed. It also provides a reference for analytical formulae and calculated forces. It will be of interest to universities and colleges which have agricultural engineering programs, civil and mechanical engineering schools which specialize in soil mechanics and construction machinery as well as to research stations with interests in soil tillage, soil physics, etc.

*Price:* US\$ 53.75 or Dfl. 145.00.

*Orders to:* Elsevier Science Publishers, P.O. Box 211, 1000 AE Amsterdam, The Netherlands. In U.S.A. and Canada: Elsevier Science Publ. Comp., P.O. Box 1663, Grand Central Station, New York, NY 10163, U.S.A.

**Physical Chemistry of Paddy Soils.** Yu Tian-ren, editor, Science Press, Beijing and Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1985, 217 p. ISBN 3-540-13001-2 (German ed.)/0-387-13001-2 (U.S.A. ed.).

This book is a monograph dealing with the interactions among charged particles (electrons, protons, ions, colloids), the most active components of paddy soil, and their chemical consequences. Starting from the characteristics of paddy soil, special attention (five chapters) is paid to electron transfer, that is, redox reactions. The intensity factor (redox potential) and capacity factor (amount of reducing substances) of redox property followed by individual redox systems (oxygen, iron, manganese, sulfur) are discussed. The second part (three chapters) consisting of ion adsorption, acidity and electrical conductance, deals with the interactions between colloidal particles and ions or proton. The third part (two chapters) presents the applied aspects of soil physical chemistry, namely physico-chemical properties of paddy soil in relation to soil genesis and plant growth.

In each chapter, except for a minimum of space on basic principles, discussions are based chiefly on results of research work carried out in the Department of Soil Electrochemistry, Institute of Soil Science, Academia Sinica, Beijing, People's Republic of China, during the last three decades. Many of the results were obtained with unique methods developed by the authors. The book may serve as a valuable reference for scientists in soil as well as in related fields, such as agronomy and colloidal chemistry.

*Price:* DM 150.00, cloth.

*Orders to:* In the People's Rep. of China: Science Press, Beijing, People's Republic of China. Elsewhere: Springer-Verlag, Heidelberger Platz 3, Postfach, D-1000 Berlin, Fed. Rep. of Germany; or: Springer-Verlag, 175 Fifth Avenue, New York, NY 10010, U.S.A.

**Excerpts from the Circular Letters of ICOMLAC** (International Committee on Low Activity Clays). Frank R. Moormann. Soil Management Support Services Technical Monograph 8. SMSS, Washington, 1985, 228 p.

Though Soil Taxonomy was published in 1975, the full text was already complete in 1970 and distributed internationally. The final version contained only minor changes. Even at the time of publication, it was recognized that the classification of the soils of the tropics was less than satisfactory. It was clear that for Soil Taxonomy to be a viable system, it had to be continuously updated as knowledge grew.

By 1975 many soil scientists felt that the Alfisols and Ultisols in the intertropical areas were too narrowly classified, confined to mainly the oxic subgroups. There was a general feeling that some taxa of this category could be upgraded with a concomitant need for new subgroups.

In 1975, an international committee (ICOMLAC) was constituted to study and discuss the classification of soils with a clay mineralogy characterized by a low cation exchange capacity because of the dominance, in the clay fraction, of minerals with a low permanent charge (constant surface charge) and a relatively high pH-dependent charge (constant surface potential). In the course of the committee's work, the mandate was narrowed down to the soil orders of Alfisols and Ultisols. The present volume contains pertinent section of the committee's circular letters, which were the main vehicle for recording the wide ranging discussions. Reprinting of the circular letters which were issued between July 1975 and February 1981, was considered worthwhile for several reasons. First, only a limited number of circular letters were printed, a number which bore no relation to the demand for information which has developed since the committee's inception. Second, this collection of the circular letters offers a fair idea of the problems involved in changing Soil Taxonomy, and the way these problems were addressed by the committee and the collaborating scientists. Third,

the collection has historical value and may serve as an example of a group exercise in soil classification, with its attendant merits and faults clearly shown.

