



bulletin

of the international society of soil science

bulletin

de l'association internationale de la science du sol

mitteilungen

der internationalen bodenkundlichen gesellschaft

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

*(Founded/fondée/gegründet 19-05-1924, 6600 members, residents of/membres, résidents de/Mitglieder, wohnhaft in 132 countries/pays/Ländern)*

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Dr. S. S. Prihar, Dept. of Soils, Punjab Agric. University, Ludhiana 141004, Punjab, India

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Prof. Dr. M. H. B. Hayes, Dept. of Chemistry, Univ. of Birmingham, P.O. Box 363, Birmingham B15-2TT, England

**III. Soil Biology/Biologie du sol/Bodenbiologie**

Prof. P. B. Tinker, Rothamsted Exp. Station, Harpenden, Herts., AL5-2JQ, England

**IV. Soil Fertility and Plant Nutrition/Fertilité du sol et nutrition des plantes/Bodenfruchtbarkeit und Pflanzenernährung**

Dr. N. S. Randhawa, Indian Council of Agric. Research, Krishi Bhavan, New Delhi 110001, India

**V. Soil Genesis, Classification and Cartography/Genèse du sol, classification et cartographie/Bodengenetik, Klassifikation und Kartographie**

Prof. Dr. R. W. Arnold, Soil Conservation Service, U.S. Dept. of Agriculture, P.O. Box 2890, Washington, D.C. 20013, USA.

**VI. Soil Technology/Technologie du sol/Bodentechnologie**

Dr. G. Várallyay, Research Inst. of Soil Science and Agric. Chemistry, Herman Ottó út 15, Budapest 11, Hungary

**VII. Soil Mineralogy/Minéralogie du sol/Bodenmineralogie**

Dr. J. B. Dixon, Soil and Crop Science Dept., Texas A & M Univ., College Station TX 77843, USA

## CONTENTS/SOMMAIRE/INHALT

Announcements of ISSS Meetings <i>Annonces de réunions de l'AISS</i> . . . . .	2
Ankündigung von IBG Tagungen	
Reports of Meetings <i>Comptes-rendus de réunions</i> . . . . .	12
Berichte von Tagungen	
Activities of the Commissions and Working Groups <i>Activités des Commissions et Groupes de travail</i> . . . . .	20
Tätigkeit der Kommissionen und Arbeitsgruppen	
– Subcommission on Soil Conservation and Environment . . . . .	20
– Working Group on an International Reference Base for soil classification . . . . .	24
– Working Group on Soil Information Systems . . . . .	25
– Working Group/Committee on Soil Zoology . . . . .	26
– Commission II, on Interdisciplinary Cooperation . . . . .	28
News from the National and Regional Societies <i>Novelles des Associations nationales et régionales</i> . . . . .	30
Berichte der nationalen und regionalen Gesellschaften	
In Memoriam . . . . .	34
Fifty-five years ago . . . . .	35
The 1:1 million Soil map of the European Communities . . . . .	36
Meetings, Conferences, Symposia <i>Réunions, Conférences, Symposiums</i> . . . . .	39
Tagungen, Konferenzen, Symposien	
International Training Courses <i>Cours internationaux de formation</i> . . . . .	44
Internationale Fortbildungskurse	
The International Foundation for Science . . . . .	45
New Publications <i>Nouvelles Publications</i> . . . . .	47
Neu Veröffentlichungen	
News from the ISSS Secretariat and Treasury <i>Nouvelles du Secrétariat et de la Trésorerie de l'AISS</i> . . . . .	77
Mitteilungen des IBG-Sekretariats und der Kassenverwaltung	



ISSS AISS IBG

## PROGRAMMGESTALTUNG IBG-TAGUNG 13.–20. AUGUST 1986 HAMBURG

Thema: 'Böden – unter steigender Vielfalt und Intensität ihrer Inanspruchnahme –'

### **Vortragstagung:**

Es sind 7 Plenarsitzungen á 1 Stunde jeweils morgens zu Beginn der Sitzungen vorgesehen. Hierin sollen aktuelle Themen und neue Forschungsergebnisse von Experten aus allen Teilen der Welt vorgestellt werden. Ferner sind Symposien zu speziellen Themen geplant, in denen etwa 3 Hauptvorträge diskutiert werden sollen. Die übrige Zeit steht für Kommissionssitzungen (einzeln und gemeinsam) zur Verfügung, die bis zu 60 Vorträge je Kommission umfassen können. Etwa die gleiche Anzahl von Poster Präsentationen wird möglich sein. Die Themenwahl in Symposien und Kommissionssitzungen obliegt dem jeweiligen Kommissionsvorsitzenden.

Sonntag, 17.8.86 wird sitzungsfrei sein. Er ist für Besichtigungen und kleine Fachexkursionen im Nahbereich Hamburgs vorgesehen.

### **Exkursionen:**

Vor-Kongress-Exkursionen von 8 bis 10 Tagen Dauer geben in der Zeit vom 1. bis zum 12. August 1986 in großer zusammenhängender Querschnitts-Route einen Überblick über Bodenlandschaften und Bodennutzung in der Bundesrepublik Deutschland. Sie enden in Hamburg. Nach-Kongress-Exkursionen von 3 bis 6 Tagen Dauer finden parallel in 5 verschiedenen Regionen der Bundesrepublik Deutschland mit unterschiedlichen thematischen Schwerpunkten in der Zeit von 21. bis zum 26. August 1986 statt.

Während der Vortragstagung sind 1-tägige wissenschaftliche und kulturhistorische Exkursionen geplant.

Exkursionen in Oesterreich und in der Schweiz werden in zeitlicher Abstimmung mit dem beschriebenen Programm durchgeführt. Eine Exkursion in den Niederlanden ist im Gespräch.

## PROGRAMME 13TH ISSS CONGRESS, AUGUST 13–20, 1986 HAMBURG

Motto: 'Demands on soils – increasing in variety and diversity'

### **Congress Sessions**

It is foreseen to start the sessions every morning with a one-hour Plenary Session. Herein experts from all over the world will present current themes and latest research results. Further on, Symposia are planned on special themes wherein about three main presentations will be discussed. The rest of the time will be available for single or joint sessions of the commissions. Per commission up to 60 papers might be presented orally. About the same number of poster presentations will be possible. The choice of the themes for symposia and commission sessions will be the responsibility of the



commission chairmen. No sessions will be held on Sunday 17-8-1986, which is reserved for sightseeing and small excursions around Hamburg.

#### **Excursions:**

Precongress excursions of 8 to 10 days are scheduled between 1st and 12th of August 1986. The itinerary will allow a broad view of soil landscapes and soil utilization in the Federal Republic of Germany in large coherent cross sections. They will end in Hamburg.

Postcongress excursions of 3 to 6 days will be held as parallel events with different scientific topics in different regions of the Federal Republic of Germany between 21st and 26th of August 1986.

During the Congress in Hamburg one-day excursions are planned to scientific and cultural-historical points of interest.

Excursions in Austria and Switzerland will be organized in connection with the programme. Furthermore an excursion in the Netherlands is under discussion.

### **PROGRAMME DU CONGRÈS DE L'AISS 13-20 AOÛT 1986 HAMBOURG**

Thème: Les besoins en sols: exigences croissantes en surfaces et en quantités.

#### **Séances de congrès**

Sept séances plnières d'une durée de une heure sont prévues chaque jour en début de sessions. Des spécialistes de renommée internationale présenteront un certain nombre de grands thèmes actuels, ainsi que les résultats de leurs recherches scientifiques.

D'un autre côté, des symposium sur des sujets spécialisés comportant trois communications environ avec discussion générale sont programmés. Tout le reste du temps sera à la disposition des Commissions (en sessions séparés ou conjointes). La présentation de 60 communications sera grosso modo offerte à chacune, auxquelles il faut ajouter un nombre similaire de posters. Le choix des thèmes des Symposium et des sessions des commissions sera effectué par le président de chaque commission. La journée du dimanche 17 août 1986 sera libre; les congressistes pourront ainsi participer à un certain nombre de tours dans le voisinage immédiat de Hambourg.

#### **Excursions:**

Des excursions avant-congrès d'une durée de 8 à 10 jours auront lieu entre le 1er et le 12 août 1986; elles seront consacrées à l'étude des paysages, des sols et de l'utilisation des terres en R.F.A. Ces excursions se termineront à Hambourg.

Des excursions post-congrès d'une durée de 3 à 6 jours et consacrées à des thèmes variés auront lieu du 21 au 26 août 1986 dans 5 régions de la R.F.A.

Pendant la congrès, diverses excursions d'une journée se rapportant aussi bien à des sites d'intérêt pédologique qu'historique seront à la disposition des congressistes.

Enfin, d'autres excursions pourront se dérouler en Autriche et en Suisse. De même, la mise sur pied d'une excursion aux Pays-Bas est actuellement en cours de discussion.

**International Society of Soil Science – Association Française pour l'Etude du Sol**

Announcement  
**SEVENTH INTERNATIONAL WORKING MEETING ON SOIL  
MICROMORPHOLOGY**  
*Paris, France, 8–12 July 1985*

*Venue and Structure*

The meeting will be held at the Institut National Agronomique Paris-Grignon, 16, Rue Claude Bernard, 75005 Paris, France. It is sponsored by the ISSS Sub-commission on Soil Micromorphology, and organised by the French Society of Soil Science.

The meeting will consist of voluntary papers, poster sessions and keynote papers by invited speakers; some of these keynote papers will be selected from voluntary papers.

The official languages are English, French and German.

The deadline for summaries (500 words) is 1st October 1984.

*Scientific Programme*

1. Micromorphology applied to the study of genesis and behaviour of:
  - a. humid tropical soils
  - b. mediterranean and arid soils
  - c. other soils
2. Interactions between living organisms, organic matter, mineral components and fabric of the soil
3. Technical and methodological problems in soil microscopy
4. The applications of micromorphology to the effects of cultivation (in memoriam of A. Jongerius)
5. Relationships between soil fabrics and physical and mechanical behaviour of soils
6. Applications in other fields (archeology, geomorphology, soil mechanics, paleopedology).

*Field Trips*

Midweek excursions in Paris basin.

A pre-meeting excursion in Camargue, Rhône valley and Burgundy.

A post-meeting excursion in western France: Brittany and Bordelais.

*Address*

All correspondence concerning the meeting (attendance; submission of papers; participation in field trips) should be sent to the Secretary-General of the Meeting: N. Fedoroff, INA P-G. Département des Sols, Thiverval-Grignon 78850, France.

**International Society of Soil Science – Bangladesh Society of Soil Science**

Announcement  
**INTERNATIONAL SYMPOSIUM ON SOIL TEST – CROP RESPONSE  
CORRELATION STUDIES**

*Dhaka, Bangladesh, 7–10 February, 1984*

*Structure and Venue*

A meeting of Commission IV of the ISSS in collaboration with the Bangladesh Society of Soil Science will be held at the premises of the Bangladesh Agricultural Research Council (BARC) in Dhaka from 7–10 February 1984.

### *Programme*

The programme will include three days of paper reading sessions and one day of visits. The main topics of the sessions will be as follows:

- Soil Test – Crop Response Correlation Studies for Fertilizer Recommendations
- Crop Response to Applied Nutrients under irrigated and Dryland Farming Conditions
- Critical Limits of Different Nutrient Elements for Different Crops on the Basis of Soil Series
- Plant Tissue Test for Predicting Fertilizer Need
- Availability of Micronutrients in Aerobic and Anaerobic Soils
- Major Constraints in the Nutrition of Rice Crop
- Benchmark Survey for Different Nutrient Elements.

### *Details*

A one-day visit will be arranged to the Bangladesh Agricultural University, Mymensingh.

Accommodation will be arranged in local hotels. The registration fee will be US \$ 50.00.

### *Address*

For further details and also for a booking form, please write to:

Dr. M. S. Islam, Joint Secretary (Organizing Committee), c/o Dr. M. A. Mannan, BARC, Farm Gate, New Airport Road, Dhaka-15, Bangladesh, *not later than 15 October 1983.*

## **International Society of Soil Science – Soil Science Society of China**

### Announcement

### **INTERNATIONAL SYMPOSIUM ON RED SOILS**

*Nanjing, China, 15–19 November, 1983*

### *Structure*

The Institute of Soil Science of the Academia Sinica at Nanjing is organising the symposium, on behalf of the Soil Science Society of China and the ISSS Commissions V and VI.

### *Programme*

China's red soil regions approximately cover an area of 2,000,000 km<sup>2</sup> and amount to about 21% of the total area of the country. In the past decades, studies have been made on the genesis, classification, characteristics and management of red soils in China. One of the purposes of the Symposium is to summarise past work on these red soils, including agricultural soils developed on red earth.

In addition, at least ten invited papers by foreign participants are expected, dealing with genesis, classification and/or management of soils of the humid tropics and subtropics at large.

All papers submitted to the Symposium will be published in a book 'Tropical Soils'.

A ten-day excursion covering typical red soil groups in the tropical and subtropical parts of China will be arranged immediately after the meeting. The number of participants will be about 40, including over 10 foreign scholars.

### *Details*

The working language of the Symposium will be English.

The registration fee will be US \$ 100.00. Accommodation expenses will be US \$

250.00 for the Symposium itself, and \$ 750.00 for the ten-day excursion; the latter includes intercity flights. For accompany persons the accomodation fee is \$ 275.00, and the travel \$ 150.00.

*Address*

Dr. Gong Zitong, Secretary, Organising Committee of the Symposium on Red Soils, c/o Institute of Soil Science – Academia Sinica, P.O. Box no. 821, Nanjing, People's Republic of China.

**Czechoslovak Soil Science Society**

Announcement

**INTERNATIONAL SYMPOSIUM 'HUMUS ET PLANTA' VIII**

*Prague, Czechoslovakia, 28 August–3 September 1983*

*Structure*

The Czechoslovak Soil Science Society is pleased to announce the holding of the eighth international symposium 'Humus et Planta', organised in cooperation with the Research Institute for Crop Production, Prague-Ruzyně; the Agricultural University of Prague, Prague-Suchdol; the Research Institute for Amelioration of Agricultural Soils, Prague-Zbraslav; and the Research Institute for Soils and Crop Fertilization, Bratislava. ISSS Commission II is co-sponsoring the event.

*Subject*

The topics of the Symposium will be:

- the role of the soil organic matter in sustaining and increasing soil fertility;
- interrelations between the humus substances and plants;
- soil organic matter and soil biocenoses;
- humus and detoxification and biological degradation of xenobiotic substances;
- transformation of plant nutrients as controlled by soil organic compounds;
- recycling of organic substances in natural and artificial ecosystems;
- methods relevant to the main topics.

*Organisational details*

The official languages will be: Russian and English.

Papers should be either in Russian with an English summary, or English with a Russian summary. The size should not be more than 6 pages including diagrams, tables and summaries.

The Symposium will be held at the Agricultural University, Prague 6-Suchdol, lodging and board will be at students' dormitories and mensa. A one-day professional excursion and sight-seeing tour is foreseen.

*Registration and Information:* Dr. J. Damaska, Secretary of the Organising Committee of 'Humus et Planta', c/o Research Institute for Amelioration of Agricultural Soils (VUZPP), 161-06 Prague 6-Ruzyně, Czechoslovakia.

Announcement

**INTERNATIONAL SYMPOSIUM ON 'WATER AND SOLUTE MOVEMENT  
IN HEAVY CLAY SOILS'**

*Wageningen, the Netherlands, 27–31 August 1984*

*Programme*

This Symposium, which is sponsored by Commissions I and V of the ISSS, will be held at the International Agricultural Centre in Wageningen, Netherlands. The programme will consist of invited papers and a limited number of voluntary papers. Two field trips will be organized, one to very young clay soils in a newly reclaimed IJsselmeerpolder (Excursion 1) and another one to young and old riverine clays near the river Rhine (Excursion 2).

The following themes will be discussed:

1. Development of structural patterns in swelling and shrinking clays
2. Transport phenomena: water movement
3. Transport phenomena: solute transport
4. Measurement and simulation techniques.

*Papers and Proceedings*

Voluntary papers are requested dealing with the above topics. Authors are encouraged to emphasize practical applications. Themes 2 and 3 also include effects on soil formation. Papers should be submitted in the form of an extended abstract (2–4 pages A4 format), containing specific information, including tables and graphs. The complete papers can be submitted elsewhere. The extended abstracts should be received by November 1, 1983. They will be reviewed and, when accepted, they will be part of the Symposium Proceedings which will be available around July 1, 1984. The Proceedings will be mailed to all participants well before the Symposium.

*Costs*

Registration fee per person will be Dfl 250.00 (appr. US \$ 100.00) with an additional 10% for ISSS. The fee covers the Proceedings, mailing costs and social events. Accommodation will be Dfl. 40.00 (bed and breakfast, single room) or Dfl. 65.00, including lunch and dinner. Excursion cost for each excursion will be Dfl. 50.00, including lunch.

---

NOTICE OF INTENT

Surname: ..... First name and title: .....

Mailing address: .....

Institution: .....

I expect to attend the Symposium on Water and Solute Movement in Heavy Clay Soils, Wageningen, August 84.

I propose to submit an extended abstract entitled: .....

I shall be accompanied by: .....

I intend to participate in excursion 1

I intend to participate in excursion 2.

Date: ..... Signature: .....

This notice of intent should be returned by *September 1st, 1983* to the Secretary:

Dr. Ir. J. Bouma, STIBOKA, P.O. Box 98, 6700 AB Wageningen, the Netherlands.

**International Society of Soil Science – Bulgarian Society of Soil Science**

Announcement

**INTERNATIONAL WORKING MEETING ON CLASSIFICATION AND  
MANAGEMENT OF SOILS IN MOUNTAINOUS REGIONS**

*Sofia, Bulgaria, 25 September–3 October 1984*

*Organisation and Venue*

An international meeting on classification and management of soils in mountainous regions will be organised jointly by the Bulgarian Society of Soil Science and Commissions V and VI of ISSS. It will take place from 25 September–3 October 1984 at the N. Poushkarov Institute of Soil Science and Yield Prediction in Sofia, Bulgaria. Official language of the meeting will be English.

*Costs and Deadlines*

Registration fee: US\$ 70; Field trip participation fee: US\$ 30; Board and lodging during field trip: US\$ 40–50 per day on the basis of a double bedroom.

Submissions of titles of papers, and of application forms or Notice of intent: not later than 31 January 1984. Submission of papers: not later than 31 March 1984. Paper presentation: not to exceed 15 minutes (5 standard pages). Proceedings of the meeting will be published by the Academy of Sciences' Printing House in Sofia.

*Programme and Timetable*

- 25 Sept. – Arrival of the participants. Registration.
- 26 Sept. – Opening and Session I: Classification of soils and study of the soil resources in mountainous regions.
- 27 Sept. – Session II: Erosion problems in mountainous regions and their economically effective solution.
- 28 Sept. – Session III: Problems related to soil fertility and land use in mountainous regions.
- 29 Sept. – Field trip: Sofia – Troyan.
- 30 Sept. – Field trip: Troyan – Pavel Banya – Kurdjali.
- 1 Oct. – Field trip: Kurdjali – Smolyan – Plovdiv – Sofia.
- 2 Oct. – Closing Session: Adoption of working documents (standards for mountainous land use).
- 3 Oct. – Departure.

-----  
**NOTICE OF INTENT**

Name and academic title: .....

Address: .....

Institution: .....

I expect to attend the International Meeting on Soils in Mountainous regions, Sofia, September 25–October 3, 1984.

I intend to submit a paper on .....

I shall be accompanied by .....

Date ..... Signature .....

This notice of intent should be returned to:

Organizing Committee, International Meeting on Mountainous Soils, 5 Shosse Bankya, 1080 Sofia, P.O. Box 1369, Bulgaria.



Announcement

**INTERNATIONAL SYMPOSIUM ON CERRADO: TECHNOLOGY FOR USE  
AND MANAGEMENT**

*Brasília, Brazil, March 1985*

*Organizing Committee*

An International Symposium on world savannas will be held in March, 1985, in Brasília, Brazil, under the auspices of the Brazilian Agricultural Research Corporation (EMBRAPA), the Scientific and Technological National Council (CNPq), and the International Society of Soil Science (ISSS). This event will be organized by the Cerrados Agricultural Research Center (CPAD/EMBRAPA) and the Brazilian Society of Soil Science (SBCS).

*Subject*

Previous symposia – six in total – were devoted only to Brazilian Cerrados (local designation for savannas). The present one will however emphasize the comparison among different savannas, especially in terms of suitable technology for their use. In this sense, it will be a joint effort with Commissions IV, V, and VI of the ISSS.

*Programme*

The programme will include mainly invited keynote papers and panel sessions, but papers on related subjects and technical posters will also be accepted by the Organizing Committee. The programme will also include a technical excursion, for a limited number of foreign participants only, from São Paulo State to Brasília, in order to discuss soil distribution and use. Portuguese and English will be the official languages.

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NOTICE OF INTENT

Name .....

Academic title .....

Address .....

Institution .....

I am interested in receiving further details on the International Symposium on Cerrado, March 1985, Brasília.

I expect to attend the Symposium.

I should like to participate in the technical excursions.

I shall be accompanied by .....

I propose to submit a paper on .....

.....

I propose to submit a poster on .....

.....

Date: ..... Signature: .....

This notice of intent should be returned by *October 1st, 1983*, to:

VII Simpósio Sobre Cerrado, Caixa Postal 70-0023, 73.000-Planaltina-DF, Brazil.

Announcement  
**INTERNATIONAL PANEL ON VOLCANIC ASH SOILS**  
*Tenerife, Spain, July 1984*

*Structure*

The meeting will be organised by the Department of Pedology of La Laguna University, Tenerife, Canary Islands, Spain. It is sponsored by the Spanish Society of Soil Science, with the adhesion of ISSS.

The panel can be considered to be the third in a series: a first international meeting on the subject took place in Tokyo, Japan, in 1964 ('Classification and correlation of soils from volcanic ash', organised by FAO/UNDP and the Government of Japan), and the second one in Turrialba, Costa Rica, in 1969 ('Volcanic ash soils in Latin-America', organised by the Inter-American Institute of Agricultural Sciences IICA).

*Subject*

Main topics of the Panel meeting will be:

1. Genesis and Classification of volcanic soils
2. Mineralogy of volcanic soils
3. Chemistry of volcanic soils
4. Fertility of volcanic soils
5. Biology and Biochemistry of volcanic soils.

*Details and deadlines*

Languages oral presentations in English and Spanish (no simultaneous translation).  
Poster displays in English, Spanish and French.

Those interested should communicate their intent not later than September 30st 1983.

Deadline for acceptance of papers: December 31th 1983.

Deadline for registration: February 28th 1984.

Papers should not exceed 10 pages, text, bibliography, figures and annexes included.

The amount of registration fee will be communicated to participants in the second circular.

There will be a post-conference excursion to some islands of the Canarian Archipelago.

---

NOTICE OF INTENT

Name .....

Address .....

Institution and address .....

I expect to attend the third international Panel on Volcanic Ash Soils

I propose to submit a paper on .....

.....

Date ..... Signature .....

This notice of intent should be returned by *September 30st, 1983* to:

E. Fernandez Caldas, Panel Internacional de Suelos Volcanicos, Departamento de Edafologia, Universidad de la Laguna, Tenerife, Islas Canarias, Spain.

**Asociación Argentina de la Ciencia del Suelo –  
Sociedad Latinoamericana de la Ciencia del Suelo**

**Announcement  
VIIIth LATINAMERICAN CONGRESS OF SOIL SCIENCE  
Mar del Plata, Argentina, 23–28 October, 1983**

The eighth Latinamerican congress of soil science will be held in Mar del Plata, Argentina, in combination with the tenth Argentinian Congress of soil science. The main activities will be:

*Paper presentation sessions*

- Soil Physics, Irrigation and Water Use
- Soil Chemistry
- Soil Biochemistry and Microbiology
- Soil and Water Management and Conservation
- Soil Fertility and Fertilizers Use
- Soil Mineralogy, Genesis, Classification and Survey.

*Discussion sessions*

- Argentinian Law of Soil Conservation
- Evaluation of Soil Research in Argentina; actual state, needs and development
- Soil Science Teaching in Argentina (graduate level) and other Latinamerican countries (post-graduate level).

*Symposium sessions*

- Nitrogen Balance in Agricultural Systems (keynote speaker: Dr. C. A. Campbell, Canada)
- Water Use by Crops in Temperate Regions (Dr. J. T. Ritchie, USA)
- Reclamation of Alkali Soils under Dry-farming Conditions (Dr. R. Cairns, Canada)
- Development of Tropical Lands for Agricultural Purposes (Dr. P. Sánchez, USA).

*Field tours*

The Organising Committee has also planned two edaphological tours. A local one will be a regular part of the Congress activities. An optional tour, lasting approximately four days, will take place immediately after the Congress.

*Proceedings*

The Proceedings of the Congress will contain only the extended abstracts of all papers submitted. The full papers may be published in the periodical 'Ciencia del Suelo' of the Asociación Argentina de la Ciencia del Suelo, or in any other publishing medium of the author's choice.

*Address*

For registration and additional information please apply to: Dr. Néstor A. Darwich, Presidente, Comisión Organizadora Congreso de Suelos, CC 276, 7620 Balcarce, Prov. Buenos Aires, Argentina.  
(For Spanish text see page 33).

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

Report on the  
**INTERNATIONAL CONFERENCE ON LAND CLEARING AND  
DEVELOPMENT IN THE TROPICS**  
*Ibadan, Nigeria, November 1982*

The first International Conference on Land Clearing and Development in the Tropics was held at the International Institute of Tropical Agriculture (IITA) November 23–26, 1982. Almost 100 scientists and practitioners came from some 25 countries in primarily tropical regions. The conference was organized because of increasing world concerns about the rapid deterioration of fragile tropical soils when land is cleared and managed improperly, and because of the considerable progress that has been made by IITA and other research institutions in developing sound land clearing and post-clearing management technologies. Several variants of such technologies were described in the conference papers (a choice of them will be published as a book). The first successful large scale experiment on land clearing and management at the IITA was established 13 years ago, and was now carrying its 26th consecutive corn crop. The yields, averaging 3 tons/ha, show no sign of declining. The site was cleared by shear blade with a minimum of soil disturbance, and an appropriate no-till-crop-residue-mulching technique has kept soil erosion negligible.

Different types of land clearing machinery were demonstrated on a clearing site in secondary rain forest. The demonstration, and experiences from different parts of the tropics, led to the conclusion that manual clearing should be used where possible, but that occasionally mechanical clearing may be the only alternative. Of the heavy equipment type of land clearing machinery, the shear blade is the least damaging in forest areas, provided the soil is at a suitable moisture level and the clearing is followed by prompt establishment of plant cover. Less capital intensive and more environmentally acceptable methods such as chain-saws would reduce the demands on foreign exchange for heavy machines and the energy to power them. There is urgent need to develop tools and management techniques to increase the labor productivity of manual clearing.

To promote better methods of land clearing and post-clearing management, the Conference established an ad-hoc committee with C. F. Bentley, Canada, as chairman and R. Lal, IITA, as a secretary. The Committee was charged with a list of responsibilities, e.g.:

- to contact organizations with similar interests regarding completed and ongoing land clearing projects,
- to assemble information on agencies that are establishing data banks on appropriate research and development results,
- to establish a clearing house of research literature,
- to establish research priorities at international and national levels,
- to prepare financially research proposals and submit these to funding sources after working-group approval, and
- to prepare and seek funds for further international symposia.

Director Hartmans and the staff of IITA, and particularly the organizing secretary Dr. Lal, are to be congratulated for the well-run Conference and demonstrations – but it was only the beginning of an enormous work! The established Committee now faces the problems of organizing and funding its future activity, and coordinating it with other organizations of similar interests.

Reijo Heinonen, Uppsala, Sweden

Report on  
CHEMRAWN II: CHEMISTRY AND WORLD FOOD SUPPLIES – THE NEW  
FRONTIERS

*Manila, Philippines, December 1982*

Chemrawn II was the second in the CHEMRAWN ('Chemical Research Applied to World Needs') series of international meetings designed by the International Union of Pure and Applied Chemistry (IUPAC) to identify and address world needs amenable to solutions through chemistry. It was co-sponsored by the International Rice Research Institute (IRRI), with ISSS as one of the affiliate sponsors. The meeting, held from 6th to 10th December 1982 at Manila, brought together about 700 scientists, industrial managers, agricultural and soil specialists, and policymakers from some 40 developing and more developed nations to discuss and design future research directions and identify priorities in chemistry, biological sciences and agriculture to ameliorate the mounting problem of providing adequate food and nutrition in developing nations for their growing populations. The conference was set against a forecast that the global population will probably reach a peak of between 10 and 12 billion people. It is generally agreed that the actual numbers are only one part of the problem. As per capita incomes increase people demand more varied diets, usually with more animal products, with higher grain equivalents and this increases the consumption of grain per capita. The present forecasts are that production of food should be able to stay ahead of population growth rates and enable the world's population to be fed.

There were three main objectives: first, to suggest those priority areas for research which can be expected to be successful so as to be able to recommend these to funding bodies and research workers; second, to strengthen those areas of research which can be carried out in developing countries without large expenditures and with the scientific, technological and economic capacities available and to examine how to improve the transfer of technology under conditions which would be most likely to lead to acceptance and utilization; third, to accelerate implementation of research priorities and objectives by fostering cooperation among universities, industries and governments.

The first day was devoted to keynote addresses which reviewed the economic, social, and political factors; the role of implementing institutions; and the potential for the new frontiers of chemistry and agriculture to meet the world's growing food problems.

During the second and third days there were concurrent sessions of technical papers which considered:

1. What is the present status of the various scientific and technological opportunities? What must be done to have these opportunities provide important, practical contributions by the end of the century?
2. Which technological options provide the best opportunities for rapidly expanding food production, storage and processing capabilities?

These technical sessions focused on:

- New frontiers in food production and processing, addressing such areas as: genetic engineering (the use of recombinant DNA techniques, wide crosses, and other innovative breeding approaches in crop and livestock improvement); the biochemistry of plant stress, growth regulators and other chemical means of modifying crop performance; the potential of cell and tissue culture; photosynthetic activity and partitioning; nitrogen fixation; pheromone chemistry; and biomass utilization.
- The role of chemistry in raising agricultural productivity. Topics included (1) soil and crop management for more efficient use of water and plant nutrient resources, (2) integrated pest control and weed management utilizing new chemical knowledge,

(3) new techniques for resource monitoring, pollution control, and sound environmental management, (4) role of chemistry in animal and aquaculture production systems, and (5) control of major human and animal diseases limiting tropical agricultural production.

– Improvements in the preparation, storage, and processing of food, with emphasis on (1) development of new or superior sources of food, (2) the preservation of food quality by chemical and biological techniques and the prevention of deterioration and losses in storage and processing, and (3) chemistry in the assessment, analysis, and quality control of food supplies.

The fourth and fifth days were devoted to a special plenary session 'The Forward Edge' on promising areas of research, with a final analysis, recommendations and plans for future action. Both the Conference Scientific Papers and the recommendations and plans of action will be published. Further information is available from the General Chairman of the Conference, Dr. Bryant W. Rossiter, CHEMRAWN II, c/o International Food Policy Research Institute, 1776 Massachusetts Avenue, N.W., Washington DC, 20036, U.S.A.

*Source: ICSU Newsletter No. 13*

Report on the  
SECOND INTERNATIONAL SYMPOSIUM ON N<sub>2</sub> FIXATION WITH NON-  
LEGUMES

*Banff-Alberta, Canada, September 1982*

The 2nd International Symposium on N<sub>2</sub>-fixation with Non-Legumes, organized by the joint scientific auspices of the Agricultural Institute of Canada and Canadian Society of Microbiologists, headed by Dr. R. J. Rennie, took place in Banff, Alberta, Canada from September 5–10, 1982. The first meeting was held in Brazil in 1979. The symposium was attended by 107 participants from 21 countries. Forty-five papers were presented orally, including seven introductory and consensus papers. A total of 27 presentations were shown in poster session. Papers were delivered within five sessions. These are (1) microbiology of the association, (2) site and process of the association, (3) genetics of the bacterium and the host plant, (4) techniques of measuring N<sub>2</sub>-fixation, and (5) forestry.

On the final day, a special session on the 'application and exploitation' was held. In this session, the problems and future research direction were discussed for (1) sorghum and millet, (2) grasses, (3) forestry, (4) wheat, (5) sugar cane and (6) rice.

Major topics of this symposium concerned with 'associative N<sub>2</sub>-fixation', although some papers dealt with free-living N<sub>2</sub>-fixation and Actinorhizae associations. As compared with the first symposium held three years ago, greater emphasis has been developed to the microbiology of associations and techniques to assess N<sub>2</sub>-fixation. Of interest for soil microbiologists were several papers reporting the occurrence of non-conventional N<sub>2</sub>-fixing Gram negative bacteria in root-bacteria association.

Although some papers dealt with the application of acetylene reduction assays, the interest of the techniques assessing N<sub>2</sub>-fixation shifted to other techniques like the use of <sup>15</sup>N. Knowledge on the genetics of bacteria-plant root relation seems to be still limited.

During one evening, round table discussions were held regarding various topics. Among them, the topic of the methodology of quantifying N<sub>2</sub>-fixation was of most interest to the participants.

The symposium was sponsored by the United Nations Development Programme, Agriculture Canada, Alberta Agriculture, the International Development Research Centre and 10 other organizations. The proceedings of the symposium will be published in a special number of the Canadian Journal of Microbiology in 1983.

*I. Watanabe, IRRI-Los Baños, Philippines.*



Report on the  
FIFTH INTERNATIONAL SOIL CLASSIFICATION WORKSHOP  
*Khartoum, Sudan, November 1982*

The Fifth International Soil Classification Workshop held in the Democratic Republic of the Sudan from 2 to 11 November 1982, marked another step at the improvement of the U.S. 'Soil Taxonomy' system of soil classification. It was the fifth in a series of international meetings initiated by the University of Puerto Rico to provide a forum for discussion of the issues under study by the various international committees on the US classification system and to allow the examination of key examples of the soils under scrutiny in the field.

The Sudan workshop thus formed part of a comprehensive effort to better adapt 'Soil Taxonomy' to the edaphic conditions of the tropics and subtropics. It had been designed to address the taxonomy and management of Vertisols and Aridisols in general, and the mandates of the international committees on the classification of Vertisols (ICOMERT) and Aridisols (ICOMID) in particular.

The workshop was a joint endeavor of the Soil Survey Administration (SSA) of the Ministry of Agriculture and Irrigation of the Sudan, the Soil Management Support Service (SMSS) of the U.S. Department of Agriculture Soil Conservation Service, the Arab Center for the Studies of Arid Zones and Dry Lands (ACSAD), the University of Puerto Rico, and the U.S. Agency for International Development (AID). Major funding for the workshop was provided by AID through SMSS, ACSAD and the Government of the Democratic Republic of the Sudan.

In addition to some 50 participants from the Sudan, about 45 soil scientists from 22 countries attended the workshop. They represented national soil survey organizations, bilateral technical assistance agencies such as ABOS of Belgium and ORSTOM of France, multinational organizations such as FAO, the International Agricultural Research Centers, the International Soil Museum, and several universities. Also the ISSS Working Group on an International Reference Base for soil classification was represented.

The technical sessions were held in Khartoum's modern and luxurious Friendship Hall Conference Centre. There were fourteen technical sessions during which 45 papers were presented. The general talks of the first technical session, among them the excellent keynote address by Dr. L. D. Swindale, Director General of ICRISAT, provided the proper perspective for the more specific subject matters of the subsequent sessions that dealt with various aspects related to the taxonomy and management of Vertisols and Aridisols. Several outstanding papers were presented in these sessions but only three examples can be mentioned here. Dr. L. P. Wilding of Texas A&M University discussed new concepts of Vertisol formation; Dr. G. Uehara of the University of Hawaii examined the application of geostatistics to the spatial variability of some Vertisols of the Sudan; and Dr. J. Burford of ICRISAT lectured on the intensive management of Vertisols.

To complement the presentation of formal papers, substantial periods of time were set aside for the discussion of the work of ICOMERT and ICOMID.

The field trips constituted an outstanding feature of the workshop. The six excursions covered a total distance of about 1,200 km in the vicinity of Khartoum, from Khartoum to Wad Medani, in the Gezira, and in the Kenaana area along the Blue Nile southeast to Wad Medani. The ten pedons studied included six Vertisols, three Aridisols and one Alfisol. The trips were flawlessly organized and well timed. The very lively discussions around the enormous pits were most productive and characterized by high technical standards. The active and knowledgeable participation of the Sudanese pedologists in these discussions merits special mention.

The Sudan workshop thus fully achieved its objectives and under the able and energetic leadership of Dr. Juan A. Comerma, Chairman of ICOMERT, considerable progress was made toward the redefinition of Vertisols.

The Soil Survey Administration deserves high commendations for the perfect local organization of the workshop. Dr. Hassan Hag Abdulla, Director of SSA, and Dr. Abdel Karim El Obeid assumed the burden of coordinating this effort which involved the complete staff of SSA. The dedicated and effective organizational team work of SSA made the technical success of the workshop possible.

The workshop participants enjoyed an overwhelming hospitality in the Sudan, highlighted by several invitations to sumptuous dinners and other social functions. These pleasant occasions combined with the successful scientific activities to make the Fifth International Soil Classification Workshop in the Sudan a very memorable professional, cultural and social event.

F. H. Beinroth, Mayaguez-Puerto Rico, USA

#### THE LABORATORY CROSS-CHECKING PROGRAMME OF ISM (LABEX)

Complying with the recommendations of the 2nd International Soil Classification Workshop in Malaysia and Thailand in 1978, the International Soil Museum at Wageningen initiated a programme of comparison of methods and results of laboratory analyses, for soil classification purposes in first instance.

Some 20 national and regional laboratories from all continents were invited to participate in a pilot scheme to study the need and feasibility of international standardization of analytical procedures. These laboratories analyzed the particle size distribution and the CEC of ten reference samples sent to them.

The results, presented at the 5th International Soil Classification Workshop in Sudan in September 1982, in general show a large variability of data both in accuracy and in precision. This strongly points to the need for standardization. The results also indicate that a not insignificant level of variability will remain unavoidable. This has an important bearing on several existing classification criteria.

There have been suggestions to extend the programme to a larger number of participants, to a wider range in reference samples, and to more soil parameters. Funds are being sought for this purpose, but in the meantime ISM should like to gauge the interest of prospective participants of such a scheme.

Any laboratory working in this field and interested in comparison of procedures and data (including having some own samples analyzed centrally) is kindly invited to apply to ISM, P.O. Box 353, 7600 AJ Wageningen, the Netherlands. A report on the pilot round will be sent upon request to the same address.

L. P. van Reeuwijk, Labex Programme Secretary, Wageningen

#### Report on the INTERNATIONAL SYMPOSIUM ON POLDERS OF THE WORLD *Lelystad, the Netherlands, October 1982*

As part of a year of events to celebrate the fiftieth anniversary of the closure of the North Sea dyke across the mouth of the former Zuider Sea – thus creating the freshwater IJsselmeer and, eventually, the reclaimed polder land within it – the Dutch government together with a number of national institutions organized a symposium on polder development at Lelystad in the Netherlands 4–10 October 1982. The ISSS, FAO and Unesco were amongst a number of international organizations which cosponsored the symposium.

The avowed aims of the symposium were:

- to provide a forum in which policy-makers, engineers, scientists, managers, contractors, politicians and farmers from various parts of the world could exchange knowledge and experience on wide-ranging aspects of polder development;
- to provide Dutch trade and industry with the opportunity to display their know-how on polder development to the international visitors; and
- to provide the Dutch people with the opportunity to learn how other countries are dealing with situations where polder development is needed.

Those aims were well achieved. The symposium and the associated exhibition were superlatively well prepared. Opened by the Dutch Minister of Transport and Public Works, the symposium brought together over 400 participants from about 60 countries. For each of the five major themes – polder projects; land and water management; construction; agriculture; socio-economic and physical planning aspects; and environmental aspects – separate keynote papers were given by a Dutch expert and an international expert. Two afternoons were devoted to working group sessions. The 137 papers submitted to the symposium, made available in three handsomely-bound volumes at the opening of the symposium, were not read individually but were covered by comprehensive reviews made by rapporteurs at the opening of the relevant group meetings. The symposium was followed by three days of excursions through new and old polder areas and to the Delta Works in the Rhine-Scheldt estuary.

Of particular interest to ISSS members were two large-scale maps displayed at the exhibition: one, formally unveiled by the Minister at the opening ceremony, showed the locations of polders of the world; the other, prepared by the International Soil Museum, indicated poorly drained soil areas identified on the FAO-Unesco Soil Map of the World. The explanatory text on this map clearly indicates that many of these poorly drained areas are not suitable for polder development, a notion that may have been lost on a number of non-soil participants.

H. Brammer, Dhaka, Bangladesh

N.B.

A limited stock of the Volumes containing the symposium papers (price Dfl. 180.00) and the explanatory text 'Wetlands of the World' (price Dfl. 10.00) are available from ILRI, Publications Department, P.O. Box 45, 6700 AA Wageningen. Prices are exclusive of mail charges; ISSS members may benefit of a reduction of 30% on the prices of all ILRI publications (student rate). □

Report on the  
SYMPOSIUM ON MINIMUM DATA SETS FOR AGRO-TECHNOLOGY  
TRANSFER

*Hyderabad, India, March 1983.*

ICRISAT was the host and SMSS (the US programme on Soil Management Support Services) the co-sponsor of the symposium which was organised by the new USAID project IBSNAT (International Benchmark Site Network for Agrotechnology Transfer), to be executed by the Department of Agronomy and Soils of the University of Hawaii.

This five-year project is a follow-up of, and departure from, the just completed USAID-funded Benchmark Soil Project (BSP) of the Universities of Hawaii and Puerto Rico. The latter Project was basically meant to prove that the family-level of the US Soil Taxonomy system of soil classification should be a suitable vehicle for analog transfer of agrotechnology to and in-between developing countries in the tropics and subtropics.

The new project has an altogether different orientation: not soil classification but crop physiology. It is envisaged to study the basic relationships between land/soil, climate/weather, and crop cultivar performance at a number of sites that will be very carefully monitored over a number of years. The data generated will be used in developing and testing of computer models based on the varying soil and weather requirements at the different phenological growth stages of important crops, through the matching of crop requirements with land characteristics in loco.

The rationale of the new project was already discussed during an international Panel Meeting at FAO – Rome, back in March 1980 on ‘strategy for land evaluation and agrotechnology transfers in the tropics’. At the time it was recommended that a steering committee of FAO and BSP personnel was to be formed immediately, to procure funds and cooperation from international organisations (UN Agencies and CGIAR institutes) as well as from national agencies of technical assistance, like USAID.

The participants of the Symposium – most of them invited by USAID/IBSNAT – consisted of a) a number of soil scientists and agronomists from developing countries: Philippines, Malaysia, Thailand, India, Pakistan, Syria, Camerons, Burundi, Venezuela, Brazil, Panama, and some Pacific territories, b) US soil scientists, mainly of the BSP and SMSS projects, c) a sizeable group of US crop-modelling and computer programming specialists, d) a few scientists of other developed countries, viz. BRD, Australia, and international institutions, viz. FAO, CATIE, IFDC, and ISM, e) representatives from CGIAR institutes, viz. ICRISAT (India), CIAT (Colombia), and IPC (Peru).

This group agreed on the following:

- Ten crops are selected for development of models and site testing, viz. the cereals wheat, sorghum, rice and maize; the pulses phaseolus, soybeans and groundnuts; the rootcrops cassava, potatoes and arroids.
- Five major sites for *development* of the crop production models (with high-level management input) are identified as follows: Hawaii (any crop), Venezuela (beans, potatoes), CIAT (cassava, beans), ICRISAT (sorghum, groundnuts), and possibly Pakistan (wheat, maize).
- Ten countries are favourably inclined to carry out *testing* of crop performance (with relatively low level of management input), each contributing several sites as parts of national networks: Malaysia, Philippines, Thailand, Cameroon, Costa Rica, Syria, Brazil, Panama, Guam, Fiji. These and other sites are to be distributed as evenly as possible over all six relevant agroclimatic zones (warm and cool respectively of wet, humid and dry). Soil conditions and classification units may however vary.
- In addition to the nationally preferred cultivars of prospective crops, there will be at least one common cultivar per crop and agroclimatic zone, that is responsive to at least a medium level of management.

Details were spelled out on minimum sets of data to be recorded on each site, as follows:

*On soils:* nutrient status, moisture availability, aeration (oxygen supply), tilth/degradation hazard, and toxicities. Very detailed soil maps will be prepared for each site (by SMSS personnel), and analysis of soil samples is to be carried out by both a reference laboratory and the host country laboratory.

*On climate/weather:* rainfall characteristics, temperatures, sunshine, humidity, wind speed, soil moisture, soil temperature.

*On land use and management:* agronomic history, actual practices of irrigation, fertilizing, tillage, etc.

*On crops:* monitoring of growth at all key visual phenological stages of plant development; by leaf area index, biomass production and economic yield.

The above data is to be aggregated at some of the major sites and then used in computer programmes for crop growth simulation; for instance at the facilities of the US Agricultural Research Services of Temple, Texas.

In the formal recommendations accepted at the closing session of the Symposium it was stipulated – all in accordance with the 1980 Rome meeting – a) that IBSNAT actively explore possibilities for internationalizing the funding of the project, b) that it seek contact with ISNAR for identification of more testing sites at national institutions in developing countries, c) that it promote effective liaison between various centres interested in crop growth modelling, d) that the data generated be fully exchangeable and the computer programmes to be developed be fully compatible, and e) that a technical advisory committee be established with broad international representation.

Annual meetings are foreseen between all participants and collaborators to evaluate progress and to discuss adaptations of the programme; the first will probably be in Hawaii or the Philippines.

W. G. Sombroek, Wageningen, the Netherlands

Report on the  
IRRI SYMPOSIUM ON ORGANIC MATTER AND RICE  
*Los Baños, Philippines, September 1982*

The symposium on the 'Organic Matter and Rice' was held at the International Rice Research Institute (IRRI) from 27 September to 1 October 1982.