*Requests to:* Dr. H. Eswaran, SMSS Program Leader, USDA/SCS, P.O. Box 2890, Washington, DC 20013, U.S.A.; or: country mission offices of the Agency for International Development (AID).

**Soil Physics with Basic. Transport Models for Soil-Plant Systems.** Developments in Soil Science 14. G. S. Campbell. Elsevier Science Publishers, Amsterdam, Oxford, New York, Tokyo, 1985, 150 p. ISBN 0-444-42557-8 (this volume), 0-444-40882-7 (series).

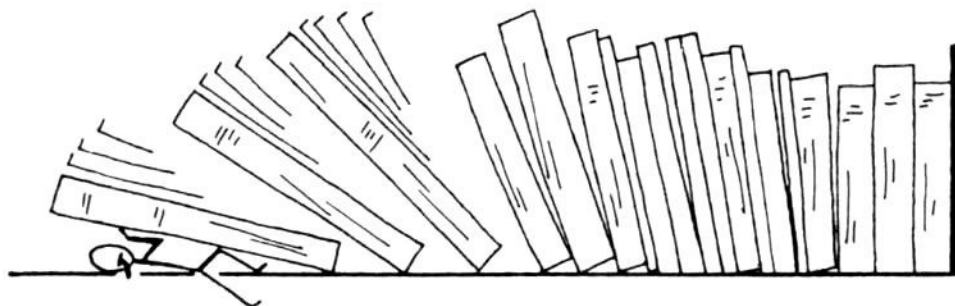
This book covers material taught in a graduate-level soil physics course at Washington State University. While most soil physics courses dwell mainly on deriving rather than solving the differential equations for transport, the author's approach is to focus on solutions. Graduate students in agricultural and biological sciences usually have a good working knowledge of algebra and calculus, but not of differential equations. In order to teach methods for solving very difficult differential equations with difficult boundary conditions using fairly simple mathematical tools, the author uses numerical procedures on microcomputers to solve the differential equations. Numerical methods convert differential equations into algebraic equations which can be solved using conventional methods of linear algebra.

This book reflects the philosophy used in the course. Each chapter introduces soil physics concepts, generally in the conventional way. Most chapters then go on to develop simple computer programs to solve the equations and illustrate the points made in the discussion. Problems at the end of each chapter help the reader practice using the concepts introduced in the chapter. The problems and computer programs are an integral part of the presentation, and readers are strongly encouraged to experiment with each model until both the working of the model and the concepts it teaches are familiar. Although the programs are generally short and relatively simple, they are suitable for use as submodels in large, general-purpose models of the soil-plant-atmosphere system, and have been used in this way by the author and by several of his students. The programs in the book are also available on diskette for use on Apple II series (operating system DOS 3.3) and IBM-PC (operating system PC-DOS 2.0 and later). The diskette programs have all been independently tested and can be copied and modified to include additional design requirements according to the user's specific needs.

Teachers and students alike will welcome this new textbook. It will enable graduate students to understand and solve transport problems which exist in field situations, and will provide them with a good working knowledge of soil physics – fundamental to so many other areas in soil, plant and engineering sciences.

*Prices:* Volume: US\$ 41.50; Dfl. 120.00. Diskette: US\$ 31.00; Dfl. 90.00.

*Orders to:* Elsevier Science Publishers, P.O. Box 211, 1000 AE Amsterdam, The Netherlands. In U.S.A. and Canada: Elsevier Science Publ. Comp., 52, Vanderbilt Avenue, New York, NY 10017, U.S.A.



## New Journals/Nouveaux Périodiques/Neue Zeitschifte

**Agrotechnology Transfer.** International Benchmark Sites Network for Agrotechnology Transfer (IBSNAT) and Soil Management Support Service (SMSS), Honolulu. V. L. Pecsok, managing editor. ISSN 0883-8631.