The plan of holding this symposium was made during discussions between Chinese and IRRI scientists. IRRI organized the symposium, and invited 92 scientists from 14 countries. The government of the Federal Republic of Germany partly sponsored the symposium.

The symposium included an introductory session, normal sessions, a field trip at IRRI, poster presentations, and group discussions. Normal sessions were: (1) organic sources of plant nutrients, (2) decomposition of organic matter in wetland rice soils, (3) organic matter and soil physical properties, (4) organic matter and plant growth, and (5) management and evaluation of organic manures in rice-based farming systems.

On the final day, group discussions were held to draft recommendations for future research on organic matter in rice culture. The groups were composed of: (1) agronomic evaluation, (2) management and economics of use of organic materials, (3) decomposition and transformation processes, (4) nutritional and physiological effects, (5) soil physical properties and processes, and (6) environmental and ecological problems.

Of great value of this symposium was the summarization of a large volume of works on organic matter in China and Japan, which have been mostly published in their own languages. While the information on the nutritional value and decomposition of organic matter in flooded rice-soil system was quite rich, the information on the soil physics and effects other than nutritional effects was scanty.

The proceedings, including the recommendations, will be published in IRRI in 1983.

I. Watanabe, IRRI-Los Baños, Philippines



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

**ISSS Subcommittee on Soil Conservation and Environment**

Report on the  
**INTERNATIONAL CONFERENCE ON SOIL EROSION AND  
CONSERVATION 'MALAMA AINA'**

*Honolulu, Hawaii, USA, January 16-22, 1983*

The conference was a follow-up to the 'Workshop on Soil Erosion Assessment' hosted by the University of Ghent, at Ghent, Belgium in February 1978 and 'Conservation 80', hosted by the National College of Agricultural Engineering at Silsoe, U.K. in June 1980. It was intended as a forum for presenting current multidisciplinary developments in the field of soil erosion and conservation and for bringing forth global concerns which need to be considered in formulating and tying together all the elements necessary for effective soil conservation.

The conference and the post-conference workshop were co-sponsored by the University of Hawaii's Institute of Tropical Agriculture and Human Resources and the East-West Center's Environment and Policy Institute. Several professional/scientific societies, among which the ISSS, and international research institutes also co-sponsored the conference.

*Themes*

Contributions were invited on four themes relating to inventory, impacts, mechanisms and interdisciplinary requirements for problem-solving. Each theme was the subject of a technical session:

- I: Delineating sediment sources and estimating the magnitude and extent of erosion.
- II: Quantifying the impacts of erosion and sedimentation on land productivity and the environment.
- III: Establishing quantitative values for erosion causing and control parameters.
- IV: Global and regional interdisciplinary requirements for conservation-effective land use planning and implementation.

The sessions contained approximately 140 papers contributed by authors representing nearly 30 countries. Discipline representation was perhaps the widest in the short history of these meetings. This provided a healthy balance between representatives from soils, agronomy, engineering hydrology, geography and forestry in attendance. Most were researchers but a considerable number of extension specialists, consultants and government/institutional representatives were present. Sessions II and III were by far the strongest in the conference reflecting the intensity of current work on modelling soil erosion-causing parameters and its effect on crop yields and related off-site hazards. A special session covered conservation problems that are particularly relevant to arid and semi-arid regions, where water supply is limiting and manipulation of runoff represents an essential element of overall productivity. A major weakness was the small number of contributors (four) dealing with wind erosion. The format for conducting the conference, namely brief paper presentations followed by rapporteur critiques, and then an open question-answer period, succeeded in stimulating substantial discussion and interactions among participants. The usual debate involving 'process-oriented' versus 'empirical' research was quite lively, as both approaches received considerable coverage among presented papers. Conference proceedings will be published by the Soil Conservation Society of America.



### *New organisational structures*

Aside from the planned technical sessions, the conference provided a forum for publicizing the flurry of international activities in the general area of soil management/conservation which seem to have intensified in the last three years. The most recent of these are the establishment of a new Sub-commission on Soil Conservation and the Environment within the International Society of Soil Science (see below) and a World Chapter within the Soil Conservation Society of America (see below). While membership in these societies were among the options to colleagues within the international community who are involved with soil conservation, it was still deemed necessary to establish an independent society which would carry on the successful traditions and maintain the flexible structure which have marked the group's activities since the 1978 Ghent meeting. A decision was taken to form such a society with a primary charge of overseeing the organization of future international soil conservation conferences. The society was named the 'International Soil Conservation Organization' with the acronym ISCO. The only society office will be that of the President who will host the following meeting.

After a deliberate analysis of available options, the steering committee decided to accept the offer of Venezuela to host the next conference in 1985. As a consequence, the President of ISCO for the period 1983-1985 will be Prof. I. Pla-Sentis (Apartado 189, Maracay, Venezuela). The themes and scope of that conference will be determined during the following few months and will be subsequently announced by the organizers in the first circular.

### *Field trip*

A field trip on January 22 ended the official conference and included overviews of Hawaii's agriculture and the University of Hawaii's field research on soil erosion and conservation on the island Ohahu. The agricultural stops were at an irrigated sugarcane estate of the Ohahu Sugarcane Company, at pineapple fields (including an exhibition of pineapple varieties), and an aquafarm for prawn production. Atten-



*Some participants of the Malama Aina conference admiring a sediment collector with sample splitter, at the erosion testing site of the University of Hawaii at Ohahu*

tion was also given to other land uses such as cattle ranging, horse breeding, papaya cultivation and vegetable farming.

At the Runa station, Mr. R. Wiener of the Hawaiï Sugar Planters' Association explained the technical and economical problems of sugar cane. Both sugar cane and pineapple are cultivated mainly with drip-irrigation. Because of a drop in world market sugar prices, the least productive fields are abandoned while on the other hand the pineapple cultivation is expanding. The harvest of sugarcane and pineapple is heavy on the land because of machinery tracks which can cover almost 20% of the land under pineapple and also because of the huge amounts of topsoil which are collected with the cane during the harvest operation. The major part of the soils under cultivation are classified as Orthic Ferralsol (FAO) or tropeptic Eutruxox (US Soil Taxonomy) with a CEC of  $\pm 15$  and pH of  $\pm 6$ .

At the Waiakua experimental site of the University of Hawaiï, runoff plots were installed in a small catchment of 2.4 ha. The objectives of the research were: 1. to quantify factors causing erosion on representative soils (see above), 2. to determine the effects of erosion on productivity.

#### *Post-conference workshop*

While technical constraints resulting from knowledge gaps can be serious barriers against implementing soil conservation technology, socio-economic and political constraints are more often the deterrents to such implementation. Twenty delegates from among the conference participants were invited to meet with hosts from the University of Hawaiï and the East-West Center, in a workshop on 'Soil and Water Conservation Policy' during the period January 25-27, 1983. Country reports were presented together with reports from FAO and UNEP on the World Soil Charter and World Soils Policy respectively. Small group discussions followed in which issues pertaining to such policy were identified and guidelines which may assist policy makers were formulated. A report summarizing the main conclusions of the workshop will be published later this year.

S. A. El-Swaify, Honolulu, Hawaiï  
T. de Meester, Wageningen, Netherlands  
and D. Gabriels, Ghent, Belgium

### **PROGRAMME OF ACTION OF SUBCOMMISSION C**

*Minutes of meeting at the ISSS Secretariat in Wageningen, 18-3-1983*

Messrs T. de Meester, K. Flach and W. Sombroek met to follow up on recommendations developed by Subcommittee members participating at the Honolulu Conference on Soil Conservation (Malama Aina 1983, 17-22 January 1983; see above).

In line with their recommendations the group decided on the following high-priority activities:

#### *1. Publication on methods for assessing and predicting erosion*

Develop an ISSS-publication on methods and techniques (including modelling) to assess the amount of erosion that has taken place in the past and to predict likely amounts of erosion under projected farming systems. The publication will comprise wind and water erosion and deal with fieldplot, watershed and laboratory techniques and with modelling systems.

#### *2. Terminology*

- Evaluate the terminology on soil erosion and conservation in existing glossaries and develop standards.

- Cooperate with the International Centre for Soil Conservation Information (Silsoe, UK) in promoting standardized terminology and in distributing soil conservation information (cf. ISSS Bulletin no. 62, page 48).

### 3. *Case studies on soil erosion*

- Conduct case studies of the development of severe erosion problems in established farming areas and areas of drastic land use change as consequence of agricultural development schemes.
- Document successes and failures in allocating conditions in problem areas. Cooperate with SCOPE (Scientific Committee on Problems of the Environment, a standing committee of the International Council of Scientific Unions – Paris).

### 4. *Information systems*

The Subcommittee will cooperate with the Working Group on Soil Information Systems in the development of a soil-climate data base for soil conservation for different agro-ecological zones.

### 5. *Symposium on Soil Conservation at the 1986 ISSS Congress*

- Explore possibilities for a Symposium on Soil Conservation and Environment at the 1986 International Congress of Soil Science in Hamburg.

The symposium should concentrate on:

- Methodologies for making quantitative estimates of past erosion and of future erosion from changes of farming systems.
- Case studies and models of soil productivity changes as a consequence of soil erosion.

K. Flach, Washington DC, USA

## WORLD ASSOCIATION OF SOIL AND WATER CONSERVATION

During the International Conference on Soil Erosion and Conservation in Honolulu, Hawaii, the formation was announced of a World Association of Soil and Water Conservation.

The new association will seek to encourage the wise use and conservation of soil and water resources worldwide. Its members will include scientists, professional conservationists and policy makers.

Initially, the association will operate under the auspices of the Soil Conservation Society of America. SCSA will maintain membership records for the association and publish a newsletter for the group.

In addition to publishing a newsletter, the world association will seek to sponsor a biennial conference, assess soil and water conservation needs in nations throughout the world, work for the adoption of sound soil and water conservation problems, and work with other worldwide conservation organizations and agencies in support of mutual interests.

Bylaws are being written and officers will be elected for the new association in the next few months. Annual dues for the association will be \$ 10.00 (payable in U.S. funds).

More information about the association is available from SCSA, 7515 N.E. Ankeny Road, Ankeny, Iowa 50021, USA.

### *Comments*

ISSS commends the Soil Conservation Society of America for this initiative to foster world-wide recognition of the dangers of soil erosion by scientists of many disciplines, land managers, and policy makers.

The new Subcommittee on 'Soil Conservation and Environment' of ISSS concentrates on technical aspects of processes of erosion, the assessment of actual and potential erosion, and the impact of erosion on soil productivity.

The Subcommittee, under the chairmanship of Dr. Klaus Flach of Washington DC, USA, hopes to work closely with the new group in providing the necessary scientific backing from the side of soil science. □

**INTERNATIONAL REFERENCE BASE FOR SOIL CLASSIFICATION**

Many inquiries to the ISSS-S.G. and to the undersigned show a worldwide interest in the task of this Working Group. As announced in Bull. 61, p. 42, the steps 1 and 2 are in progress. Also preparations for the appointment of convenors for the sub-groups were made and an application for the necessary funds was prepared. It hopefully will be considered by UNEP, in the framework of World Soils Policy Projects, on the occasion of the eleventh session of its Governing Council in May 83.

E. Schlichting, Stuttgart-Hohenheim, FRG

**WALL CHART 'SOILS OF THE WORLD' IN PREPARATION**

In a cooperative project the International Soil Museum (ISM), Elsevier Scientific Publishing Company, FAO and Unesco, are preparing a large-size wall chart entitled: 'Soils of the World'. The chart of about 80 × 150 cm will show colour photographs representative for each one of the 106 units of the FAO-Unesco Soil Map of the World. The size of the photographs is about 3.5 × 20 cm. To make comparisons possible with some other soil classification systems, the correlation is presented in the margin of the chart. Possibly, the classification systems in use in Australia, Brazil, England and Wales, Fed. Rep. of Germany, France, USA and USSR will be shown.

It has been agreed that ISM will supply the photographs. These are for a large part pictures of soil monoliths of the ISM collection. However, a number of soil units are not represented adequately at ISM. This institution is therefore requesting national soil correlators of the major soil classification systems for their cooperation in providing high quality, original colour negatives, colour slides or colour photographs of one or more soils from their country, or from their picture collection on other countries' soils.

*The pictures should meet some important requirements, which are sometimes difficult to fulfill:*

- The pictures should show the natural colour of the soil and be as bright and sharp as possible over the whole length of the profile. The pictures should not show a distorted perspective caused by an oblique position of the camera, such as is usually the case in small pits. The lighting of the whole profile should be as even as possible; no dark parts or shadows are allowed.
- Although the actual size of the profile should be known, the picture should not show a cloth tape, rule, pencil, pocket knife or other measuring scales through the middle of the picture. A tape or other scale of known length at the side of the picture can usually be allowed for the purpose. Since the size of the picture is about 3.5 × 20 cm, at a scale of about 1 to 6, this will give us some room for selecting a good section of the picture for the chart, without the measuring scale.
- The budget for the preparation of the chart is very small. ISM is providing the photographs without charge, because it is thought that the wall chart is a useful instruction and demonstration medium. It is hoped that national cooperators will place selected pictures at ISM's disposal without payment. Elsevier will, however, give 5 free copies of the wall chart for each picture selected for the chart. The chart will be priced at about US \$ 6.00.

Some soil scientists have already been approached for their cooperation. Other interested persons please contact: ISM, attn. Hans van Baren, P.O. Box 353, 6700 AJ Wageningen, the Netherlands.



Report on the  
4TH INTERNATIONAL MEETING ON SOIL INFORMATION SYSTEMS  
*Bolkesjø, Norway, 28 February–4 March 1983*

The working group meeting in Norway from 28 February–4 March was organised jointly by the Norwegian Society of Soil Science (President: Prof. E. Steinnes) and the Norwegian Computing Centre. The participants came from Bulgaria, Britain, Denmark, France, India, Kenya, Mexico, the Netherlands, Norway, Yugoslavia, Zaire, Zambia. Many participants were grateful for financial assistance from UNEP, which enabled them to attend.

The group was able to visit: the Norwegian Institute of Land Inventory at Ås; the Agricultural University of Norway at Ås; A/S SysScan at Kongsberg; the Geographical Survey of Norway at Hønefoss; and the Norwegian Computing Centre in Oslo. These visits allowed to discuss aspects of work in progress, and to see examples of commercially available hardware and software.

The participants spent three days at Bolkesjø discussing papers presented under the headings of:

a) Data base and data methodology, b) Soil data in agriculture, c) Quantitative methodology, d) Cartography, e) New cartography, and f) the Global Environment Monitoring system (GEMS) of UNEP.

The following are subjective personal impressions:

(i) Descriptions of the structure of established or planned SIS emphasized again that an SIS cannot output better data than it receives. We must be careful that the computer aura does not mislead our public on the per cent truth of the data they will receive. Also soil polygons are rarely pure, however elegantly they are presented.

(ii) Reports on the manipulation of data from an SIS re-opened discussion on the merits of handling boundary information in the raster or vector modes. The computer clearly offers the opportunity of re-appraising data, and relocating soil boundaries, for different purposes. It seems unnecessarily restrictive to tie an SIS to a single scheme of soil classification. Some problems and solutions were discussed. The techniques of geostatistics are finding a practical role in predicting soil conditions between sample points. At least they can demonstrate how close these points must be if interpolation is intended.

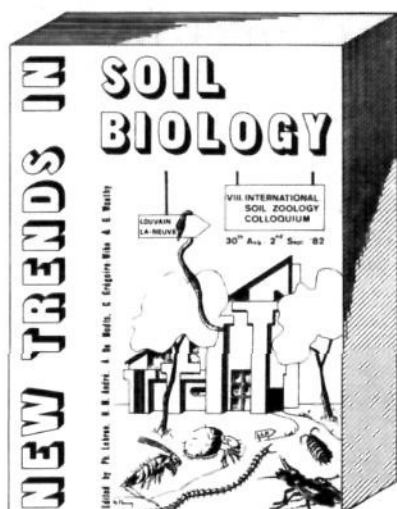
(iii) Reports on the derivation of soil data from indirect sources such as remote sensor data demonstrated yet again that *until* its truth has been checked in the field a soil map based solely on inference is ornament and not information.

There were informal seminars on topics in data base management, geostatistics and the problems of data transfer in countries with imperfect telephone systems.

The group also discussed the soil component of the global environment monitoring system of the UNEP, as outlined in the consultants report, and described at the meeting. The Working Group warmly supported the overall design of the projects as it was presented to them.

Ph. Beckett, Oxford, U.K.

Report on the  
**EIGHTH INTERNATIONAL COLLOQUIUM OF SOIL ZOOLOGY**  
*Louvain-la-Neuve, Belgium, 30 August–2 September 1982*



The very interesting and delightful campus of the Université Catholique de Louvain at Louvain-la-Neuve, Belgium was the site of the VIII International Colloquium of Soil Zoology during the summer of 1982. Researchers and students from 32 countries including many European and Asian localities plus Bolivia, Chile, Mexico, three Canadian Provinces, five states in the US and four African countries comprised the 194 registered participants. The program entitled 'New Trends in Soil Biology' was very well organized by Professor Philippe Lebrun and his colleagues Drs. André, Grégoire-Wibo, Wauthy and De Medts from the Ecologie Animale group.

A combined format of more than 132 invited, contributed and poster presentations focused effectively on all contemporary aspects of soil ecology. Even though soil ani-

mal dynamics were emphasized, the vital and integral relationships of microorganisms and abiotic factors were appropriately considered and interwoven in the true interdisciplinary sense of soil ecology. Plenary sessions initiated the specific topics as follows: 1) Role played by soil fauna in mineral cycling, chaired by Prof. J. A. Wallwork from London (20 presentations); 2) Functional relationships between soil organisms, Prof. D. Parkinson from Alberta, Canada, chairman (31 presentations); 3) Ecophysiology of soil animals, presided by Prof. G. Vannier from Brunoy, France (26 presentations); 4) Restoration capacities of soil communities, chaired by Prof. B. Heydemann from Kiel (27 presentations); and 5) General aspects of fundamental and applied soil ecology, special poster session (28 presentations). Interrelationships of the total biotic component of the soil relative to the physical and chemical properties was much in evidence at this conference.

Published proceedings of this meeting are available and inquiries may be addressed to Ecologie Animale, Place Croix du Sud, 5, B-1348, Louvain-la-Neuve, Belgium.

D. L. Dindal, Syracuse, NY, USA

*Further information on soil zoology:*

The next colloquium – the ninth in the series – will take place in Moscow, USSR, in August 1985. Prof. M. Ghilarov (for address see below) will be responsible for its organization. The tenth colloquium is likely to be in 1988 in Bangalore, India.

The editor of the own information bulletin of the Soil Zoology Group, 'Pedofauna', will henceforth be Dr. George Wauthy of Louvain-la-Neuve. He takes over from Dr. M. B. Bouché, who for many years has informed soil biologists on meetings, publications and research activities on the subject, in the three official languages of the Society. He deserves ample gratitude of all adherents of the Group for his tireless devotion!



The *address* of the new editor 'Pedofauna' is: Dr. G. Wauthy, Ecologie Animale, Université Catholique de Louvain, Place de la Croix du Sud 5, 1348 Louvain-la-Neuve, Belgique (tel. 010-418181).

At a business meeting of the Soil Zoology Group/Committee of ISSS during the Louvain-la-Neuve colloquium (see above) the following persons were elected or reappointed as office bearers:

- K. E. Kee, president, CSIRO, Division of Soils, Waite Road, Urrbrae, South Australia.
- M. B. Bouché, secrétaire, Laboratoire de Zoologie du sol, INRA, CEPE, BP 5051, Route de Mende, F-34033 Montpellier, France.
- J. M. Anderson, Wolfson Ecology Laboratory, Dept. of Biological Sciences, Exeter EX4 4PS, England.
- P. Berthet, UCL, Ecologie, Place Croix du Sud 5, B-1348 Louvain-la-Neuve, Belgique.
- K. Domsch, Institut für Bodenbiologie, Bundesallee 50, D-3300 Braunschweig, Bundesrepublik Deutschland.
- M. Ghilarov, Morph. Evolution & Animal Ecology, Lenin Avenue 33, 117071 Moscow W-71, USSR.
- Ph. Lebrun, voir P. Berthet.
- U. Löhme, Dept. Water Environment & Society, Linköping University, S-58183 Linköping, Sweden.
- D. Reichle, Deciduous forest biome Director, Oak Ridge National Laboratory, Oak Ridge Tennessee 37830, USA.
- J. E. Satchell, the Nature Conservancy, Merlewood Research Station, Grange-Over-Sands, Cumbria LH11 6JU England. □

#### SYMPOSIUM 'DARWIN' SUR L'ÉCOLOGIE DES VERS DE TERRE

A l'initiative de l'AISS, un Symposium s'est tenu du 29 Août au 4 Septembre 1983 à la station de Recherches de Merlewood (Lancs., Angleterre), pour célébrer le centenaire de la parution de l'oeuvre de Darwin: 'Formation of vegetable mould through the action of earthworms'.

Près de 150 participants de 32 nationalités différentes présentant 56 communications et 42 posters, firent de ce Symposium l'évènement le plus important dans l'histoire de l'étude des Vers de terre depuis un siècle.

Ce n'est pas seulement par la qualité des communications, la diversité et la richesse de l'assemblée réunie que ce Symposium restera dans les mémoires. John Satchell et son équipe, par la chaleur de leur accueil, la perfection de l'organisation tant des sessions scientifiques que les sorties culturelles et de détente nous ont fait goûter pleinement, durant ces huit jours, l'harmonie et le savoir vivre traditionnels, polis au long des siècles, de la vieille Angleterre.

Les treize thèmes abordèrent des aspects très variés de la Biologie des Vers de terre, certains classiques, d'autres thèmes développés plus récemment reflètent certaines préoccupations de notre époque: les Vers de terre et la pollution des sols et leur utilisation dans la mise en valeur des déchets organiques, des terres récupérées, ou comme aliment pour divers animaux. Cet aspect utilitaire des Vers de terre, préparé par des années de patients travaux prend aujourd'hui une place de plus en plus considérable.

Chacun des thèmes fut introduit par une conférence de synthèse et illustré par un nombre de communications et de posters apportant une information plus détaillée.

Les articles, à paraître dans *Pedobiologia*, et le livre issus de ce Symposium constitueront certainement une base solide et complète pour les débutants et un point sur les divers problèmes utile à tous.

Patrick Lavelle, Paris, France

(Source: 'Pedofauna' 35/36, 1982)

ON INTERDISCIPLINARY COOPERATION...

Dear Mr. Secretary-General,

...The fact that till recently the International Council of Scientific Unions (ICSU) did not recognise the importance of including soil scientists in the work on recommendations for land use, soil, and water management of its standing inter-union CASAFA\* Commission suggests to me that perhaps the ISSS should adopt a bolder line in publicizing the capabilities of its members and in bringing about a greater awareness of the excellent work of fundamental, practical, and social importance which has been and is being carried out by soil scientists. In recent discussions with colleague Dr. F. L. Himes of the Ohio State University I have come to realise how some more 'vociferous' or 'pushing' groups - environmentalists in particular - are rediscovering some areas of research which were investigated and well documented by soil scientists. These 'new discoveries' are often a generation or more old in soils literature; yet under new champions such work often gets headlines in today's media. These areas include the influences of acid rainfall, and the non-soil science 'discoverers' of its effects seem unaware of soil buffering influences, and of the potentially vastly different effects of such rainfall in different areas. We hear again of the roles of the heavy metal contents of sewage sludges, often without reference to some fine work done by soil scientists during the past twenty years. There is renewed interest in soil conditioners and the work of soil scientists in this area during the past 30 or more years is often ignored.

Soil scientists are good scientists, and like most good scientists they are humble people who let their works speak and avoid the fanfare of self aggrandizement. Unfortunately, though, there is a danger that if our Society members keep their 'lights hidden under bushels' much very important work which can best be done by men of soils will be done improperly by others.

For such reasons I attach great importance, Mr. Secretary, to your efforts to get ISSS involved in the work of CASAFA. Progress will be made if all of our members draw to your attention gross omissions with regard to the assignment of soil scientists to committees which examine any scientific aspect involving the soil environment. I am confident in your ability to handle any such situations once you have been informed.

A suggestion has been put forward that ICSU might organise a series of conferences on 'Scientific Research Applied to World Needs'. These conferences would discuss a state-of-the-science report on a subject of major scientific, technological and economic importance.

I would suggest that an interdisciplinary approach to a study of 'Soil Structure' would be ideally suited to the criteria which ICSU appear to have in mind. The 1978 congress in Adelaide, Australia on 'Modification of Soil Structure' was, judging by the publication of the Proceedings (edited by W. W. Emerson, R. D. Bond, and A. R. Dexter, Wiley, 1978), an excellent beginning to an interdisciplinary study of this kind.

Everyone who is involved with soil science knows well that the dangers presented by the degradation of soil structure could eventually pose a far greater problem than the depletion of fossil fuels. The realisation of the problem has yet to get through to the populace or to the politicians. It would take a work of popular appeal on the lines of Rachel Carson's 'Silent Spring' to emphasize the dangers to the relatively well fed and warmed inhabitants of the temperate regions the long term significance of their springtime clay-coloured rivers. We know well that the erosion problems of

\*) Commission on the Application of Science to Agriculture, Forestry and Aquaculture.

these regions can be small compared with those in cultivated areas in the humid tropics.

As secretary of the ISSS Working Group on 'Studies of the Nature and Properties of Soil Colloid Surfaces' I am particularly eager to see the promotion of an interdisciplinary conference in the area of soil structure. It is not necessary to remind soil scientists of the role which the aggregate plays in soil fertility, or to describe the components of aggregates, and to indicate the types of chemical, physical and mechanical forces and bonds which hold these components together, or to outline the effects of cultivation, and of biological oxidation of the component organic colloids, and to indicate the effects of mechanical impacts on the stabilities of the aggregates.

We are well aware that we are far from an understanding at the 'molecular level' of what is involved in aggregates. Prerequisites for any detailed understanding would be a knowledge of the composition, structures, and surface properties of the soil colloids which are the reservoirs of fertility in the aggregates. The state of the art in so far as knowledge in these areas has been outlined in *ISSS Bulletin*, No. 60, pp. 59-88 (1981). Various articles in that series point out that although great progress has been made in understanding the composition and structures of aluminium and iron hydroxides there is still much to be done to understand the genesis and the structures of those hydroxides which occur free in the soil and associated with the other soil colloids, and that progress is slow in obtaining an awareness of the structures and physico-chemical properties of soil organic colloids. In particular much needs to be known about the manner in which the major classes of component colloids are associated in the 'conglomerate' soil colloid, and how the nature of the mixture influences the surface properties of each component in the 'conglomerate'. Awareness in this latter area is important in so far as understanding the contribution of each component to ion-exchange processes and to the retention of nutrients and pollutants. It is important also for an understanding of the interparticle forces and processes which hold the aggregates together.

When I suggest that a proposal might be made to ICSU to consider an interdisciplinary conference on 'soil structure', I have in mind a conference which should be dominated by soil scientists or by scientists who can relate their work to the soil...

... careful consideration might be given to inviting persons who are leaders in their respective areas to present an in-depth treatment of areas relevant to the components, structures, adhesions, porosities, strenghts, etc. of aggregates. This is not the place or time to consider such areas; such a task might well be undertaken by the steering committee for 'Studies of the Nature and Properties of Soil Colloid Surfaces'. However, the finished products might well provide the authoritative view on the state of knowledge in the different areas and also suggest areas most needing attention, and even, perhaps, approaches to ways in which these areas might be studied.

The interdisciplinary team to handle the objectives of the conference would largely come from scientists in the different commissions of the ISSS. These might well be aided by contributions from selected civil engineers, by clay scientists, and by surface scientists and physicists who understand soil components and soils.

Inevitably the financing of such a conference would be expensive...

...There can be little doubt however but that publishers would be eager to 'market' the proceedings, and if these were to be in the form of an authoritative advanced text it is clear that they would have a good market value. The return could be expected to be sufficient at least to finance the expenses of the invited contributors.

Yours sincerely,

M. H. B. Hayes  
Chairman, Commission II, ISSS

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

**Bulgarian Society of Soil Science**



**Professor Dr. Velin Yankov Koinov 70 years of age**

Prof. Velin Yankov Koinov, DSci, corresponding member of the Bulgarian Academy of Sciences (BAS), was born on 17 December, 1912, in the town of Asenovgrad, Bulgaria. He completed his secondary education in 1931 at the Obrastsov Chiflik School of Agriculture near the town of Rousse. He received his higher education at the Liment Okhridski University in Sofia, at the Department of Agronomy where he was granted the scientific degree 'Doctor of Agronomical Science'. In 1939 he became an assistant to the Ordinariat of the same Department and in 1947 an associate professor at the V. Kolarov Higher Institute of Agriculture in Plovdiv and the G. Dimitrov Higher Institute of Agriculture in Sofia. In 1958 he was elected ordinary professor and during many years he was head of the Department of Soil Science at the G. Dimitrov Institute, and of the Department of Soil Genesis and Classification at the

Soil Institute of the Bulgarian Academy of Science. Later on he headed the same Department at the N. Poushkarov Institute of Soil Science. In 1967 he was elected a corresponding member of the Academy of Agricultural Sciences and, later on, of the Bulgarian Academy of Sciences.

The scientific research conducted by Prof. Koinov had been focused mainly on soil genesis, cartography and classification. He was an active member of the joint Bulgarian – Soviet soil expedition in 1947. Prof. Koinov was also an active participant in a number of international meetings, conferences and congresses organized by FAO, ISSS and Soil Science Societies of European countries. He is the author of more than 150 scientific works and of a textbook in soil science. For many years he was at the head of the large-scale soil survey carried out in this country, the result of which is the detailed soil map of the Thracian Valley drawn on a scale of 1:50,000 of which he is the author, as well as the soil maps of Bulgaria on a scale of 1:200,000 and 1:400,000 of which he is a co-author. Since 1958 he has been participating in the preparation of a soil map of the world on a scale of 1:5,000,000 and between 1967 and 1975 he took part in the preparation of the FAO 1:1,000,000 map of Europe as the person in charge with, and correlator for south-eastern Europe. He directed the research related to the soil-geographic regionalization of the country; the geochemical aspects of soil science; the systematics and classification of soils in Bulgaria; the establishment of methods for large-scale soil survey; the specialization and concentration of agricultural production, perspective planning and regionalization of agricultural crops, and a number of other issues. He has trained many scientific workers in soil science. Since 1958 he is a member of ISSS.

The extensive scientific research and applied work of the corresponding member of BAS Prof. Velin Koinov, DSci, had been duly appraised by the Government of the People's Republic of Bulgaria. He was awarded the title 'Dimitrov Prize Laureate' in 1959. Twice (1959 and 1972) he was decorated with the Order of Cyril and Methodius I degree. He has also received many medals and distinctions of honour.

L. Raikov, Sofia, Bulgaria

### **Japanese Society of Soil Science and Plant Nutrition**

The Annual Meeting of the Japanese Society took place in Kyoto from 6 to 8 April 1983. At the meeting 348 papers were presented in the 11 divisions. Also, 3 symposia were held, on the subjects Soil Biomass, Nutrition Diagnosis of Crops, and P-fertility of Paddy Soils.

The next Annual Meeting of the Society will be held in Tokyo at the Tokyo University for Agriculture, April 3–4, 1984, for the General Meeting and the Symposium, and in Sendai at the Tohoku University, for presentation of papers and post-Congress tour, August 20–26, 1984.

*Address of the Secretary:* Dr. Toshio Kaneko, Japanese Society of Soil Science and Plant Nutrition, 26-10-202, Hongo 6-chome, Bunkyo-ku, Tokyo, 113 Japan.

### **Soil Science Society of South Africa**

At a meeting of the Society on 26th January 1983 it was decided that the current name 'the Soil Science Society of Southern Africa' be changed into the above one.

*Address of the Secretary:* R. W. Fitzpatrick, 30030, Sunnyside 0132, South Africa.

### **Australian Society of Soil Science Incorporated**

Dr. Colin Williams, recently retired soil fertility specialist from the Division of Plant Industry CSIRO, Canberra, Australia, received the J. A. Prescott Medal of Soil Science for 1982 of the Australian Society of Soil Science Inc.

The Society will be holding a national soils conference in 1984. The purpose is to allow presentation and discussion of the latest developments in soil science, and to foster closer contact and liaison between soil workers from all parts of Australia, and elsewhere. Participation is open to all interested in soil science. Preliminary details are as follows:

*Date and venue:* 13–18 May 1984, University of Queensland, Brisbane.

*Format and duration:* 3 days working sessions based on presented papers, 1 day pre-conference tour on 13th May and a two day post-conference tour on the 17th and 18th May.

*Further information:* Secretary, A.S.S.I., c/o C.S.I.R.O., Cunningham Laboratory, Carmody Road, St. Lucia Qld. 4067.

### **British Society of Soil Science – Welsh Soils Discussion Group**

The Welsh Soils Discussion Group which recently celebrated its 21st anniversary, continues to provide two meetings a year for its members. Papers are presented and discussed at meetings in May and October and a field excursion is normally arranged to follow the May meeting.

Visiting soil scientists are always welcome at the meetings which are held in the constituent colleges of the University of Wales or at the offices of the Ministry of Agriculture near Aberystwyth. An annual report is published each year containing the papers presented at the meetings. Recent meetings have discussed 'Soils and Archaeology', 'Soils and Upland Management' and 'Soil Related Pests and Diseases'.

Membership of the Group is around 70, drawn from Universities, the Agricultural Advisory Service, the Forestry Commission and other interested bodies throughout Wales. The current officers of the Group are:

Chairman: Dr. A. Throughton\*  
General Secretary/Treasurer: Dr. E. M. Bridges  
Publications Manager: Dr. D. A. Jenkins  
Meetings Secretary: Dr. J. Dearing (1982–3)

\*) recently deceased

*Enquiries* about the group, and its activities and publications should be made in the first place to the General Secretary, Dr. E. M. Bridges, Department of Geography, University College of Swansea, Swansea, SA2 8PP, United Kingdom.

### **Soil Science Society of America**

The officers for the 1982-1983 period are:

President: Dr. H. Gardner, Washington State University  
President-elect: Prof. Dr. Donald R. Nielson, Univ. of California  
Past-President: Dr. Robert G. Gast, University of Nebraska  
Executive Vice President: Dr. Rodney A. Briggs, University of Nebraska, 677 South Segoe Road, Madison, WI 53711, U.S.A.

The 1983 combined annual meeting of the American Society of Agriculture (ASA), Crop Science Society of America (CSSA) and the Soil Science Society of America (SSSA) will take place in Washington DC, 14-19 August.

At the 1982 annual meeting in Anaheim, California *Robert A. Olson*, professor of agronomy of the University of Nebraska, Lincoln, received the Agronomic Achievement Award - Soils; *A. Paul Schwab*, research scientist of Batelle Pacific Northwest Laboratories in Richland, Wash. the Emil Truog Award; *John M. Bremmer*, professor of agronomy and biochemistry at Iowa State University the Bouyoucos Soil Science Distinguished Career Award; and *Garrison Sposito*, professor of soil science at the University of California, Riverside the Soil Science Award.

*James P. Martin*, professor emeritus of soil science at the University of California, Riverside, and *Frank Riecken*, professor emeritus of agronomy at Iowa State University became Honorary Members of the Soil Science Society of America.

### **Israel Society of Soil Science**

Following elections held in March 1983, the executive council of the Society is composed as follows:

Chairman - Dr. A. Mantell, Inst. of Soils and Water, Volcani Center.  
Secretary - Dr. H. Frenkel, Inst. of Soils and Water, Volcani Center.  
Treasurer - Prof. E. Rawitz, Seagram Centre for Soil and Water Sciences, Hebrew University of Jerusalem.  
Members - Dr. J. Ben-Asher, Inst. for Desert Research, Ben Gurion University of the Negev.  
- Mr. S. Sharon, Fertilizers and Chemicals, Ltd.

There are now 108 registered members, among whom 66 are members of ISSS.

*Address* of the Secretary: Inst. of Soils and Water, ARO, The Volcani Center, Bet Dagan 50-250, Israel.

### **Soil Science Society of Pakistan**

The Society elected its new Council for the years 1983 and 1984 as follows:

President: Dr. M. Aslam Mian, Associate Professor, Department of Soil Science, University of Agriculture, Faisalabad  
Vice Presidents: Dr. Taj Muhammad Chaudry, Agricultural Chemist-Soils, Agricultural Research Institute, Tandojam  
Mr. Atta Muhammad Ranjha, Lecturer, Faisalabad  
Secretary: Dr. Altaf Hussain, Associate Professor, Faisalabad  
Joint Secretary: Mr. Muhammad Arshad, Lecturer, Faisalabad  
Treasurer: Dr. Iftikhar Ahmad, Assistant Professor, Faisalabad

A national soil science Congress will be held in Sept. 1983 at the University of Agriculture in Faisalabad.

*Address* of the Secretary: Department of Soil Science, University of Agriculture, Faisalabad, Pakistan.



## Asociación Argentina de la Ciencia del Suelo

*Congress* (for english announcement see page 11)

El X Congreso Argentino y VIII Latinoamericano de la Ciencia del Suelo celebrará-se en Mar del Plata, de 23 al 28 de octubre de 1983. La finalidad principal de esta reunión es analizar y sintetizar el estado actual de la ciencia del suelo en los aspectos de investigación, enseñanza y aplicación del conocimiento, así como brindar la oportunidad para presentar los trabajos realizados en los últimos tres años. El análisis mencionado permitirá detectar aquellas áreas en las que es necesario volcar los mayores esfuerzos para alcanzar un nivel adecuado de aplicación de la tecnología en el manejo del recurso suelo y en la producción de cultivos. Asimismo, a través de la participación de investigadores y educadores de otros países latinoamericanos, se intenta promover el intercambio científico y tecnológico, a la vez que afianzar el funcionamiento de la Asociación Latinoamericana de la Ciencia del Suelo.

Las actividades programadas comprenden la presentación de trabajos inéditos, — en forma oral y/o en paneles —, el funcionamiento de mesas redondas y el desarrollo de conferencias. Los trabajos aceptados por la Comisión Organizadora a través del Comité Asesor, se distribuirán en Comisiones, mesas redondas y conferencias.

En las Actas del X Congreso Argentino y VIII Latinoamericano de la Ciencia del Suelo se publicarán únicamente los resúmenes expandidos. La Revista 'Ciencia del Suelo' de la A.A.C.S., aceptará para su publicación los trabajos completos, a solicitud del autor, quien podrá sin embargo elegir cualquier otro medio para su publicación.

*Dirección:* Dr. Elvira E. Suero, Secretaria, Comisión Organizadora Congreso de Suelos, CC 276, 7620 Balcarce, Prov. Bs. Aires, Argentina (tel. 0266-22040/41/42).

### *Argentinian Subcommittee on Micromorphology*

A Subcommittee of Micromorphology has been created within the Argentine Society of Soil Science. The new Subcommittee has been organized on the basis of a former Working Group. The aim of the Subcommittee is to promote a greater development and diffusion of Micromorphology in different ways: discussion and unification of micromorphological terminology, collection and dissemination specific literature, etc.

The executives of the Subcommittee are: Hector J. M. Morrás and Perla A. Imbellone. *Address:* Cervino 3101, 1425 — Buenos Aires — República Argentina.

## APPOINTMENTS, HONOURS/NOMINATIONS, DISTINCTIONS ERNENNUNGEN, AUSZEICHNUNGEN

Mr. **Graham M. Higgins**, specialist in soil survey & land evaluation, was appointed Chief of the Soils Branch of FAO's Land and Water Development Division in Rome, upon the retirement of Dr. F. W. Hauck from that position.

Prof. Dr. **E. Gordon Hallsworth**, Ancien Président de l'A.I.S.S., vient d'être élu comme membre-étranger de l'Académie d'Agriculture de France.

## IN MEMORIAM

### Dr. R. S. Murthy (1925–1983)



Dr. R. S. Murthy was born on 12th December 1925. He got his B.Sc. degree from the University of Mysore. He obtained his M.Sc. degree in Soil Science and Agricultural Chemistry with distinction and subsequently a Ph.D. (Soil Science) from the Banaras Hindu University. Dr. Murthy started his illustrious career in the Ministry of Irrigation and Power in 1949. He joined the Indian Agricultural Research Institute at New Delhi in 1954 in the Division of Soil Science & Agricultural Chemistry. Between 1958 and 1971 he worked as Assistant Soil Survey officer and Soil Correlator. Subsequently he worked as a Specialist (Soils) in the National Commission on Agriculture, Government of India, 1971. From December 1971 to August 1976 he worked as Chief Soil Survey Officer. Dr. Murthy's reputation as capable soil scientist and administrator earned him the prestigious position of Director of the National Bureau of Soil Survey and Land Use Planning in 1976 which he held till 28.2.1983. As the first Di-

rector of the Bureau he played an important role in planning and laying a sound research programme.

Dr. Murthy travelled widely and attended many international conferences. He presided over many scientific meetings and headed high-level study teams in India and abroad. Besides being a member of various scientific committees and societies, he was the Vice President of the Indian Society of Soil Science; President, Commonwealth Association of Scientific Agricultural Societies, Canada; Member, International Advisory Panel of the International Soil Museum, the Netherlands; Member, Working Group on Desertification, UNEP, Nairobi; Member, Bureau of the International Commission on Water Resource System, Poland; Vice President, Commission V, International Society of Soil Science; Member, Steering Committee, International Board for Soil Resources Management, IRRI Philippines; President of the Agricultural Sciences 69th Session of the Indian Science Congress Association, 1982; and President of the Nagpur Chapter of the Indian Society of Soil Science.

Dr. Murthy played a key role in organising the soils exhibition and post-congress tours of the 12th International Congress of Soil Science held at New Delhi in February 1982, 47th Annual Convention of the Indian Society of Soil Science at Nagpur in October 1982, Silver Jubilee of the National Soil Survey Organisation in October 1982, and the 15th Annual Convention of the Indian Society of Agricultural Chemists at Parbhani in December 1982. He published more than 100 scientific papers in national and international journals.

He was a recipient of three national awards, viz., Rafi Ahmed Kidwai Memorial Prize for Agricultural Research, ICAR; FICCI Award for outstanding contribution in Science & Technology, and Borlaug Award for outstanding research in the field of Agriculture in general and Soil Science in particular.

Dr. Murthy breathed his last at 7.15 P.M. on 4th March 1983 at Bombay after prolonged illness.

N. S. Randhawa, New Delhi, India

Proceedings of the International Society of Soil  
Science — Mitteilungen der Internationalen  
Bodenkundlichen Gesellschaft — Comptes  
Rendus de l'Association Internationale de la  
Science du Sol

Central Organ of Soil Science — Zentralblatt für  
Bodenkunde — Revue de la Science du Sol

Vol./Bd. III

1927-28

No 3

**Election of a new President**

When visiting Rome in November 1927 for the meeting of the International Institute of Agriculture, I received a telegram from Prof. Polynov containing the sad tidings of the death of our President Prof. Dr. K. Glinka.

I at once convoked a meeting of those members of the Executive Committee who were in Rome at the moment (Bilbao, d'Ossat, and Schucht). We came to the conclusion that § 20 of the Statutes was applicable to this case, so that the Executive Committee had the right to settle the question as to who should succeed Prof. Glinka as they judged fit. The arrangement we agreed on was that the Russian members should submit a number of names, from which the Executive Committee could make a choice.

I consequently made this decision known without delay to the Russian members, and received in reply a communication from the Russian representative of our Society, Prof. Jarilov, to the effect that Prof. Gedroiz had almost unanimously been indicated as their candidate. The Executive Committee (d'Ossat, Frosterus, Bilbao, Schucht, Lipman, Hissink) thereupon unanimously nominated Prof. Gedroiz, Leningrad, as President of the International Society of Soil Science.

Acting President and  
General Secretary:

Dr. D. J. Hissink, Groningen (Holland).

**Wahl eines neuen Präsidenten**

Als ich mich im November 1927 in Rom aufhielt, um an der Tagung des Internationalen Landwirtschaftlichen Instituts teilzunehmen, erhielt ich von Prof. Polinov aus Leningrad ein Telegramm mit der traurigen Mit-

Soil Research — Bodenkundliche Forschungen  
Recherches sur le Sol

Supplements to the Proceedings of the International  
Society of Soil Science — Beiheft zu den Mitteilungen  
der Internationalen Bodenkundlichen Gesellschaft —  
Suppléments aux Comptes Rendus de l'Association de  
la Science du Sol

Vol./Bd. I

1928

No 1

**Contribution à l'Etude de l'Argile Colloïdale\***

(Beitrag zum Studium des kolloiden Tons — Contribution  
to the study of the colloidal clay)

par **A. Demolon** et **G. Barbier**

I. Individualité physico-chimique de l'argile colloïdale

Les études ont porté sur la matière argileuse extraite de la terre à briques.

La totalité de celle-ci est susceptible de prendre l'état colloïdal. Son extraction nécessite préalablement sa dispersion, et ce but ne peut être atteint qu'après élimination des électrolytes coagulants et action d'un déflocculant énergique (soude, ammoniacque).

La matière argileuse apparait comme douée de propriétés spécifiques en relation avec son état colloïdal, en particulier en ce qui concerne les phénomènes d'adsorption. Si, dans l'analyse mécanique des sols,

*Glinka(r): 'Sie haben in Holland doch gar keine Böden!'*

*Hissink(l): 'Aber wir haben Ernten!'*

(cf. Stebutt; Lehrbuch der Bodenkunde)



## THE 1:1 MILLION SOIL MAP OF THE EUROPEAN COMMUNITIES

### *Short outline with regard to its preparation*

During an EC expert meeting in Ireland in 1979 it was agreed by FAO that EC should prepare a Soil Map of the European Communities on scale 1:1 million. Most of the documentation and information necessary for this map was provided by the European countries which had cooperated since 1965 until 1974 with the FAO project of a Soil Map of Europe at 1:1 million. Updating or improvement of the existing documents was made in the beginning of 1980. Complete new material such as the 1:1 million Soil Map of France was incorporated into the first draft, presented at a meeting of an expert sub-group on Land Resources Evaluation held at Ghent in May 1980. The compilation, drafting and proof correction of the Soil Map of the European Communities are carried out since then at the Geological Institute, Ghent under the direction of Professor R. Tavernier.