This new newsletter combines the Benchmark Sites News and Soil Taxonomy News. It will be preserving the information content of these two earlier newsletters and, in addition, demonstrate how the quality and content of a single publication can be made larger than the sum of its former parts.

Agrotechnology Transfer was created to alter the concept of research and technical assistance in this larger system by taking advantage of the power which information technology brings to agricultural development programs. For the first time tools are available that offer developing countries and their institutions the capacity to respond quickly and effectively to rapidly changing conditions.

Agrotechnology Transfer not only aims to report progress of the IBSNAT and SMSS projects, but also intends to report successes achieved through shared efforts of related development projects.

*Requests to:* IBSNAT Project/SMSS, College of Tropical Agriculture and Human Resources, Dept. of Agronomy and Soil Science, 2500 Dole Street, Krauss 21, Honolulu, Hawaii 96822.

**Applied Geochemistry.** Journal of the International Association of Geochemistry and Cosmochemistry. B. Hitchon, executive editor. Bi-monthly. Pergamon Press, New York, Oxford. ISSN 0883-2927.

Some of the wide range of topics to be covered are: the search for energy resources such as petroleum, natural gas, geothermal energy, oil shales, tar sands and coal, as well as uranium; the search for mineral resources including metallic and non-metallic minerals; the upgrading of energy and mineral resources where there is a direct geochemical application, e.g. water-rock interaction during in situ recovery of tar sands; the use of geochemical knowledge for the protection of the environment from pollution; medical geochemistry, or the association of diseases (human health) with, for example, trace elements in soils and water; agricultural aspects of geochemistry, e.g. association of growth with trace elements in soils and water.

It is intended that each article will have some practical application to an aspect of human endeavour, such as the search for resources, preservation of the environment, agriculture of health. No field of geochemistry is excluded because all fields can be applied in any given circumstance. Articles on inorganic, organic and isotope applications will therefore be accepted, provided they have a practical application.

*Subscription price:* (1986) Institutional rate US\$ 95.00; individual rate US\$ 35.00.

*Orders to:* Pergamon Press, Fairview Park, Elmsford Park, Elmsford, NY 10523, U.S.A.; or: Headington Hill Hall, Oxford, England OX3 0BW.

**Journal of Coastal Research.** An International Forum for the Littoral Sciences. C. W. Finkl, Jr., editor-in-chief. The Coastal Education and Research Foundation, Fort Lauderdale. Quarterly. ISSN 0749-0208.

This new journal is dedicated to all aspects of coastal research. These include geology, biology, geomorphology (physical geography), climate, littoral oceanography, hydrography, coastal hydraulics, environmental (resource) management, engineering, and remote sensing. Although each field functions effectively within its own purview, the cross-disciplinary nature of coastal studies requires familiarity with other fields as well. Hence, the scope of topics is necessarily broad in order to address the complexity of coastal biophysical and socio-economic interactions. Because of the wide range of interrelated topics, the journal invites original contributions and manuscripts dealing with theory, methodology, techniques, and field or applied topic studies on interdisciplinary control issues.

The journal encourages the dissemination of knowledge and understanding of the coastal zone by promoting cooperation and communication between specialists in different disciplines. Natural scientists, for example, are encouraged to collaborate with professionals in other fields to prepare contributions relating to the coastal zone that foster increased appreciation of coastal environments and processes. By means of this journal, with its scholarly and professional papers, systematic review articles, book and symposia reviews, communications and news, and special topical issues, an international forum for the development of integrated coastal research is provided.

*Subscription price:* Institutional US\$ 60.00; personal US\$ 50.00, plus postage.

*Orders to:* Dr. C. W. Finkl, Jr., P.O. Box 2473, Fort Lauderdale, FL 33303, U.S.A.