The Soil Map of the European Communities will cover the ten EC countries and the proposed new entrants Portugal and Spain. This map consists of seven sheets as indicated on the figure. They are drawn on topographic base maps of the 1:1 million series of the Operational Navigation Charts. The legend is shown on two separate sheets. The sheet size is 88,5 cm × 114,7 cm; the overall size when joined up is 253,3 cm × 337,3 cm. The printing is carried out by Cook, Hammond & Kell Ltd. in England.

The classification used for this map is the one adopted for the FAO-Unesco Soil Map of the World at scale 1:5 million. The soil units have been grouped in several orders such as the Fluvisols, Luvisols, Histosols, etc. These orders have been further subdivided in great groups which in turn, especially for the Soil Map of the European Communities, have been broken down, when necessary, in subgroups. These subgroups are indicated by a 3 digit symbol in the legend.

The legend consists of 312 numbered units. These are the designated soil associations, each of which is characterized by the dominant soil and by associated soils (covering more than 10% but less than 50% of the area) together with units of smaller extent (inclusions). These associations are also characterized by the textural class of the dominant soil and the slope class.

Fifty-one different dominant soil units on the great group level have been indicated on the map by means of specific colours which are about the same as on the FAO-Unesco Soil Map of the World. Phases and miscellaneous land units are indicated by black overprint of ornaments.

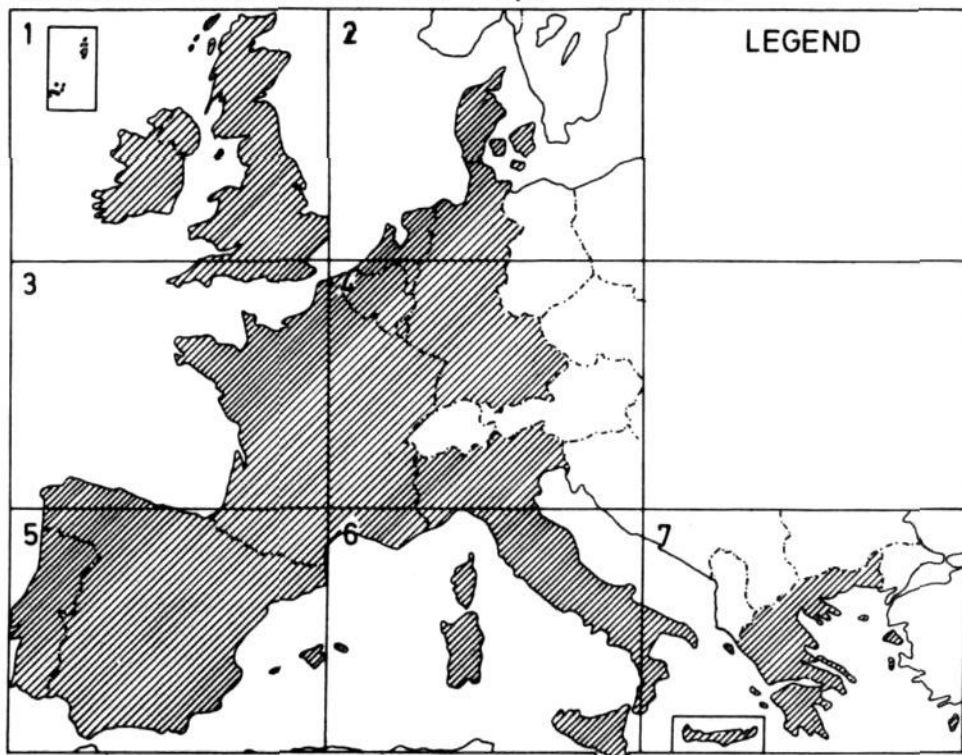
The printing of the Soil Map and the redaction of an explanatory text accompanying this map are progressing satisfactorily. The full colour printed proof of sheets 1 to 3 was corrected on the end of March 1983 while the line work and type proofs of sheets 4 to 7 are already checked. Some chapter of the booklet are also in final draft. In any event everything about the publication should be ready for printing by end of 1983. At least one thousand copies of the Soil Map of the EC would be printed initially with contract for possibly more copies.

The publication of this map and accompanying explanatory text will be the culmination of 30 year's work on the soils of a part of Europe but will also come at an opportune time when new interest in 'suitability' mapping for crops has become an important aspect of land utilization and planning throughout the community.

Those wishing to receive *further information* on the publication and future distribution of the map should apply to: Commission of the European Communities, DG VI F-4, Rue de la Loi 86, 1040 Brussels, Belgium.

R. Tavernier, Ghent, Belgium.

## EUROPEAN COMMUNITIES - Soil Maps - Sheet Plan



### *Comments*

Ever since the late sixties there have been plans to arrive at a modern soil map of the European continent, as an elaboration of the existing FAO-Unesco 1:5,000,000 Soil Map of the World project.

Relevant data for a 1:1,000,000 map were collected and recorded on country maps by national soil correlators in all countries concerned, and assembled at a coordinating office at the University of Ghent, Belgium (Prof. R. Tavernier), with scientific support from FAO (Dr. R. Dudal). FAO was also to finance the production of the map, but unfortunately it had to terminate its involvement in 1974 because of a general lack of funds.

In the late seventies interest in the map production was revived through the EC Land Resources Evaluation project, which needed a basic document on soils for its land use and land degradation assessment programmes. The EC however committed itself only to the financing of the map sheets covering the EC member countries and those to be associated in the near future: Ireland, UK, Denmark, Netherlands, Belgium, Luxemburg, BRD, France, Italy, Greece, Spain and Portugal. Even though most of the other European countries occur wholly or partially on the map sheets concerned (see sheet plan), their soil units will not appear on the EC map. The respective territories are to remain blank.

Not surprisingly, a number of national soil correlators of the non-EC European countries have expressed their disappointment with the present arrangements, because of the wealth of data assembled with so much effort and dedication over the past dozen of years. This concern is shared by the Officers of ISSS, also in view of the

venue and the theme of the next International Congress of Soil Science, to take place in Hamburg-BRD in August 1986. That event would be an ideal occasion to present and discuss the contents of the full set of map sheets and reports, as a basis for regional exchange of agro-technology and environmental conservation. It would be very much a pity if such a basic document would be lacking just because of lack of funds for printing!

It has now been agreed that a concerted effort should be undertaken, with the cooperation of the national institutions concerned, to ensure printing of the map sheets for *all* of Europe. It is still feasible to do this in conjunction with the EC-part, because as yet only the western most sheets (no. 1, 3 and 5) are in the production phase.

In consultation with FAO and Unesco, the Secretary-General has recently made an appeal to UNEP for some financial support for the printing of the soil map of the whole of Europe at scale 1:1,000,000, in concertation with the current EC activity in this field. The effort may be considered to constitute an important step in the updating of the FAO-Unesco 1:5,000,000 Soil Map of the World, which forms part of UNEP's World Soils Policy Plan-of-Action; it would also strengthen the case for the elaboration of an International Reference Base for soil classification.

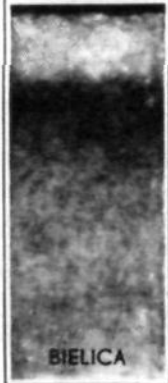
The total costs involved for the non-EC part of Europe are in the order of \$ 360,000. However, the costs for completion of sheets 2, 4, 6 and 7 are relatively modest (less than \$ 100,000) because their base maps have already been prepared, and all soil boundaries and their coding are ready for fair drawing. It is hoped that UNEP will at least provide part of the costs for completion of these four sheets, and that the remainder will be shared by the countries involved. The Secretary-General will soon enter into contact with directors or national correlators of the soil institutions in these countries. He would also appreciate signs of encouragement, and own initiatives on fund raising. □

*The Polish Postal Services' appreciation of the importance of soils in the European context...*

GLEBA NAJWIEKSZYM SKARBEM I ZRODLEM ZYCIA



REDZINA



BIELICA

KARTKA POCZTOWA  
POLSKIE  
TOWARZYSTWO  
GLEBOZNAWCZE



Secretary-general ISSS

c/o ISM, P.O. Box 353

6700 AJ Wageningen



Holandia

P. P. T. 88 82 200 000 PRZY ul. MAT. SZYBIAK 11 GAWLONSKI



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

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

**1983**

**Centennial Commemoration of the Mount Krakatau Explosion**, August 1983.

*Information:* Committee on 100th Anniversary of Mt. Krakatau Explosion, Lipi, Jl. Tenku Chik Ditiro 43, Jakarta, Indonesia.

**2nd International Symposium on Iron Nutrition in Plants**, Logan, Utah, USA, August 2-5, 1983.

*Information:* D. W. James, Dept. of Soil Sci. and Biometeorology, Utah State Univ., Logan, Utah 84322, USA.

**3rd International Symposium on Microbial Ecology**, East Lansing, Michigan, USA, August 7-12, 1983 (Intl. Union of Microbiol. Sci., IUMS).

*Information:* Dr. C. Wells, The Kellogg Center for Continuing Education, Michigan State Univ., East Lansing, MI 48824, USA.

**Annual Meeting of the Soil Science Society of America**, Washington, DC, USA, August 14-18, 1983.

*Information:* Mr. Keith Schlesinger, Soil Science Society of America, 677 South Segoe Road, Madison, Wisconsin 53711, USA.

**18th General Assembly of Intern. Union of Geodesy and Geophysics (IUGG)**, Hamburg Fed. Rep. of Germany, August 15-26, 1983. (With Symposia and Workshops on Remote sensing and data transmission; Groundwater; Hydrology of humid tropical regions with particular reference to the hydrological effects of agriculture and forestry practices).

*Information:* J. C. Rodda, Water Data Unit, Reading Bridge House, Reading, Berks, RG1 8PS, England.

**International Meeting on Geochemistry, Preparation and Characterisation of Humic Substances**, Estes Park, Colorado, USA, August 17-24, 1983.

*Information:* Dr. L. Malcolm, IHSS, US Geological Survey, MS 407, Box 25046, Federal Center, Denver CO 80225, USA.

**9th International Symposium on Microchemical Techniques and Trace Analysis**, Amsterdam, the Netherlands, August 20-September 2, 1983.

*Information:* Dr. G. den Boef, c/o Municipal Congress Bureau, Oudezijds Achterburgwal 199, 1012 DK Amsterdam, the Netherlands.

**5th International Symposium on Nitrogen Fixation**, Noordwijkerhout, the Netherlands, August 28-September 3, 1983.

*Information:* Organizing Committee, International Agricultural Centre, P.O. Box 88, 6700 AB Wageningen, the Netherlands.

**\*8th International Symposium 'Humus et Planta'**, Prague, Czechoslovakia, August 28-September 3, 1983 (ISSS Commission II).

*Information:* Dr. J. Damaska, Secretary Organising Committee, c/o Research Institute for Amelioration of Agricultural Soils (VUZP), 16106 Prague 6-Ruzyně, Czechoslovakia.

**Geomaterials: Rocks, Concretes, Soils**, Evanston, Illinois, USA, September 11–15, 1983.

*Information:* Secretary-General IUTAM, Chalmers Univ. of Technology, Fack, S-40220 Gothenburg 5, Sweden.

**6th International Symposium on Environmental Biochemistry**, Santa Fe, New Mexico, USA, October 9–14, 1983.

*Information:* Dr. D. E. Caldwell, Dept. of Biology, Univ. of New Mexico, Albuquerque, NM 87131, USA.

**International Conference on Utilisation of Phosphate Rocks in Soils in Latin America**, Cochabamba, Bolivia, October 10–15, 1983.

*Information:* Mr. V. Ricaldi, Casilla 183, Cochabamba, Bolivia

**International Symposium on Peat Utilization**, Bemedji, Minnesota, USA, October 11–13, 1983.

*Information:* Dr. S. Spigarelli, Bemedji State Univ., Bemedji, Minnesota 56601, USA.

**\*International Symposium on Peat and Peat Soils**, Israel, October 9–14, 1983.

*Information:* Dr. K. M. Schallinger, Volcani Centre, P. O. Box 6, Bet-Dagan 20–500, Israel.

**\*International Workshop on Salt-affected Soils of Latin America**, Maracay, Venezuela, October 23–30, 1983 (ISSS Subcommittee A; see ISSS Bulletin 62).

*Information:* Prof. A. Florentino, Apartado 1208, Santa Rosa, Maracay, Venezuela.

**8th Latinamerican and 10th Argentinian Congress of Soil Science**, Mar del Plata, Argentina, October 23–28, 1983.

*Information:* Comision Organizadora Congreso de Suelos, CC 276, 7620 Balcare, Buenos Aires, Argentina. (See also pages 11 and 33).

**\*International Workshop on Land Evaluation for Extensive Grazing**, ILCA, Addis Abeba, Ethiopia, October 31–November 5, 1983 (ISSS Working Group LE; see ISSS Bull. 62).

*Information:* P. J. Brumby, ILCA, P.O. Box 5689, Addis Abeba, Ethiopia. or: Prof. Dr. I. S. Zonneveld, ITC, P.O. Box 6, 7500 AA Enschede, the Netherlands.

**International Conference on Environmental Hazards of Agrochemicals in Developing Countries**, University of Alexandria, Research Center, Alexandria, Egypt, November 8–12, 1983 (cooperation UNEP-Unesco/MAB).

*Information:* Dr. A. H. El Sebae, Associate Director UNARC, P.O. Box 832, Alexandria, Egypt.

**\*International Symposium on Red Soils of Tropical and Subtropical China**, Nanjing, People's Republic of China, November 15–19, 1983, and post-symposium 10-days excursion in Southern China.

*Information:* Dr. Gong Zitong, Secretary Organizing Committee, Symposium on Red Soils, c/o Institute of Soil Science, Academia Sinica, P. O. Box 821, Nanjing, P.R. of China.

## 1984

**\*International Symposium on Soil Test and Crop Response Correlation Studies**, Dacca, Bangladesh, February 7–10, 1984 (ISSS Commission IV).

*Information:* Prof. I. U. Ahmed, c/o Dr. M. A. Mannan, Bangladesh Agric. Res. Council, Farm Gate, New Airport Road, Dacca-15, Bangladesh.

**Conference on Advancing Agricultural Production in Africa, including a Symposium on Natural Resources**, Arusha, Tanzania, February 13–18, 1984.

*Information:* Prof. H. Y. Kagumbo, Nat. Res. Council of Tanzania, or Dr. D. L. Hawksworth, Commonwealth Agricultural Bureaux, Farnham House, Farnham Royal, Slough SL2 3BN, UK.

**3rd International Symposium on Land Subsidence** of the International Association of Hydrological Sciences, Venice, Italy, March 19–24, 1984.

*Information:* Dr. A. Ivan Johnson, c/o Woodward-Clyde Consultants, 7600 East Orchard Road, Englewood, CO 80111, USA.

**\*International Conference on Soil Salinity under Irrigation – Processes and Management**, Bet-Dagan/Tel Aviv, Israel, March 25–29, 1984 (ISSS Subcommission A).

*Information:* Dr. B. Yaron, Chairman Organizing Committee, P.O. Box 3054, Tel Aviv 61030, Israel (see also ISSS Bulletin 62).

**Conference on Agricultural Engineering AG ENG 84**, Cambridge UK, April 1–5, 1984.

*Information:* Dr. G. F. Forster, NIAE, Wrest Park, Silsoe, Bedford, MK45 4HS, UK.

**Symposium on Site and Productivity of Fast Growing Plantations**, Pretoria and Pietermaritzburg, South Africa, 23 April–6 May 1984 (IUFRO).

*Information:* Symposium Secretary S.314, CSIR, P.O. Box 395, Pretoria 0001, Republic of South Africa.

**2nd International Rangeland Congress**, Adelaide, Australia, May 13–18, 1984.

*Information:* Mr. P. J. Joss, CSIRO, Denilquin, NSW 2710, Australia.

**International Savanna Symposium**, Brisbane, Australia, May 28–31, 1984

*Information:* Symposium Secretary, I.S.S., Div. Tropical Crops and Pastures, CSIRO, Cunningham Lab., St. Lucia, Brisbane, Australia 4067.

**Symposium on the History of Soil and Water Conservation**, Columbia, Missouri, USA, May, 24–26, 1984

*Information:* D. Helms, Historian, SCS-USDA, P.O. Box 2890, Washington DC 20013, U.S.A.

**\*International Panel on Volcanic Soils**, Tenerife, Canary Islands, Spain, July 1984.

*Information:* M. E. Fernandez Caldas, Dpto. de Edafología, Univ. de la Laguna, Tenerife, Islas Canarias, Spain.

**International Symposium on Challenges in African Hydrology and Water Resources**, Harare, Zimbabwe, July 23–27, 1984 (cooperation of Unesco, WMO and IAMS).

*Information:* Zimbabwe Conference Board, P.O. Box 1898, Harare, Zimbabwe.

**27th International Geological Congress**, Moscow, USSR, August 4–14, 1984 (Int. Union of Geological Sciences).

**3rd World Soybean Conference**, Ames, Iowa, USA, August 12–17, 1984.

*Information:* Dr. W. R. Fehr, Dept. of Agronomy, Iowa, State Univ., Iowa 50011, USA.

**25th International Geographical Congress**, Paris, France, August 27–31, 1984.

*Information:* Secretary-general I.G.U., c/o Geographisches Inst. Univ. Freiburg, D-78 Freiburg i. Br, Werderring 4, BRD.

**9th World Fertilizer Congress of C.I.E.C.** Instead of Uppsala, Sweden, June 14–18, 1983 will be held in **Budapest**, Hungary 11–16 June 1984.

*Information:* Dr. Cs. Csáky, MTE SZ MAE, Budapest, Kossuth L. tér 6-8. H-1055 Hungary.

**\*International Symposium on Water and Solute Movement in Heavy-clay Soils**, Wageningen, the Netherlands, August 27–31, 1984 (ISSS Commissions I and V and Working Group MV).

*Information:* Dr. J. Bouma, c/o Dutch Soil Survey Institute STIBOKA, P.O. Box 98, 6700 AB Wageningen, the Netherlands.

**3rd International Symposium on Nitrogen Fixation with Non-Legumes**, Helsinki, Finland, September 2–8, 1984.

*Information:* P. Uomala, SITRA FIN-NIF, P.O. Box 329, SF-00121, Helsinki, Finland.

**10th International Congress of Agricultural Engineering**, Budapest, Hungary. September 3–11, 1984.

*Information:* Gy. Szalai, CIGR Congress Coordinator, Comité National Hongrois de la CIGR, Kossuth Lajos tér 6–8. IV. 425, H-1372 Budapest, V., Hungary.

**\*International Meeting on Classification and Management of Soils in Mountainous Regions**, Sofia, Bulgaria, September 25–October 3, 1984 (ISSS Commissions V and VI).

*Information:* Organizing Committee, International Meeting Mountainous Soils, 5 Shosse Bankya, P.O. Box 1369, 1080 Sofia, Bulgaria.

**12th International Congress on Irrigation and Drainage**, Fort Collins, Denver, Colorado, USA, October 3–10, 1984.

*Information:* Secr. ICID, 48 Nyaya Marg. Chanakyapuri, New Delhi 110012, India.

**\*International Workshop on Land Evaluation for Soil Erosion Hazard Assessment**, Enschede, the Netherlands, October 18–22, 1984 (ISSS Working Group LE and Subcommission C).

*Information:* Prof. Dr. K. J. Beek, ITC, P.O. Box 6, 7500 AA Enschede, Netherlands.

**\*4th Symposium on Remote Sensing for Soil Survey**, Dakar, Senegal, end 1984, or January 1985 (ISSS Working Group RS).

*Information:* F. Hilwig, Projet USAID/RSI, BP 6267, Dakar-Etoile, Senegal.

## 1985

**\*International Symposium on Cerrado: Technology for Use and Management**, Brasilia, Brazil, March 1985 (ISSS Commissions IV, V and VI) (earlier announced as 'International Conference on Characterization and Management of Soils originally under Tropical Savannah Vegetation').

*Information:* Dr. W. L. Goedert, EMBRAPA-CPAC, Caixa Postal 70/0023, CEP 73300 Planaltina, DF, Brazil.

**10th Conference of the International Soil Tillage Research Organization (ISTRO)**, Guelph, Canada, July 1985.

*Information:* Prof. Dr. J. W. Ketcheson, University of Guelph, Ontario Agric. College, Dept. of Land Resource Science, Guelph, Ont. N1G 2W1, Canada.

**\*International Symposium on the Mapping of the Soil-Water Balance**, Budapest, Hungary, August 1985 (ISSS Commission I, V and VI, and Working Group MV).

*Information:* Dr. G. Várallyay, Research Inst. of Soil Science & Agric. Chemistry, Herman Otto út 15, Budapest 11, Hungary.

**\*7th International Meeting on Soil Micromorphology**, Paris, France, July 8–12, 1985 (ISSS Subcommittee B).

*Information:* N. Fedoroff, c/o INA P-G Dépt. des Sols, 78850 Thiverval-Grignon, France.

**Symposium on Potassium in Agriculture**, Atlanta, Georgia, USA, July 8–10, 1985.

*Information:* D. Armstrong, Potash & Phosphate Inst., 2801 Buford Highway, N.E., Suite 401, Atlanta, GA 30329, USA

**8th International Clay Conference**, Denver, USA, July 28–2 August 1985 (Int. Union Geol. Sci. – IUGS/Ass. Int. pour l'Etude des Argiles – AIPEA).

*Information:* Dr. P. Hauff, Box 25046, M.S. 917, Denver, Colorado 80225, USA.

**\*9th International Colloquium on Soil Zoology**, Moscow, USSR, August 1985.

*Information:* Prof. M. Ghilarow, Morph. Evolution and Animal Ecology, Lenin Avenue 33, 117071 Moscow W-71, USSR.

**1st International Conference on Geomorphology**, Manchester, UK, September 15–21, 1985.

*Information:* Prof. I. Douglas, School of Geography, Univ. of Manchester, Manchester, M13 9PL, England, UK.

**\*International Symposium on Desertification**, Khartoum, Sudan, November 1985.

## 1986

**\*3rd International Symposium on Acid Sulphate Soils**, Dakar, Senegal, January 6–10, 1986 and excursion from 13–17 January, 1986 (ISSS Working Group AS).

*Information:* Prof. Dr. L. Pons, Dept. of Soil Sci. and Geology, Agric. Univ., P.O. Box 37, 6700 AA Wageningen, the Netherlands.

**\*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.

*continuation from next page:*

**Short Course on Climate and Desertification, International School of Climatology, Erice, Sicily, Italy**

The third international course, devoted to 'The Climatological Aspects of Desertification: Facts, Theories and Methods' will be held at the Ellore Majorana Centre for Scientific Culture, Erice-Trapani, Sicily, Italy, from 10–22 October 1983. This interdisciplinary course is open for graduate and post-graduate students in environmental sciences. Some fellowships are available.

*Information:* Dr. R. Fontechi, Course Director, Commission of the European Communities, Environment Research Programmes (DG12), Rue de la Loi, 200 B, B-1049 Brussels, Belgium.

**Short Courses on Irrigation and Drainage, Utah, USA**

A number of short courses (3–6 weeks) in English and Spanish are organised each year by the International Irrigation Center. The courses include a large number of subjects in the field of irrigation and drainage, and also soil and water conservation.

*Information:* Dept. of Agric. and Irr. Eng., UMC 41, Utah State University, Logan, Utah 84322, USA.

## INTERNATIONAL TRAINING COURSES/COURS INTERNATIONAUX DE FORMATION/INTERNATIONALE FORTBILDUNGSKURSE

Supplementary to/supplémentaire à/Ergänzung von Bulletin 62, pp. 42-47

### **Cours de 3e cycle en Protection de l'environnement, EPFL, Lausanne, Suisse**

L'Ecole polytechnique fédérale de Lausanne (EPFL) organisera à partir de janvier 1984 un nouveau cours de 3e cycle en protection de l'environnement. Le cours a une durée de 15 mois et est subdivisé en deux parties indépendantes: une formation générale de 6 mois (étude théorique) et un travail de recherche individuel (étude pratique) d'une durée de 9 mois dans l'une des 4 orientations suivantes: protection des sols; écologie des polluants; génie biologique; génie sanitaire.

Le programme est offert aux titulaires d'un grade universitaire scientifique ou technique d'établissements supérieurs suisses ou étrangers de niveau comparable au diplôme de EPFL.

*Information:* Prof. L. Y. Maystre, Inst. du génie de l'environnement, EPFL-Ecublens, CH-1015 Lausanne, Suisse.

### **International Postgraduate Programme in Irrigation Engineering, Leuven, Belgium**

Catholic University of Leuven, Fac. of Agricultural Sciences

The programme comprises one academic year (October-July), is given in the English language and is open to persons with an academic degree in agriculture, in civil engineering or equivalent. The purpose of the programme is to train agricultural and civil engineers, particularly those from developing countries, in advanced irrigation and the management of irrigated land. Special emphasis is put on quantitative approaches, for which computer facilities are available. The course includes lectures, exercises and project design, and an excursion to Southern Europe.

*Information:* Director, Irrigation Engineering, Kardinaal Mercierlaan 92, B3030 Leuven (Heverlee), Belgium.

### **Post-graduate Course in Soil Science, Maracay, Venezuela**

This course is aimed to prepare students and professionals at the levels of M.Sc. and Ph.D., with capabilities for creating, planning and executing work on basic and applied research in Soil Science, and to relate research with management, conservation and use of soils in tropical environments.

These objectives are obtainable through a set of basic and optative courses, and the completion of and individual research work.

The official language is Spanish, but requiring a broad instrumental knowledge of English.

*Information:* Universidad Central de Venezuela, Facultad de Agronomía, Comisión de Estudios para Graduados, Curso de Postgrado en Ciencia del Suelo, Avda. Principal el Limón, Apartado Postal 4579, Maracay, Estado Aragua, Venezuela.

### **Short Course in Modelling of Agricultural Production: Weather, Soils and Crops, Wageningen, the Netherlands**

This new two-weeks post-graduate Course, taking place from November 21 to December 3, 1983, is organized jointly by the Foundation for Post-Graduate Courses of the Agricultural University of Wageningen and the World Meteorological Organization of Geneva, with co-sponsoring by FAO.

The course is intended for persons from developing countries, preferably from the humid tropics, who in their professional careers can apply the acquired skills in the field of agricultural planning, research and extension. The modelling approach developed by the Centre for World Food Studies will be taken as guideline.

*Information:* dr. ir. H. van Keulen, CABO, P.O. Box 14, 6700 AA Wageningen, the Netherlands

(see page 43 for other short courses).



## Research grants for developing country scientists

### THE INTERNATIONAL FOUNDATION FOR SCIENCE (IFS)

The International Foundation for Science, founded in 1972, is a non-governmental organization with a membership of 65 scientific academies and research councils in 58 countries, of which two-thirds are in developing countries and one-third in industrial countries.

The Foundation is governed by an international Board of Trustees. The Secretariat is located in Stockholm, Sweden.

#### *Granting Programme*

The Foundation provides young scientists and technologists of outstanding merit from developing countries with financial and other support in their work.

Criteria for a grant are the scientific quality and potential of the proposed research project and its relevance to the needs of the country.

- Grantees must be native to, and carry out the research in, a developing country.
- The IFS presently supports research in the fields of applied biology, agriculture, and rural technology.
- The grants enable researchers to purchase equipment, expendable supplies, literature, etc. Normally, the grants amount up to US \$ 10,000 and can be renewed three more times.
- The communication and sharing of scientific information between the grantees themselves and between grantees and senior advisers is encouraged and promoted by regional meetings and visits to project sites.
- Between 1974 and January 1983, the IFS has awarded grants to more than 600 researchers in 74 countries in Asia, Africa, Oceania, and Latin America. More than half these scientists have received one or more renewal grants.

#### *Financing*

At present eleven countries – and Unesco – contribute to the Foundation's budget, normally by government grants through academies or research councils. The annual budget for 1982 was slightly more than US \$ two million.

The institutes of the grantees contribute with the grantees' salaries and basic support for their research, often at amounts several times higher than the Foundation's grants.

#### *History*

In the late 1960's possible measures to reduce the drain of scientific talent from developing countries were discussed in international scientific circles.

In 1972 the International Foundation for Science was established by national academies or research councils in 12 countries. An Interim Board of Trustees was appointed.

In 1973 Sweden and Canada provided initial financing. The Interim Board of Trustees decided, after lengthy discussions both with scientists and research administrators, to concentrate its activities on the support of scientists conducting research in the biological sciences and their application to the production of food and other commodities. It was felt that these areas of research held the greatest potential for improving the health and nutrition of people living in developing countries.

Requiring that the research be done *in* the developing country *by* its own scientists gave further assurance that research priorities were based on the actual needs of the country. Subject to available funds, the Foundation would later enter other fields of science and technology.

In 1974 the first 45 grants were awarded and in 1975 the Foundation held its first General Assembly with 42 delegates from 23 countries. A Board of Trustees was elected and Statutes adopted. At the Second General Assembly, held in 1978, participants agreed on the desirability of supporting research projects in a new area, Rural Technology, and this decision was subsequently approved by the Board of Trustees. The Third General Assembly, 1981, was held for the first time in a developing country. The location was Chiang Mai, Thailand.

As of January 1983 the Foundation has Member Organizations in 58 countries and has provided support to more than 600 grantees. Eleven countries – and Unesco – are now financial donors of the IFS: Sweden,

U.S.A., Canada, Federal Republic of Germany, France, Australia, The Netherlands, Belgium, Nigeria, Norway and Switzerland.

#### Board of Trustees 1982-1984:

G. Butler, Canada, President  
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V. Ramalingaswami, India  
A. Sawadogo, Ivory Coast  
L. Vining, Canada  
J. Weniger, Fed. Rep. of Germ.

#### Present Scientific Areas

1. **Aquaculture.** Research on fish and shell-fish to develop local fish-farming. Fry production, including artificial spawning. Feeding, genetic improvement, cultivation techniques. Useful aquatic plants.
2. **Animal production.** Development of new feed resources and methods for dry season feeding. Introduction of improved animal production systems, research on neglected animal species and collection of basic information on performance of local breeds. Prolonging storage life of animal products.
3. **Food crops.** Crops of value particularly in subsistence agriculture. Research on plant physiology and pathology. Genetic improvement for higher yield and disease resistance. Cultivation techniques, disease control and drought resistance. *Plant-soil-relationships, soil microbiology.* Methods for improved storage and simple processing.
4. **Afforestation and mycorrhiza.** Symbioses between fungi and roots of trees or agricultural plants. Research in physiology, ecology, and symbiotic efficiency of different fungi. Inoculation methods. Afforestation methods for tropical countries.
5. **Fermentation and applied microbiology.** Traditional fermentation processes, research on mycotoxins. New methods for food preparation. Storage of food. Biogas.
6. **Natural products.** Utilization, isolation and investigation of useful compounds from plants. Search for new sources of plant-derived chemicals. Structure elucidation. Phytochemical and pharmacological investigations, including ethnobotanic studies. Cultivation.
7. **Rural technology.** Low-cost technology for rural and agricultural construction, particularly with locally available materials. Examples are fish ponds, human dwellings, animal housing, drying and storage facilities, small-scale units for villages or farms, water systems.

#### Countries with IFS Member Organizations

Argentina	Germany, Fed. Rep. of	Malawi	Somalia
Australia	Ghana	Malaysia	Sri Lanka
Belgium	Guyana	Mexico	Sudan
Brazil	India	Nepal	Sweden
Cameroon	Indonesia	Netherlands	Switzerland
Canada	Iran	Niger	Tanzania
Chile	Israel	Nigeria	Thailand
Colombia	Ivory Coast	Norway	Tunisia
Congo	Jamaica	Pakistan	Uganda
Costa Rica	Japan	Panama	United Kingdom
Denmark	Jordan	Papua New Guinea	U.S.A.
Egypt	Kenya	Peru	Venezuela
Ethiopia	Korea, Rep. of	Philippines	Zambia
Finland	Kuwait	Senegal	
France	Liberia	Seychelles	

#### Further information

The following are available from the IFS:

'Directory of Grantees' - names and addresses of all grantees with the titles of projects.  
'IFS WORK' - An introductory summary of each priority area followed by brief descriptions of projects.

'Research Grant Application' - Applications for grants should be made on this form, which must be endorsed by the applicant's institute or an appropriate national authority before being submitted for consideration.

#### Address:

IFS, Sbyllegatan 47, S-114 42 Stockholm, Sweden.

## 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 Museum (ISM) in Wageningen, the Netherlands.

*Les titres de 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 inspectées au siège de l'AISS, p/a Muséum International des Sols (ISM) à Wageningen, Pays-Bas.*

Die Titel neuer Veröffentlichungen sind hier zur Information angeführt. Bitte richten Sie Ihre Bestellungen nicht an das IBG Sekretariat sondern an den Buchhandel oder direkt an die Verlage. Fast all Veröffentlichungen sind jedoch zu besichtigen an der Stelle der IBG, p/A International Soil Museum (ISM) im Wageningen, Holland.

**Die Bodenkunde und ihre geologischen, geomorphologischen, mineralogischen und petrologischen Grundlagen. 2., übergearbeitete Auflage.** Prof. Dr. Dr. Dr. h. c. Eduard Mückenhausen. DLG Verlag, Frankfurt am Main, 1982, 632 S., 185 Schwarz-weiß Abbildungen, 24 Farbtabeln. ISBN 3-7690-0278-7.

Die jetzt auf den neuesten Stand gebrachte zweite Auflage des vorliegenden Lehrbuches ist ein geschlossener Grundriss der Bodenkunde und ihrer geowissenschaftlichen Grundlagen.

Im ersten Teil des Buches werden die Grundlagen der Bodenkunde soweit dargestellt, als es für das Verständnis der Entstehung, den Aufbau und die Eigenschaften der Böden notwendig ist.

Im zweiten Teil werden zunächst das Ergebnis der Verwitterung der Gesteine, nämlich die Textur und die stoffliche Zusammensetzung des anorganischen Bodenanteiles, dargeboten. Daran schliesst sich das Kapitel über den organischen Bodenanteil an. Auf die Bodenkomponenten bauen sich die physiko-chemischen Eigenschaften auf. Die weitere Betrachtung des Micro- und Makrogefüges vervollständigt die Grundlage für die Darstellung des Wassers im Boden, der Bodenluft und der Bodenwärme. Alle diese Voraussetzungen erlauben nun die Betrachtung der Bodenorganismen, und deren Arbeit im Boden. Es folgen die bodenbildenden Prozesse, und daran schliesst sich die Bodensystematik an.

Die Bodentypen Mitteleuropas werden eingehender, die wichtigsten der übrigen Erde kürzer dargestellt, dieser Teil wird durch 28 farbige Profile weitverbreiteter Böden anschaulich gemacht. Für die Paläoböden ist ein besonderes Kapitel vorgesehen.

Ergänzende Kapitel über Bödenkartierung, Bodenerhaltung, Kreislauf der Stoffe in der Erdkruste und an deren Oberfläche, Bodenschätzung sowie Untersuchung des Bodens im Felde vervollständigen das Bild.

Der Autor ist Ehrenmitglied der IBG.

Preis: DM 190.00.

Bestellungen: DLG Verlag, Rüterstrasse 13, 6000 Frankfurt am Main 1, BRD.

**Guidelines for Evaluating the Adequacy of Soil Resource Inventories.** T. Forbes, D. Rossiter, A. van Wambeke. SMSS Technical Monograph No. 4, Washington DC, 1982, 50 p.

The authors present a methodology to evaluate the adequacy of soil resource inventories with regard to standards that institutions may wish to adhere to.

The criteria for evaluation are grouped under four points: (1) map scale, large enough so that the smallest area of interest to the user can be legibly represented on the map; (2) adequacy of the map legend so that all the land qualities and/or soil properties which are needed to predict the performance of soils for specific uses can be found in the inventory; (3) base map quality, or the accuracy by which points and areas can be located on the ground or on the map, and (4) ground truth, or the proportion of the map area in which the reported soil information is substantially correct.

The four points are developed in separate chapters explaining the rationale of the methodology, followed by a step by step description of the evaluation procedures. Examples of calculations are given. A glossary, area and distance conversion formulas, a system of reference coordinates, tables of random digits, and the construction of binomial acceptance test graphs are given in appendices.

The evaluation needs the cooperation of competent soil scientists or agronomists capable of appraising land qualities or soil characteristics in the field or in the laboratory.

The method will be of interest to individuals, institutions or agencies which need to assess the adequacy of soil resource information for land development projects. It will help to define acceptability or rejection of soil surveys which are commissioned. It may also be used to screen soil information before it is included in data banks.

Requests to: Program Leader, Soil Management Support Services, Soil Conservation Service, P. O. Box 2890, Washington, DC 20013, U.S.A.

A. van Wambeke, Ghent

**Entstehung, Eigenschaften und Systematik der Böden der Bundesrepublik Deutschland. 2., ergänzte Auflage.** E. Mückenhausen. DLG Verlag, Frankfurt am Main, 1977, 300 S., 60 Farbtafeln ISBN 3-7690-0289-9.

For prospective attendants of the forthcoming 13th Congress in Hamburg, Germany, in 1986 it is fortunate that the book of Prof. Mückenhausen is available, be it that the reader should be able to read German. The second edition of this book on the genesis, characteristics and classification of the soils in the Federal Republic of Germany (FRG) has many additions, showing the advance in knowledge between 1962, when the first edition was published, and the second one of 1977. The additions are, however, not incorporated in the text, but follow the relevant chapters.

After a general introduction on soil formation and a chapter on the history of soil classification, attention is given to the principles and framework of the soil classification system of the FRG. The separate soil categories and units are then treated in detail. An appendix shows the field descriptions and colour pictures of 60 soil profiles of the FRG, together with the place of occurrence, mean yearly precipitation and temperature data, vegetation, parent material, the most important physical and chemical data. The profile pictures are ably painted, not photographed. They were earlier published in 1959 in 'Die wichtigsten Böden der Bundesrepublik Deutschland' (Important soils of the FRG) by the same author.

The book is very well produced.

*Price:* DM 150,—

*Orders to:* DLG Verlag, Rüterstrasse 13, D-6000 Frankfurt am Main, Fed. Rep. of Germany.

**Soils with Variable Charge Conference Proceedings.** P. C. Rankin and G. J. Churchman, editors. Soil Bureau, DSIR, Lower Hutt, 1981, 111 p.

The publication contains the proceedings, excluding oral and poster papers, of the Conference on Soils with Variable Charge, held in Palmerston North, New Zealand, February 1981. The contents consist of the six review papers, the conference lecture entitled 'Soil science and the social effects on the transfer of agricultural technology', which was given by Dr. D. J. Greenland, the 'implications of the conference' papers and twelve discussion group reports. Furthermore, it has a list of the oral and poster papers. These are available separately in abstract form from the organizers.

*Price:* NZ \$ 5.50 in New Zealand, NZ \$ 6.50 elsewhere, including postage. Prepayment required.

*Orders to:* Soil Bureau, Private Bag, Lower Hutt, New Zealand.

**Improvement of methods of long-term prediction of variations in groundwater resources and regimes due to human activity.** IAHS Publ. 136, G. P. Jones, editor. International Association of Hydrological Sciences, 1982, viii + 343 p.

These are the proceedings of a Symposium, organized by the IAHS International Commission on Groundwater in Exeter, July 1982.

Variations in groundwater resources and regimes are taking place on a wide range of scales throughout the world, and we can be certain that the results of such changes will be with us for decades if not centuries. With ever-increasing pressure upon finite natural resources exerted directly or indirectly by population growth, it is essential that greater use be made of those forecasting techniques that allow prediction of long-term effects in order that control measures can be introduced in sufficient time. The four headings under which the 35 papers in this volume have been grouped appear to be separate by title but have a high degree of integration in their content. The parameters governing groundwater resources normally have equal significance for resources and quality, and the absence of contributions on groundwater quality is due to their inclusion in a complementary volume: Effects of Waste Disposal on Groundwater and Surface Water, IAHS Publ. 139, also announced in this Bulletin.

*Price:* US \$ 30.00 + \$ 2.00 for postage.

*Orders to:* Office of the Treasurer, IAHS, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.; or: IUGG Publications Office, 39 ter Rue Gay Lussac, 75005 Paris, France.

**Soil Chemistry. Part B: Physico-Chemical Models. Second, revised edition.** G. H. Bolt, editor. Elsevier Scientific Publishing Company, Amsterdam, 1982, xxii + 538 p. ISBN 0-444-42060-6.

Written primarily for professional soil scientists it deals with theoretical developments in the field. These are given particularly extensive coverage and include derivations exposing assumptions and approximations, allowing for a critical evaluation of the models involved. Throughout the book, ample reference is made to sources of experimental information, and a valuable feature of the work is the condensation of important parts of the theory by means of summarizing graphs, tables and equations, which enable rapid estimation of relevant parameters.

All chapters in this new edition have been up-dated by the addition of an appendix describing new developments relevant to the subject matter of that chapter, and a completely new chapter dealing with ion adsorption on inorganic variable charge constituents has been added.

While 'Soil Chemistry, Part B' complements 'Soil Chemistry, Part A - Basic Elements' (edited by G. H. Bolt and M. G. M. Bruggenwert, 1976), in that it elaborates on many of the topics introduced in that volume, it can also be used alone as a completely self-contained work.

*Price:* Dfl. 180.00 or about US\$ 85.00.

*Orders to:* Elsevier Scientific Publishing Company, P.O. Box 211, 1000 AE Amsterdam, the Netherlands; or: 52 Vanderbilt Avenue, New York, NY 10017, U.S.A.

**Permanent Inventory of Agricultural Research Projects in the European Communities-AGREP.** Commonwealth Agricultural Bureaux, 1982, 1203 p., ISBN 0-85198-5122.

This standard reference work, published by CAB on behalf of the Commission of the European Communities, is the only comprehensive source of information on the latest agricultural research projects in the countries of the EC. Most projects included have not been reported in currently available documentation. AGREP covers agriculture in the broadest sense with sections on national resources, plant protection, animal production, agricultural engineering and building, food and nutrition, economic and social aspects, research related to developing countries, and general research methodology and service institutions related to these aspects. Approximately 22,000 projects are included.

This is a vital tool for scientists wishing to know of other projects related to their work, for research managers responsible for planning and co-ordinating research programmes, for advisory services and agricultural industries seeking information on current research, and for librarians and documentalists conducting research surveys.

*Price:* £ 59.00 or US\$ 124.00.

*Orders to:* CAB, Farnham House, Farnham Royal, Slough SL2 3BN, England.

**Effects of waste disposal on groundwater and surface water.** IAHS Publication 139. R. Perry, editor. International Association of Hydrological Sciences, 1982, viii + 278 p.

These are the proceedings of a Symposium, organized by the IAHS International Commission on Water Quality in Exeter, July 1982.

The concept of water quality is particularly important at the present time as 1981-1990 is the United Nations International Drinking Water Supply and Sanitation Decade. The World Health Organization is currently revising their guidelines for water quality and this reflects the current national and international concern about trace organic and inorganic materials in drinking water and an attempt is now being made to define more realistically the risk assessment associated with these materials in the water cycle. The 24 papers in this volume can be broadly divided into those concerned with surface water quality, those concerned with groundwater quality and those relating to the transport of pollutants to groundwater through the unsaturated zone.

*Price:* US\$ 30.00 + \$ 2.00 for postage.

*Orders to:* Office of the Treasurer, IAHS, 2000 Florida Avenue NW, Washington, DC 20009, U.S.A.; or: IUGG Publications Office, 39 ter Rue Gay Lussac, 75005 Paris, France.

**Erosion and Environment.** M. Holy. Pergamon Press, Oxford, New York, 1980, revised reprint 1982, 236 p., 153 illust. ISBN 0-08-024466-1.

For the first edition, see Bulletin 58, p. 73. This revised reprint examines both the theoretical and practical aspects of the protection of the Earth's primary resources, water and soil, from the adverse effects of water and wind erosion. A detailed analysis is made of the basic factors which affect the occurrence and intensity of erosion processes. Numerous graphs and photographs illustrate the latest knowledge and experience in the design and implementation of erosion control projects. Of interest to agronomists, geologists, ecologists, environmentalists and environmental engineers.

The publication has numerous illustrations and 271 literature references.

*Price:* US\$ 62.00.

*Orders to:* Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England. In U.S.A.: Fairview Park, Elmsford, NY 10523, U.S.A.

**Proceedings of the Summer Institute on Agro-Forestry in Arid and Semi-Arid Zones, Jodhpur, June-July 1981.** Central Arid Zone Research Institute (CAZRI), Jodhpur, 1981, 4 volumes, various pagings.

This one-month meeting was organized by the Indian Council of Agricultural Research at CAZRI to inform Indian participants on a variety of basic aspects of agro-forestry in the dry regions of the country and on recent advances in this subject. The proceedings contain papers in the following fields: concepts and scope of agro-forestry (2 papers), agro-climatology (3 papers), farming systems (9 papers), multipurpose trees and shrubs (4 papers), complementary systems to agro-forestry (9 papers), soil and soil fertility (8 papers), land use systems (3 papers), plant protection and toxicology (5 papers), appropriate utilization of agro-forestry products (3 papers), rural development (4 papers). Furthermore, recommendations on future basic and applied research and on the incorporation of agro-forestry in university curricula are given.

*Orders to:* Central Arid Zone Research Institute, Jodhpur, Rajasthan, India.

**A Bibliography of Earthworm Research 1930-1980.** J. E. Satchell and Kyla Martin, Merlewood Research Station, Grange-over-Sands, 1981.

This bibliography with about 1800 entries is printed in chronological order and in alphabetical order of authors within years. Experience shows that key wording is a highly subjective process, best left to the individual user. Therefore, a computer programme enables searching for any word or words in the title, separately or in combination with names of authors and publication year. All titles are translated into English to facilitate computer search.

*Price:* £ 5.00 plus postage and packing.

*Orders to:* The Institute of Terrestrial Ecology, Merlewood Research Station, Grange-over-Sands, Cumbria LA11 6JU, England.



**Sols.** Département des Sols, Institut National Agronomique Paris-Grignon. Publication non-périodique.

Le Département des Sols de l'I.N.A., Paris-Grignon va assurer des publications dont le nom est 'Sols'. Ces fascicules de 60 à 120 pages porteront sur plusieurs sujets tels que résumés de thèses ou synthèses, analyses et critiques de divers sujets de bibliographie, et comptes rendus de colloques et séminaires.