**Powder Diffraction. An international journal of materials characterization.** Quarterly. D. K. Smith, Editor-in-Chief. JCPDS-International Centre for Diffraction Data, Swarthmore. ISSN 0885-7156.

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**Journal of Contaminant Hydrology.** R. W. Gillham, G. Matthess, P. L. McCarty and P. S. C. Rao, editors. Elsevier, Amsterdam. ISSN 0169-7722.

This new international journal will publish scientific articles pertaining to the contamination of groundwater, thus providing a common forum for a diverse group of scientists involved in investigations of groundwater contamination.

Emphasis will be on investigations of the physical, chemical, and biological processes that influence the behavior of organic and inorganic contaminants in both the unsaturated (vadose) and the saturated zones. Articles on contamination of surface water will not be included unless they specifically deal with the link between surface and groundwater.

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**Applied Agricultural Research.** J. D. Oster, editor-in-chief. Springer-Verlag, Berlin.

Agriculture was the occupation of most who ever lived and remains so today. Only during the last century has it been possible for large numbers of people in some countries to take up other pursuits knowing their supply of daily food and fiber is assured. This fundamental change in contemporary civilization has been made possible by widespread information exchanges and application of agricultural research. Traditionally these have been most effective on the state and regional level. This new journal is dedicated to facilitating the exchange of current, new and innovative agricultural practices across regional and international boundaries.

The traditional researcher provides us with a wealth of knowledge regarding the basic concepts and principles of agricultural management for enhanced productivity. The extension specialist, farm advisor, experiment station superintendent, farm manager, private consultant and other researchers often need a more specific presentation of how to actually apply such concepts in the field. The present review journal promotes the publication of these types of 'how to' articles. It publishes tutorial and conceptual articles as a forum for dealing with contemporary issues stemming from basic principles or published research reports, as well as new research findings of immediate applicability. The objective is to convey information that can be used by people unfamiliar with a specific area or raise sufficient interest to pursue it further by themselves or with the help of others.

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*Subscription price:* (1987) Volume 1, 5 issues, DM 281.00 + forwarding charges.

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**Current Titles in Ocean, Coastal, Lake & Waterway Sciences** – Reader's Information Bulletin and Service RIBS. C. W. Finkle, Jr. and R. W. Fairbridge, editors. Coastal Education and Research Foundation, Fort Lauderdale.

The Coastal Education and Research Foundation is dedicated to the advancement of the coastal sciences. The present new Reader's Information Bulletin and Service compiles facsimile reproductions of tables of contents from important research and applied-science journals. The bulletin includes titles in the ocean, coastal, lake and waterway sciences and will be of interest to scientists in oceanography, biology, geology, ecology, marine, climatology, limnology, engineering, resource management, geomorphology and hydrology.

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**Geoarchaeology**, an International Journal. J. Donahue, editor-in-chief. John Wiley & Sons, New York, Brisbane, Chichester. Quarterly.

Serving archaeologists, geologists, geographers, anthropologists, geomorphologists, and soil scientists, this new journal is dedicated to the exploration of the relationships between and among their various disciplines. Focusing primarily on the application of the geological sciences in furthering the interpretation of archaeological materials, the journal also encourages any research, methodology, or broad concept that will promote better understanding of the connections between these fields. The journal focuses on: original research reports on the environmental setting of archaeological sites and material analysis of artifacts.

syntheses discussing broader aspects of geoarchaeology, and on methods papers describing new techniques and equipment. It includes book reviews, meeting notes, professional news and a calendar of events.  
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**MITTEILUNGEN DES IBG-SEKRETARIATS U.D. KASSENVERWALTUNG**

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**There is space for more!**