Ce type de publication non périodique n'existant pas encore, le Département a cru bon de développer une telle approche. De plus, les délais de publication sont de l'ordre du mois.

Les fascicules suivants sont déjà parus ou en cours de préparation;

1. Séminaire de Pédologie – Science du Sol. I.N.A. Paris-Grignon-I.N.R.A., FF 12,00.
2. V. Hallaire: La valeur des Terres Agricoles, FF 24,00.
3. B. Fournier: Remembrement et Pédologie (en préparation).
- 4, 5, 6. Actes du Colloque A.I.S.S., Informatique et Pédologie, FF 87,00.
7. Bibliographies et Télédétection, FF 30,00.
8. J. Boulaye: Typologie des Sols (tome I), FF 37,00.
9. J. Boulaye: Typologie des Sols (tome II), FF 41,00.
10. Utilisation en plein champ de l'isotope  $^{15}\text{N}$  sur betteraves sucrières (Beauce, 1980), FF 39,00.

En préparation sont:

- C. King: Intérêt des micro-ondes pour l'Agronomie et la Pédologie.
- C-M. et M-C. Girard: L'interprétation des images et photographies en Agronomie, Botanique et Pédologie.
- Matière organique.

Pour chaque fascicule il sera demandé une participation aux frais. Elle variera selon les numéros. Le tirage de chaque fascicule sera fonction de la demande. Il est possible de commander d'avance tel ou tel numéro à paraître.

Pour tous renseignements, adressez-vous à Dr. M-C. Girard, Lab. de Pédologie, I.N.A. Paris-Grignon, 78850 Thiverval-Grignon, France.

**Agro-forestry in the African Humid Tropics.** L. H. MacDonald. The United Nations University, Tokyo, 1982, 163 p. UNUP Publication 364. ISBN 92-808-0364-6.

This publication contains the proceedings of a workshop held in Ibadan, Nigeria, 27 April–1 May 1981. Agro-forestry is used here to encompass any agricultural system that combines trees with crops and/or animals, either spatially or sequentially. At the workshop papers were presented in the following sections: principles of agro-forestry (5 papers), traditional agro-forestry systems: prospects for development (7 papers), taungya systems from biological and production viewpoints (6 papers), current agro-forestry activities (10 papers), and considerations for the future development of agro-forestry (6 papers). All sections are followed by a summary of the discussion held. It also has reports on the Working Group on Research Needs, Training and Extension, and on Systems Management.

While these proceedings are concerned primarily with agro-forestry in the African humid tropics, the conceptual points are relevant to other agro-forestry systems as well; even many of the specific papers will be of value to those working in the Neotropics or Asia. Of course, the tree, pasture, or crop species may not be relevant to sites in other areas, but the experimental design or concern with developing traditional systems may apply.

Price: US\$ 12.00

Orders to: National Distributors. For a list of distributors: Publications Section, Academic Services, The United Nations University, Toho Seimei Bldg., 15-1 Shibuya 2-chome, Shibuya-ku, Tokyo 150, Japan. In U.S.A.: UNIPUB, 345 Park Avenue South, New York, NY 10010, U.S.A. In Europe and Africa: Bowker Publishing Company, Erasmus House, Epping, Essex CM16 4BU, England.

**Introduction to Quantitative Analysis of Remote Sensing Data.** Videotapes. Purdue University, West Lafayette, 1982.

This is a set of five tutorial videotapes on remote sensing, developed by Shirley Davis, Laboratory for Applications of Remote Sensing, Purdue University. Presentation included in the set are: The Remote Sensing Information System by D. A. Landgrebe, The Role of Pattern Recognition in Remote Sensing by P. H. Swain, Correlation and Enhancement of Digital Image Data by P. E. Anuta, Spectral Properties of Soils by M. F. Baumgardner, and The Role of Numerical Analysis in Forest Management by R. M. Hoffer. The tapes run for just under 30 minutes each, presenting well-illustrated aspects of the technology from the perspectives of experienced scientists.

An innovative feature of these videotaped presentations is the printed 'Viewing Notes' that accompany each tape. The level suits viewers who have already gained some familiarity with general concepts and terminology of remote sensing, but a mathematical background is not required. The cassette tapes are available in U.S. Standard 3/4-inch, 1/2 inch VHS or Beta formats, as well as in formats conforming to other standards-NTSC, PAC, SECAM.

Price: US\$ 250.00 for each videotape, \$ 20 for extra sets of 25 viewing notes, plus postage.

For further information: G. W. O'Brien, Continuing Education Administration, 116 Stewart Center, Purdue University, West Lafayette, IN 47907, U.S.A.

Orders to: Continuing Education Business Office, Rm. 110, Stewart Center, Purdue University, West Lafayette, IN 47907, U.S.A.

**Soils of the Great Plains. Land Use, Crops and Grasses.** A. R. Aandahl. University of Nebraska Press, Lincoln and London, 1982, xvi + 282 p., one map of 90 × 120 cm, 140 colour photographs. ISBN 0-8032-1011-6.

The Great Plains cover all or parts of 10 states of the USA just east of the Rocky Mountains, from the Canadian border to the Gulf of Mexico. A soil map, printed in 1972, shows 195 mapping units. The main purpose of the present book is to describe these units. Excellent coloured soil profile and landscape pictures of seventy soil series complement the text.

The pictures are also available as high quality slides (Soil Teaching Aid, A. R. Aandahl, Univ. of Nebraska Press, 1979, see Bulletin 57, p. 45).

Price: \$ 28.50

Orders to: University of Nebraska Press, 901 N. 17th Street, Lincoln, NE 68588, U.S.A.; or: American University Publishers Group, 1 Gower Street, London WC1E 6HA, England.

**Regional Study on Rainfed Agriculture and Agro-climatic Inventory of Eleven Countries in the Near East Region.** FAO Near East Regional Office/Land and Water Development Division. FAO, Rome, 1982, 160 p., in folder with 4 maps at a scale of 1:2 million. ISBN 92-5-101222-9.

In this inventory the same methodology used for the Study on Agro-ecological Zones (see Bulletin 57, p. 46; 59, p. 54 and 60, p. 48) was followed. The present study includes information on rainfed agriculture, covering the present situation with its agronomic aspects as well as general information on rainfed agriculture in the region, encompassing the countries from Algeria in the west to Syria, Turkey and Yemen in the east. A quantitative climatic inventory is based on temperature data and the lengths of the growing period. The maps, at a scale of 1 to 2 million, show the mean duration of the growing periods in days per year. This climatic inventory has not (yet?) been used for an agro-ecological inventory, in which climatic and soils data are both taken into consideration. Such a basis for a land suitability classification was included in the studies within the Agro-ecological Zones Project.

Orders to: Official country FAO sales representatives or, in case of difficulties, through Sales and Distribution Section, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

**Lehrbuch der Bodenkunde.** F. Scheffer und P. Schachtschabel. 11., neu bearbeitete Auflage von P. Schachtschabel, H. P. Blume, K.-H. Hartge und U. Schwertmann, unter Mitarbeit von G. Brümmer und M. Renger. F. Enke Verlag, Stuttgart, 1982, 456 S., 186 Abbildungen. ISBN 3-432-84771-8.

Nahezu alle Kapitel des Buches wurden neu bearbeitet und auf den neuesten Wissensstand gebracht. Die Abhandlung neuer Aspekte, vor allem auch im Bereich der Umweltwissenschaften, hat eine Erweiterung des Textes um 50 Seiten notwendig gemacht. Im Vergleich zur 10. Auflage wurden vor allem folgende Kapitel neu gefasst und erweitert: Bei den Tonmineralen wird gezeigt, dass durch Elektronenmikroskopie mit hohem Auflösungsvermögen die Struktur dieser Minerale nunmehr direkt sichtbar gemacht werden kann. Beim Kationenaustausch nimmt die besonders für tropische Böden wichtige variable Ladung der anorganischen Austauschereinen breiteren Raum ein. Im Kapitel Organische Substanz wird die Bedeutung der Komplexierung von Schwermetallen diskutiert. Im Kapitel Bodenorganismen ist deren Funktion im Wirkungssystem Boden stärker als bisher herausgestellt worden.

Im Kapitel Bodenacidität wurde deren Entstehung und die Schädigung der Aluminiumionen in der Bodenlösung auf das Pflanzenwachstum stärker in den Vordergrund gestellt.

Im Kapitel Bodenwasser wurden die Wasserversorgung der Pflanzen und der kapillare Aufstieg aus dem Grundwasser, die Wasseraufnahme durch die Pflanzenwurzeln sowie die wechselseitigen Beziehungen zwischen Wasserverbrauch und Pflanzenertrag stärker berücksichtigt. Neu konzipiert wurden die Kapitel Bodenluft, Bodentemperatur und Bodenfarbe.

In den Kapiteln Nährstoffe, Ertrags- und Düngereentwicklung werden die Düngung in der Bundesrepublik Deutschland einer kritischen Betrachtung unterzogen. Über den Nährstoffaufwand und den tatsächlichen -bedarf werden Bilanzen aufgestellt und die ökonomischen Auswirkungen dargelegt.

Eine wesentliche Erweiterung erfuhr das Kapitel Schadstoffe, das nun einen besonderen Schwerpunkt darstellt. Neben der Bedeutung der Böden als Puffer-, Filter- und Transformationssysteme für Schadstoffe wird ausführlich auf die derzeitige Belastung der Böden in der Bundesrepublik Deutschland und die methodischen Möglichkeiten zur analytischen Erfassung der Schadstoffbelastung von Böden eingegangen. Eingegangen wird auch auf die Emissionsquellen der Schadstoffe und deren Verhalten in Böden sowie ihre Wirkung auf Pflanze, Tier und Mensch.

Im Kapitel Klärschlamm und Müllkompost werden die Vorteile, aber auch die mit der Ausbringung dieser Substrate verbundenen Probleme für die Böden und deren landwirtschaftlichen Nutzung dargelegt.

Neu aufgenommen wurde das Kapitel Böden als Teile von Ökosystemen, in dem vor allem die Funktion des Bodens in einem Waldökotop exemplarisch behandelt wird. Im Teil Bodenentwicklung werden Einflüsse des Menschen stärker berücksichtigt. Die Bodensystematik fusst nunmehr auf diagnostischen Horizonten unter Betonung quantifizierbarer Merkmale entsprechend der US-Soil Taxonomy, wodurch eine präzise Definition von Bodeneinheiten ermöglicht wird. Die außereuropäischen Böden wurden als Bodeneinheiten der FAO/Unesco Bodenkarte weitgehend neu beschrieben. Verbreitung und Nutzbarkeit der Böden werden in den erweiterten Kapitel Bodenzonen der Erde behandelt. Die anthropogene Erosion und der Bodenschutz wurden in einem eigenen Kapitel zusammengefasst.

Preis: DM 64,00, Alkorphan gebunden.

Bestellungen: Ferd. Enke Verlag, Postfach 1304, D-7000 Stuttgart, Bundesrepublik Deutschland.

**ISM Soil Monolith Papers.** A new series. International Soil Museum, Wageningen. Series: ISSN 0167-8701. Separate issues have an ISBN number.

A Soil Monolith Paper (SMP) deals with a soil monolith of the ISM collection that is considered to be a representative example of a soil unit according to the legend of the FAO-Unesco Soil Map of the World. A SMP gives in about 60 pages an overview of the characteristics of one of the soil units in general, as well as detailed information and data on the selected representative profile. Special attention is given to aspects of land evaluation, both according to local standards for the land capability assessment, as well as to the different pertinent land qualities.

The outline and contents of the SMP takes note of suggestions received from soil scientists from many countries. Since they are also intended for use by teachers at university and college levels, 8 colour slides with each issue show the landscape, the profile and some pictures of relevant soil micromorphological features. A colour photograph complements the information. The following issues have appeared:

SMP 1, Thionic Fluvisol (Sulfic Tropaquept), Thailand, 1981. ISBN 90-6672-007-7.

SMP 5, Humic Acrisol (Orthoxic Palehumult), Jamaica, 1982. ISBN 90-6672-009-3.

SMP 6, Acri-Orthic Ferralsol (Haplic Acrorthox), Jamaica, 1982. ISBN 90-6672-010-7.

In preparation are issues on: Orthic Ferralsol, Zambia; Placic Podzol, Ireland; Humic Nitosol, Kenya, and a Calcic Chernozem, Romania.

Price: Dfl. 20.00, US\$ 8.00 or £ 5.00 per issue, including postage. Prepayment required.

Orders to: International Soil Museum, P.O. Box 353, 6700 AJ Wageningen, the Netherlands.

**Beachtung Ökologischer Grenzen bei der Landwirtschaft.** 197. Sonderheft der 'Berichte über Landwirtschaft'. Verlag Paul Parey, Hamburg und Berlin, 1981, 276 S., 112 Einzel darstellungen in 74 Abbildungen und mit 79 Tabellen. ISBN 3-490-29715-6.

Fragen zum 'Umweltschutz in Land- und Forstwirtschaft' werden nach wie vor lebhaft diskutiert. In den 'Berichte über Landwirtschaft' haben sie einen angestammten Platz. Eine bereits 1972 zu diesem Thema vorgelegte dreiteilige Dokumentation in Band 50, Heft 1-3, fand 1978 in Band 55/4 ihre erste Fortschreibung unter dem Titel 'Agrarwirtschaft und Umwelt'. Die zweite Fortschreibung erfolgt mit dem vorliegenden 197. Sonderheft, das sich speziell mit den ökologischen Grenzen der Landwirtschaft befasst.

Namhafte Wissenschaftler aus Bundesforschungsanstalten, Universitäten und Forschungseinrichtungen der Länder äussern sich zu aktuellen Schwerpunkten der Problematik Landwirtschaft und Ökologie. Unter verschiedenen Aspekten werden die gegenwärtige Lage wie auch die entsprechenden Erfordernisse und Möglichkeiten zur Verbesserung des Boden-, Gewässer- und Artenschutzes dargestellt. Dabei kommen zu einzelnen Fragen auch voneinander abweichende Auffassungen zu Worte.

Im einzelnen geht es um folgende Sachgebiete: Bioindikatoren; Bodenerosion; Schadstoffe im Boden; Verlagerung von Pflanzennährstoffen und Artenschutz. Die vielschichtigen Antworten sind nicht nur von naturwissenschaftlichem Interesse, sondern sie enthalten auch viele praktische Hinweise, ob und wie die Erfordernisse des modernen Landbaus mit den ökologischen Gesetzmässigkeiten in Einklang zu bringen sind. Die Erörterung dieser Thematik durch Wissenschaftler verschiedener Disziplinen erweist sich als besonders fruchtbar.

Preis: DM 131,00.

Bestellungen an: Verlagsbuchhandlung Paul Parey, Postfach 106304, D-2000 Hamburg 1, Bundesrepublik Deutschland.

**Migrations Organo-Minérales des Sols Tempérés.** Colloques Internationaux du Centre National de la Recherche Scientifique, Nancy, Septembre 1979. Edition du CNRS, Paris, 1981, 500 p. ISBN 2-222-02681-4.

L'ensemble des travaux regroupés dans cet ouvrage (49 communications, 3 tables rondes et 10 posters) fait le point des progrès récents dans la connaissance des mécanismes physicochimiques et biologiques, qui participent aux transports de matière à travers les sols et les écosystèmes terrestres. Les communications sont regroupées en quatre thèmes: Thème I: Ecologie des phénomènes de migrations organo-minérales. Sont évoqués dans ce thème, les milieux drainés ou hydromorphes soumis à une pédogéochimie organique acide et les milieux carbonatés. Thème II: Composés biologiques intervenant dans les migrations organo-minérales. Sont pris en compte, dans ce thème, le rôle des microorganismes et le rôle de la faune du sol dans les phénomènes d'interactions organo-minérales et de transport de matière. Thème III: Chimie des combinaisons organo-minérales, c'est-à-dire étude interdisciplinaire des mécanismes d'insolubilisation et de désorption des colloïdes humiques à l'interface 'minéraux-gels minéraux' et 'gels minéraux-solution'. Thème IV: Mécanismes et incidences des migrations organo-minérales, avec notamment, le rôle des agents de migration et des conditions du milieu dans les phénomènes d'appauvrissement ou d'enrichissement des sols à partir des matériaux transportés.

Cet ouvrage présente également un compte-rendu des réflexions suscitées à l'occasion de tables rondes portant sur les thèmes suivants: (1) Rôle des organismes vivants dans les transformations et les migrations de la matière minérale et de la matière organique, (2) L'eau du sol, vecteur des migrations organo-minérales. Hydrodynamique et chimie des solutés, et (3) Méthode d'étude de l'insolubilisation des complexes organo-minéraux.

Prix: FF 270,00.

Commandes: Librairie des Editions du CNRS, 15 quai Anatole France, 75700 Paris, France.

**Proceedings of the First International Symposium on Soil, Geology and Landforms: Impact on Land Use Planning in Developing Countries.** Prinya Nutalaya, Pisidhi Karasudhi, Theerapongs Thanasuthipitak, Irb Kheoruenromne and Anchalee Sudhiprakarn, editors. AGID-AIT, Bangkok, 1982, various paging. ISBN 974-8202-00-3.

In planning for land use, the natural environment can be most effectively dealt with if the planner considers the importance of physical determinants, especially soil, minerals, landform and water. In many developing countries the primary land use determinants have been economic, social and political whilst the physical determinants have been ignored. Industrialization in developing countries has added a new dimension to the environmental problems of many countries in Africa, Asia, and Latin America. Many voices have been raised in alarm over the degraded state of the environment in the Western world. The developing countries are in a position to avoid many of the mistakes made by the countries of the North. The ever-increasing demand on land means that planning decision ought to be made only after comprehensive analysis of all relevant factors.

The International Symposium, held in Bangkok in April 1982, covered various aspects of physical determinants of the natural environments and their impact on land use planning, case histories of the land use problems and remedial measures, assessment of land capability, and planning approaches. It also included six guest lecture papers on aspects of land evaluations and land use planning. As such this Proceedings will be of particular interest to soil scientists, geographers, geologists, geotechnical engineers, planners, and others who are concerned with land use planning and land resources management, especially in the developing countries.

The Proceedings contains 96 papers arranged in seven sections, contributed by authors from 28 countries, as follows: soil, climate and agriculture (22 papers), geological physical environment (17 papers), landform (13 papers), water (10 papers), engineering work, land use (9 papers), and assessment, evaluation, planning (20 papers). It also contains the texts of six guest lectures. In total about 1300 pages.

*Price:* US\$ 66.00 including surface mail charges, prepayment required.

*Orders to:* Landplan I Secretariat, Asian Institute of Technology, P.O. Box 2754, Bangkok, Thailand 10501.

**Bodenkundliche Probleme städtische Verdichtungsräume – Soil Problems in Urban Areas.** H. P. Blume und E. Schlichting. Mitt. Deutsche Bodenkundliche Gesellschaft, 33, 1982, 280 p.

This volume contains the papers presented at an international symposium on soil problems in urban areas, which was held in Berlin, Fed. Rep. of Germany, in September 1981, with co-sponsoring of ISSS Commission V. Papers were presented in the following sessions: soil destruction in urban areas – an underrated problem; soil contamination by heavy metals – an ecological bomb; soils of and near waste disposal units – problems of sanitary landfills and waste water irrigation fields; use of soils in density populated areas; and soil mapping – necessary for planning of city and greenbelts.

The papers are partly in German, partly in English, all summarized in the other language.

*Preis/Price:* DM 11,00.

*Bestellungen an/orders to:* Deutsche Bodenkundliche Gesellschaft, Institut für Bodenkunde, von-Sieboldstrasse 4, 3400 Göttingen, BRD.

**Proceedings Second International Conference on Geotextiles – Comptes-Rendus Deuxième Congrès International des Géotextiles.** Las Vegas, August 1982. Industrial Fabrics Association International, St. Paul, 1982, 4 volumes, 1200 p.

The first three volumes contain about 150 papers dealing with the application of geotextiles in areas such as drainage, erosion control, slopes and embankments, paved roads, and railroads. The fourth volume contains the special invited papers, closing reports and session discussions from the conference. The proceedings are the largest single source for current geotextile information.

Contents: volume I: drainage, dams, erosion control; volume II: international standards, unpaved roads, railroads, paved roads, durability; volume III: walls and foundations, slope and embankments, properties and tests; volume IV: invited papers, session discussions. The majority of the papers are in English, some in French. All have abstracts in these two languages.

*Price:* US\$ 40.00 for each volume, US\$ 95.00 for the complete 4-volume set. Postage extra. Prepayment required.

*Orders to:* IFAI, 350 Endicott Bldg, St. Paul, Minnesota 55101, U.S.A.

**Amazonia. Agriculture and Land Use Research.** S. B. Hecht, editor. Centro Internacional de Agricultura Tropical, Cali, 1982, 428 p. ISBN 84-89206-13-9.

This publication contains the proceedings of the International Conference on Amazonian Agriculture and Land Use Research, held in Cali, Colombia in 1980. It contains reports on the six countries sharing this vast region of South America, where agricultural and forestry development have a significant potential for contributing to economic growth and improved human welfare. Five technical reports comprise information on land resources, soils and their management, land use characteristics, annual food crops, perennial crops, and on pastures and animal production. Four papers on aspects of forestry and agroforestry conclude these interesting state of knowledge reports.

*Price:* US\$ 39,50 + handling charges.

*Orders to:* CIAT, Distribution Office, Apartado Aereo 6713, Cali, Colombia. In developed countries: UN-IPUB, P. O. Box 433, Murray Hills, New York, NY 10016, USA.



**Computer Techniques and Meteorological Data Applied to Problems of Agriculture and Forestry: A Workshop.** A. Weiss, editor. Univ. of Nebraska, Scottsbluff, 386 p.

The objectives of the workshop, held in Anaheim, California, in March 1981, were: (1) to explore the potential of modern electronics in data collection and information dissemination; (2) to assess the current status of biological knowledge as it relates to weather factors; (3) to identify the needs of various agricultural and forestry groups for improved weather related information for use in decision making; (4) to investigate the potential for improved technology transfer via hardware and/or software in the development and use of weather related information; and (5) to compile a list of current applications of weather data to agriculture and forest production.

The present publication contains the papers presented at the workshop in the following sessions: weather data for application and related decisions (8 papers); information distribution for field application (7 papers); utilization of weather data – crop production systems (8 papers), forestry production systems (3 papers), livestock production systems (5 papers).

Price: US\$ 28.50 (paper copy), \$ 4.00 (microfiche).

Orders to: NTIS, 5285 Port Royal Road, Springfield, Virginia 22161, USA. Accession number is: PB82-192436.

**Use of Computers for National Development-Agriculture. An annotated bibliography.** G. P. Tottle, editor. Published on behalf of the British Computer Society. Heyden, Londen, Philadelphia and Rheine, 1982, 42 p. ISBN 0-85501-694-9-

This bibliography has been prepared on the initiative of the Specialist Group for Developing Countries of the British Computer Society. This Group was founded in 1976 with the objective of sharing the expertise in the practical applications of computing techniques developed in the U.K., with appropriate allied bodies in developing nations. This annotated bibliography with 109 entries is provided to assist planners in the formulation of agriculture policies suited to the needs of the individual countries, and embraces the following topics: linear, and other programming and OR techniques, macro-economics, records handling systems, rural planning and sector analysis, simulation and modelling, instrumentation and forecasting.