**ISSS RECEIPTS AND PAYMENTS ACCOUNT** for the period 1 January-December 1985  
 (Treasury and Secretariat General)

Receipts	US\$ (equiv.)	Payments	US\$ (equiv.)
Balance on January 1985		Secretarial assistance	1,990
– secretary general	8,818	Travel and Representation	2,731
– treasurer	10,679	Equipment and Supplies	558
– deposit with saving account	34,940	Registration costs	24
Interest	2,778	Printing	12,392
Congress Services and Conference fees	12,994	Fellows Fund	3,358
Membership fees (incl. life members)	38,162	Bankcharges	280
Subscriptions	1,185	Postal charges	6,865
Sale of books	110	Dollar Equivalents (2)	4,352
Fellows Fund	3,591		
Grant (1)	2,252		
		Balance carried forward	
		cash in bank (3)	
		secretary-general	8,211
		treasurer	28,173
		deposit with savings account	46,575
	115,509		115,509

(1) Contribution by Dutch Soil Survey Institute Stiboka

(2) Fictitious loss of 'dollar equivalents' on the foreign currencies of the balance of January 1984

(3) US dollars, Belgian francs, Dutch guilders and other currencies





ISSS-AISS-IBG

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**Association Internationale de la Science du Sol (AISS)**  
**Internationale Bodenkundliche Gesellschaft (IBG)**

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- I Soil Physics/Physique du sol/Bodenphysik
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- V Soil Genesis, Classification and Cartography/Genèse du sol, classification et cartographie/Bodengenetik Klassifikation und Kartographie
- VI Soil Technology/Technologie du sol/Bodentechnologie
- VII Soil Mineralogy/Minéralogie du sol/Bodenmineralogie

*Subcommissions/Sous-commissions/Subkommissionen*

- A Salt Affected Soils/Sols salins/Salzböden
- B Micromorphology/Micromorphologie/Mikromorphologie
- C Soil Conservation and Environment/Conservation du sol et environnement/Bodenerhaltung und Umwelt

*Working Groups/Groupes de Travail/Arbeitsgruppen*

- FT Soil Fertility Trials/Essais de fertilité des sols/Bodenfruchtbarkeitsproben (Comm. IV)
- DP Soil Information Systems/Informatique en pédologie/Informationssysteme i.d. Bodenkunde (Comm. V)
- DC Desertification/Désertification/Verwüstung (Subcomm. C)
- FS Forest Soils/Sols forestiers/Waldböden (Comm. V)
- RB International Reference Base for Soil Classification/Base internationale de référence pour la classification des sols/Internationale Referenzbasis für Bodenklassifikation (Comm. V)
- PP Paleopedology/Paléopédologie/Paläopedologie (Comm. V, with/avec/mit INQUA)
- RS Remote Sensing for Soil Surveys/Pédologie et Télédétection/Fernerkundung für Bodenkartographie (Comm. V)
- LE Land Evaluation/Evaluation des terres/Landbewertung (Comm. VI)
- CO Soil Colloid Surfaces/Surfaces des colloïdes de sol/Kolloidale Oberflächen in Böden (Comm. II)
- EP *Engineering Properties of Soils/Propriétés constructuelles des sols/Ziviltechnische Eigenschaften von Böden* (Comm. VI)
- AS Acid Sulphate Soils/Sols sulfatés acides/Saure Sulfatböden (Comm. V)
- HP History, Philosophy and Sociology of Soil Science/Histoire, philosophie et sociologie de la science du sol/Geschichte, Philosophie und Soziologie der Bodenkunde (Comm. V)
- MV Moisture Variability of Field Soils/Variabilité en humidité des sols sur le terrain/Veränderlichkeit von Bodenfeuchtegehalt im Gelände (Comm. I)

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**A. Salt affected soils/Sols salins/Salzböden**

Dr. I. P. Abrol, Central Soil Salinity Research Institute, Karnal 132001, Haryana, India

**B. Soil Micromorphology/Micromorphologie du sol/Bodenmikromorphologie**

Prof. Dr. G. Stoops, Geologisch Instituut, Universiteit van Gent, Krijgslaan 271, 9000 Gent, Belgium

**C. Soil Conservation and Environment/Conservation du sol et environnement/Bodenerhaltung und Umwelt**

Dr. K. W. Flach, Soil Conservation Service, U.S. Dept. of Agriculture, P.O. Box 2890, Washington, D.C. 20013, USA

**Working Groups of the Commissions/Groupes de Travail des Commissions/Arbeitsgruppen der Kommissionen – Chairmen/Présidents/Vorsitzende**

**ZO Soil Zoology-Pedofauna/Zoologie du Sol/Bodenzoologie (Comm. III; with/avec/mit IUBS).**

Dr. K. E. Lee, CSIRO Division of Soils, P.B. 2, P.O. Glen Osmond, S.A. 5064, Australia.

**FT Soil Fertility Trials/Essais de fertilité des sols/Bodenfruchtbarkeitsproben (Comm. IV)**

Prof. Dr. E. von Boguslawski, Versuchsstation Rauisch-Holzhausen, Justus-Liebig-Universität Gießen, 3557 Ebsdorfergrund 4, BRD

**DP Soil Information Systems/Informatique en pédologie/Informationssysteme i.d. Bodenkunde (Comm. V)**

Dr. J. Lamp, Institut f. Pflanzenernährung u. Bodenkunde, Oslhausenstrasse 40, D-2300 Kiel 1, BRD.

**DC Desertification/Désertification/Verwüstung (Subcomm. C)**

Prof. Dr. H. E. Dregne, Texas Technical Univ., P.O. Box 4169, Lubbock, TX 79409, USA

**FS Forest Soils/Sols forestiers/Waldböden (Comm. V)**

Dr. R. Saly, Dept. of Soil Science and Geology, Sturova 2, 96001 Zvolen, Czechoslovakia

**RB International Reference Base for soil classification/Base internationale de référence pour la classification des sols/Internationale Referenzbasis für Bodenklassifikation (Comm. V)**

Prof. Dr. E. Schlichting, Institut für Bodenkunde und Standortlehre, Universität Hohenheim, P.O. Box 106, D-7000 Stuttgart-70, BRD

**PP Paleopedology/Paléopédologie/Paläopedologie (Comm. V; with/avec/mit INQUA)**

Prof. Dr. D. H. Yaalon, Department of Geology, Hebrew University, Jerusalem 91000, Israel

**RS Remote Sensing for Soil Surveys/Pédologie et Télédétection/Fernerkundung für Bodenkartographie (Comm. V)**

Dr. S. Bialousz, Ul. Belska, 24M24, 02.638, Varsovie, Poland

**LE Land Evaluation/Evaluation des terres/Landbewertung (Comm. VI)**

Prof. Dr. K. J. Beek, I.T.C., P.O. Box 6, 7500 AA Enschede, Netherlands

**CO Soil Colloid Surfaces/Surfaces des colloïdes de sol/Kolloidale Oberflächen in Böden (Comm. II)**

Prof. Dr. G. H. Bolt, Dept. of Soil Science and Plant Nutrition, Agricultural University, P.O. Box 8005, 6700 EC Wageningen, Netherlands

**EP Engineering Properties of Soils-Pedotechnique/Propriétés constructuelles des sols/Ziviltechnische Eigenschaften von Böden (Comm. VI)**

Dr. G. Wilson, Land Resource Inst. C.E.F., K. W. Neatby Bldg., Ottawa, Ont. K1A 0C6, Canada

**AS Acid Sulphate Soils/Sols sulfatés acides/Saure Sulfatböden (Comm. V)**

Prof. Dr. L. J. Pons, Dept. of Soil Science and Geology, Agric. University, P.O. Box 37, 6700 AA Wageningen, Netherlands

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**MV Moisture Variability of Field Soils/Variabilité en humidité des sols sur le terrain/Veränderlichkeit von Bodenfeuchtegehalt im Gelände (Comm. I)**

Dr. D. R. Nielsen, Dept. of Water Science and Engin., Univ. of California, Davis, CA 95616, USA

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