Price: £ 7.00

Orders to: Heyden & Son, Spectrum House, Hillview Gardens, London NW4 2JQ, England; 247 South 41st Street, Philadelphia, PA 19104, U.S.A.; or: Devesburgstrasse 6, 4440 Rheine, Fed. Rep. of Germany.

**An Introduction to Atomic Absorption Spectroscopy – a self-teaching approach.** L. Ebdon. Heyden, London, Philadelphia, Rheine, 1982, xiii + 138 p. ISBN 0-85501-714-7 (Heyden), 0-47126-194-7 (Wiley).

Atomic absorption spectroscopy offers an excellent example of the need for continuing study and training. No other instrumental analytical technique has ever shown such rapid growth in applications, yet the theory and methodology of atomic absorption are but poorly covered in many basic chemistry course books.

The aims of the present publication with self-teaching approach are: (1) to introduce and develop a knowledge of the theory, instrumentation and practice of atomic absorption, emission and fluorescence spectroscopy in flame and electrothermal atom cells, (2) to discuss the applications of these techniques to a range of typical problems in analytical chemistry, (3) to compare the relative merits of the above techniques in analytical situations, (4) to introduce an understanding of currently developing themes in the field and enable the student to follow current advances through the means of the scientific literature, and (5) to enable the student to develop and use precise and accurate analytical methods for a range of determinations using the above techniques. An attempt is made in this book to approach analytical atomic spectroscopy without requiring extensive prior knowledge. It is assumed that some basic instrumentation is known, and no detailed discussion of optical or standard electrical components is given.

The learning material is designed to replace traditional learning systems, such as lectures, as adequately as possible. While therefore it covers a definable 'course' it is, like lectures, designed to be read in conjunction with supplementary texts. Background reading in the original and current literature is very valuable.

By setting aside an evening a week for study, the reader may complete this book in five weeks. Questions are interspersed with the material.

Price: £ 9.00.

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

**The Biodegradation of Rocks and Minerals with Particular Reference to Silicate Minerals: A Literature Survey.** P. W. Dacey, D. S. Wakerley and N. W. Le Roux. Warren Spring Laboratory. Stevenage, 1981, 45 p. ISBN 0-85624-234-9.

A critical assessment has been made of the literature on the biodegradation of rocks and minerals, in particular silicates. A wide range of microbes has been reported to be capable of degrading rocks and minerals, generally through the production of organic acid metabolites. Citric, oxalic and 2-ketogluconic acids were the most active, while fatty acids, tartaric acid, humic, fulvic and lichenic acids were less active. A generalised order of degradability for silicate minerals has been established. Some practical applications of rock biodegradation have been considered and their technical feasibility discussed. Areas where further information is needed have been outlined.

Price: £ 20.00.

Orders to: Warren Spring Laboratory, Dept. of Industry, P. O. Box 20, Stevenage, Herts. SG1 2BX, U.K.



**The Influence of Sewage Sludge Application on Physical and Biological Properties of Soils.** G. Catroux, P. L'Hermite and E. Suess, editors. D. Reidel Publishing Company, Dordrecht, Boston, 1982, vii + 253 p. ISBN 90-277-1501-7.

The agricultural value of sewage sludges is well known and a lot of published data has demonstrated the positive effects of sludge applications on plant growth and yield. These effects are probably due mainly to the nitrogen and phosphorus content of sewage sludges. But, as sludges are more organic than mineral, one can expect an effect of the organic matter added to the soil on soil fertility. Certainly, in the future, landspreading of sludges will be regulated, taking into account pollution hazards for waters (excess of nitrogen and phosphorus supply compared to plant needs and soil storage capacities) and for soils (excess of heavy metals supply and build up in soils). There will be regulations fixing what low level of sludges may be spread each year, decreasing their comparative value with respect to mineral fertilizers. In this eventuality, the organic value of sludges will take on a greater importance and several questions arise: (1) what is the lowest amount of sludge to be spread to have an immediate effect on soil physical properties?, and (2) are sludges effective on soil physical properties when spreading repeated low amounts? On the other hand, organic matter and soil biology are closely linked and there are few data on the possible effects – beneficial or detrimental – on soil organisms.

The purpose of the Seminar, held at Munich, in June 1981 was to collect data, and exchange ideas on these two important practical problems related to the agronomic value of sewage sludges. The seminar was sponsored by the Commission of the European Communities. These proceedings of the Seminar contain 17 papers and the discussions.

The book will be of interest for agriculturists, agronomists, soil engineers, soil biologists, and waste disposal engineers.

*Price:* Dfl. 80.00 or US\$ 34.95, clothbound.

*Orders to:* In U.S.A. and Canada: Kluwer Boston, 190 Old Derby Street, Hingham, MA 02043, U.S.A. In all other countries: Kluwer, Distribution Center, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

**Ecology of Free-living Protozoa. A Bibliography.** B. F. Finlay and C. Ochsenein-Gatteln. Freshwater Biological Association, Ambleside, 1982, 167 p. ISSN 0308-6739.

This bibliography has been compiled with the intention of providing a comprehensive list of those publications which are concerned with or are relevant to the ecology of Protozoa. The subject of protozoan ecology is a broad one with foundations in a diversity of publications.

The Protozoa considered are those free-living representatives of the Phylum Sarcomastigophora and the Phylum Ciliophora in which functional chloroplasts are typically absent. Thus the references are limited to heterotrophic Protozoa – the Amoebae, zooflagellates and the ciliates. It does not include fossil Protozoa or those which are usually considered to be parasites or endosymbionts.

The bibliography covers freshwater and terrestrial environments and is limited to original research and reviews published in scientific books and journals. The publication is divided into 11 sections according to types of habitat and includes a systematic index and an author index.

*Price:* £ 3.00.

*Orders to:* Freshwater Biological Association, The Ferry House, Ambleside, Cumbria LA22 0LP, England.

**A geologic time scale.** W. B. Harland, A. V. Cox, P. G. Llewellyn, C. A. G. Pickton, A. G. Smith and R. Walters. Cambridge University Press, Cambridge, 1982, xi + 131 p. ISBN 0-521-28919-X (paperback), 0-215-24728-4 (hardback).

This reference book is a concentrated review of the time scales used in geology in order to date stratigraphic sequences and to define the geologic epochs. The text presents, discusses and evaluates the state of chronostratigraphic, chronometric and other scales; this includes a revised calibration in years of the standard stratigraphic scale.

There are chapters with: (1) introductory and historical background, (2) stratigraphic time scale and correlation charts for each period or other time interval with commentaries, (3) a new way of presenting the data for age estimates of each boundary (chronograms) which attempts to depict the strengths and weaknesses of the calibration, (4) a new magnetostratigraphic time scale and (5) a summary of world events in the form of charts. This book with its profusion of tables and data and the wallchart mentioned below will serve as a fundamental reference source in the earth sciences.

*Price:* £ 4.95 (paperback), £ 12.50 (hardback) in U.K..

*Orders to:* see below.

**Geologic time scale – Wallchart.** Authors as above. Cambridge University Press, Cambridge, 1982. Chart size: 60 × 100 cm, in colours. ISBN 0-521-24730-6 (rolled), 0-521-24729-2 (folded).

This wallchart mainly features the chronostratigraphic time scale developed in the book, correlated with estimated eustatic changes of sea-level, magnetostratigraphical characteristics, geological events, orogenic phases, and an indication of errors in the ages given. A smaller linear time scale, also listing geological events, and a scale with Quaternary deep sea chronology with correlations in Marine South European ages, British and North American stages. The chart is well-produced and printed on strong paper.

*Price:* £ 4.95

*Orders to:* Cambridge University Press, P.O. Box 110, Cambridge, England; 32 East 57th Street, New York, NY 10022, U.S.A.; or: 296 Beaconsfield Parade, Middle Park, Melbourne 3206, Australia.

**An Introduction to Farming Systems.** M. Haines. Longman, London and New York, 1982, 214 p. ISBN 0-582-45081-0.

This book offers a non-technical guide to the natural, economic and social factors which shape contemporary agriculture, mainly in Britain and Europe. The opening chapters outline the general background against which the farmer plays his role. Topics covered include climate, soil, the economic and political environment, the market for agricultural produce, capital investment and technology.

Having demonstrated the enormous number of influences at work on the farmer, the author examines the management of farms and the decisions that must be made both on long term strategy and on a day to day basis. The second half of the book describes the various farming systems with their attendant advantages and drawbacks. Chapters cover arable farming, grassland systems, the dairy enterprise and mixed farming. Such matters as organic farming, mechanisation, animal welfare and factory farming, the impact of agriculture on wild life and urban encroachment on farmland are also treated.

*Price:* £ 6.95 in U.K.

*Orders to:* Longman Group Ltd., Foirth Avenue, Harlow, Essex CM19 5AA, England.

**Plant Protection: an Integrated Interdisciplinary Approach.** W. H. Sill Jr. Iowa State University Press, Ames, 1982, 298 p. ISBN 0-8138-1665-3.

This textbook discusses and encourages the worldwide trend toward integration of all plant protection sciences (e.g. entomology, plant pathology, nematology, weed science) into a coordinated, cooperative approach to plant care that minimizes cost and pesticide use and increases growth efficiency.

*Price:* US\$ 23.95 + \$ 1.00 postage. Prepayment required.

*Orders to:* Iowa State University Press, 2121 South State Avenue, Ames, Iowa 50010, U.S.A..

**Sedimentation Problems in River Basins.** Studies and reports in hydrology 35. W. R. White, editor. Unesco, Paris, 1982, 152 p. ISBN 92-3-102014-5.

This publication defines the effects of man's activities on erosion and sedimentation processes in river basins, including activities such as land use and irrigation and drainage practices, and also the effects of reservoirs and dams, river control works, and interbasin transfers of water. It describes the state of knowledge of cause and effect relationships between plant cover, surface runoff, sediment production and deposition, and provides information about possibilities for the amelioration of the existing sedimentary conditions. The study presents methods for the estimation and prediction of changes in erosion and sedimentation processes following man-made changes in the river basin. This includes changes in the watershed as well as in the river channels. It is written for planners of water resources and land use, ecologists, hydrologists and hydraulic engineers.

*Price:* FF 88.00 in France.

*Orders to:* Unesco National Distributors around the world, or, in case of difficulties, Unesco Press, 7 Place de Fontenoy, 75700 Paris, France.

**An adventure in applied research: a history of the International Rice Research Institute.** R. F. Chandler. IRRI, Manila, 1982, 236 p.

Written by IRRI's first director, Dr. Robert F. Chandler, Jr., this publication details the development of IRRI from 1955, when a team of scientists and research administrators began to think about the establishment of 'an international rice research institute'.

Chandler gives the reason for the book in his preface: 'IRRI, established in 1960 by the Ford and Rockefeller Foundations, was so successful that it stimulated the development of a worldwide network on international agricultural research centers based largely on the IRRI pattern. Mainly for this reason it seemed important that the early history of IRRI, including the origin of the concept, be recorded.'

His narration of the adventures of building and staffing IRRI – complete with interesting and often humorous anecdotes about the people and problems he dealt with – takes the reader through his years (1960–1972) as director.

*Price:* US\$ 9.50 (or US\$ 3.80 for developing countries), plus airmail (US\$ 9.25) or surface mail (US\$ 1.25) postage. Prepayment required.

*Orders to:* Information Services Department, IRRI, P.O. Box 933, Manila, Philippines.

**Rice Research Strategies for the Future.** IRRI, Manila, 1982, 559 p.

The first 10 years of the International Rice Research Institute was clearly the decade of IR8, the first of the modern semidwarf rice varieties that helped initiate the green revolution. The second decade was one of broadened research and training activities as IRRI's program focused on the less-advantaged farmers – such as those with rainfed crops, deep water, and adverse soils – and on assisting the development of national rice improvement programs.

IRRI started its third decade with a research pipeline of technology that will soon serve rice farmers, and held a symposium on Rice Research Strategies for the Future. This volume contains the symposium papers and discussions, focusing on strategies and plans to adapt and move this technology to millions of small-scale farmers.

*Price:* US\$ 21.00 plus airmail (US\$ 13.00) or surface mail (US\$ 2.50) postage.

*Orders to:* Information Services Department, IRRI, P.O. Box 933, Manila, Philippines.

**Soils in Mediterranean Type Climates and their Yield Potential.** International Potash Institute, Worblaufen, 1979, vii + 451 p.

This publication forms the proceedings of the 14th Colloquium of the International Potash Institute, held in Sevilla, Spain, in 1979. The following sessions were held: opening sessions with three papers on agriculture in Spain, and characteristics of Mediterranean soils and climates, and sessions on climatological constraints for soil utilization (7 papers), the nutrient behaviour in soils of semi-arid regions (9 papers), the prediction of nutrient availability (6 papers), and the achievements of yield potentials in Mediterranean regions (11 papers). All sessions are summarized. The papers deal only with the regions bordering the Mediterranean Sea, not with areas having comparable climates in Australia, Asia, and the Americas.

*Price:* Swiss Francs 40.25 or US\$ 21.20, + mailing charges.

*Orders to:* International Potash Institute, P.O. Box 121, CH-3048 Worblaufen-Bern, Switzerland.

**Agricultural Yield Potentials in Continental Climates.** International Potash Institute, Worblaufen, 1981, vi + 295 p.

This book consists of the papers presented at the 16th Colloquium of the International Potash Institute, held at Warsaw in 1981. After an opening session introducing the organization and production of Polish agriculture, three sessions were dealing with the following subjects: the role of roots in yield formation (5 papers), microbiological activity and soil fertility (5 papers), and production systems for maximum yields (10 papers). The three sessions are summarized.

*Price:* Swiss Francs 38.00 or US\$ 20.00 + mailing charges.

*Orders to:* International Potash Institute, P.O. Box 121, CH-3048 Worblaufen-Bern, Switzerland.

**Elsevier's Mineral and Rock Table.** P. Lof, compiler. Elsevier Scientific Publishing Company, Amsterdam, 1982, size 71 × 135 cm (28" × 53"). ISBN 0-444-42081-9.

This Wall chart provides excellent colour photographs of 74 rock-forming minerals and 53 ore minerals, comprehensive diagrams featuring all important rock classifications, and the Michel-Lévy chart. The full colour photographs are accompanied by a description of the most important optical and physical characteristics of each mineral. Where appropriate, the specimens have been photographed in plane- and crossed-polarized light in order to aid correct identification. The photographs are arranged in such a way that they are logical and easy to follow. Minerals with common optical characteristics are all listed within the same column. Mineralogists, geologists, soil scientists and experts and students in other disciplines will be interested in having a copy at hand. The price is very reasonable.

*Price:* 1 copy: Dfl. 40.00, including packing in a sturdy roll and postage. Prepayment required. 10 copies: Dfl. 185.00 or about US\$ 80.00; larger quantities more discount.

*Orders to:* Elsevier Scientific Publishing Company, P.O. Box 211, 1000 AE Amsterdam, the Netherlands; In U.S.A. and Canada: 52 Vanderbilt Avenue, New York, NY 10017, U.S.A. In Australia and New Zealand: D. A. Book Depot, 11-13 Station Street, Mitcham, Vic. 3132, Australia. Single copies are only available from the Amsterdam address.

**Zoological Ripening of Soils.** L. Bal. Agricultural Research Reports 850. Centre for Agricultural Publishing and Documentation (Pudoc), Wageningen, 1982, xvii + 365 p. ISBN 90-220-0615-8.

'Soil ripening' has become a generally accepted term, denoting the initial physical, chemical and biological soil forming processes that, after drainage, transform soft, water-saturated deposits into soils suitable for agriculture. As such, ripening has been defined as the very first stage of pedogenesis before more progressive processes like the formation of structural and illuvial horizons become apparent.

The present volume deals with the changes caused by terrestrial animals in deposits and rocks that may lead to the formation of soils, including also the continual alteration of existing soils by soil animals, whether they be the same or successively different species. This process continues until a maximum stage is reached when the soil is considered to be 'zoologically ripened'. Thus it appears that the author has considerably extended the original concept of ripening to include much more progressive pedogenetic alterations.

The book consists of two parts. The first part gives a comprehensive review of the 19th century and the modern literature on soil animals and their effects on the morphology of soils, including a discussion on the formation and classification of humus forms.

In the second part a detailed account is given of the zoological ripening of two different soils developed in the deposits of the Lake IJssel (the Netherlands) after a part of this lake was drained in 1957 to form Eastern Flevoland. The report includes detailed information and discussion on the developments of vegetation and litter and on the density, migration and settlement of soil fauna. There is a chapter dealing with very detailed observations made by the author on cultures of more than 20 different faunal species. Further chapters are on the physical and chemical composition of the two soils and there is a detailed description of the morphology of the soils, for a great part based on observation carried out with micromorphological techniques. The effects caused by the soil fauna is extensively discussed. The author is continuously aware of the results of earlier research and his observations are circumstantially recorded with elaborate comparisons and discussions of the findings of other workers. The patient reader, however, interested in the role of macrofauna in soil genesis will be well rewarded when reading this book. The book is well illustrated with diagrams and black and white photomicrographs and it has a list of more than 900 references.

*Price:* Dfl. 75.00

*Orders to:* Pudoc, P.O. Box 4, 6700 AA Wageningen, the Netherlands.

D. Creutzberg, Wageningen

**Resource Use by Chaparral and Matorral – a Comparison of Vegetation Function in Two Mediterranean Type Ecosystems.** P. C. Miller, editor. Ecological Studies 39. Springer Verlag, New York, Heidelberg, Berlin, 1981, 455 p. ISBN 3-450-90556-1 (Fed. Rep. of Germany); 0-387-90556-1 (U.S.A.).

Mediterranean type ecosystems have held the attention of plant geographers, plant ecologists, climatologists and soil scientists for many years because of the similarities in the five widespread disjunct regions of the world. Many publications have appeared on these ecosystems, and much of the knowledge up to 1973 was summarized in Ecological Studies 7 (di Castri and Mooney, 1973). The present volume builds on its series predecessor in many ways. It presents the results of an international research programme in two mediterranean type ecosystems. Data from the chaparral of southern California and the matorral of central Chile are used in simulation models to explore and evaluate ecological theory. The authors were able to link quantitatively the patterns of availability of resources, i.e., of water, light, and nutrients, with such processes as transpiration, photosynthesis, and nutrient uptake.

This work should be relevant to persons interested in Mediterranean type ecosystems as well as in the applicability of ecological theory to natural systems. The book is well produced and has many figures, tables and graphs. All chapters are summarized.

*Price:* DM 98.00, or about US\$ 45.00.

*Orders to:* Springer Verlag, Heidelberger Platz 3, Postfach, D-1000 Berlin 33, Fed. Rep. of Germany; or: 175 Fifth Avenue, New York, NY 10010, U.S.A.

**Socio-economic Effects and Constraints in Tropical Forest Management.** E. G. Hallsworth, editor. John Wiley & Sons, Chichester, New York, 1982, ix + 233 p. ISBN 0-471-10375-6.

It is interesting to reflect that in spite of the volume of work published on tropical forests over the last 10 years, relatively little has appeared on the impact that tropical forest management might have on lives of the people who live in and on the fringes of the forest. This may perhaps be related to the observation that the bulk of forestry research, and most studies of forest management practices, have been undertaken in the cool temperate forests of the northern hemisphere in which, in general, men do not live. By contrast, most tropical forests are inhabited, and in many parts of the world are inhabited by remnants of tribes for whom the forest was the last refuge into which they retreated before the greater numbers, superior weaponry or better organization of an invading race.

The material on which this book is based was derived from the papers presented at a workshop, held at Dehra Dun, India in 1981, which was convened by the International Federation of Institutes of Advanced Study (IFIAS). This interesting compilation of contributions assesses the role and the importance of the human factor in the ecology of tropical forests. The volume outlines some of the conflicts that have arisen in the utilization of tropical forests by collecting the views of experts working in various parts of the world. The needs of the people living in forests are stressed and proposals are presented to satisfy their requirements and also to maintain a supply of forest products and avoid environmental deterioration.

This work will be of interest to environmental scientist, forestry experts, sociologists, economists and all related professions.

*Price:* £ 23.50, hardback.

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

**Agricultural Engineering in National Development.** Choa Swee Lin, M. Sohadi Bardaie, N. C. Saxena and Van Vi Tran, editors. Universiti Pertanian Malaysia, Serdang, 1981, 366 p.

Agricultural Engineering is the prime-mover of an efficient agricultural system. The economic prosperity of many developing and the developed countries is constantly correlated to its contribution. The profession is progressive and incorporates the current crises of energy, environment and human engineering for their optimum operations.

In Malaysia, Agricultural Engineering has only recently been recognized as a part of ongoing engineering curricula and professional practice. Even though it is so important to the national economy, particularly in agricultural and industrial production, it is not as well known and understood as other engineering professions. *The potential of Agricultural Engineering and its importance for the national development* has not been fully exploited.

The Faculty of Agricultural Engineering, UPM, on realising the important role agricultural engineering can play in the national development, had organised an international conference in September 1979. The objectives of the conference were (i) to provide an international forum for presentation and discussion of the present status, and future development of agricultural engineering, (ii) to present an opportunity for the exchange of ideas and experiences on the role of agricultural engineering in the development, (iii) to promote greater participation of agricultural engineering in national development and (iv) to promote the inter-transfer of technology in agricultural engineering among developed and developing countries through an international participation.

The present proceedings have been divided into four sections: agricultural engineering profession and training (14 papers); national policies and mechanization (18 papers); soil and water (7 papers); and energy, waste and processing (17 papers).

*Price:* US\$ 40.00

*Orders to:* Library, Univ. Pertanian Malaysia, Serdang, Selangor, Malaysia.



**Trace Element Deficiency: Metabolic and Physiological Consequences.** The Royal Society, London, 1981, 213 p.

In January 1981 a distinguished group of chemists, biochemists, physiologists, pathologists, nutritionists, veterinarians and medical research workers got together to discuss the consequences for animals and man of dietary deficiency of trace elements. Topics considered include soil as the primary source of trace elements, the form in which trace elements occur in plants, their absorption from the gastrointestinal tract and their storage in tissues. The functional roles and pathological consequences of deficiency of copper, cobalt, zinc and selenium are then discussed in detail with some attention to other elements only recently recognized as essential, such as nickel and chromium.

*Price:* £ 21.50

*Orders to:* The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, England.

**Applications of Results from Representative and Experimental Basins.** Unesco Studies and Reports in Hydrology 32. Unesco, Paris, 1982, 477 p. ISBN 92-3-101949-X.

This contribution to the International Hydrological Programme was prepared by the Working Group on Representative and Experimental Basins under the chairmanship of D. N. Body.

In this Casebook, a wide range of problems concerning the application of results from representative and experimental basins is considered on the basis of new methods for calculation, generalization and extrapolation of data including experimental studies, statistical processing, mathematical modelling and space techniques. The information in this book is presented under three general themes: (1) Estimation of water resources characteristics; (2) Assessment of effects of man's activities; and (3) Application to development and management. As noted by the editor 'the best management tool is an adequate understanding of the interaction which occurs within the hydrological cycle of the basin and an appreciation of the manner in which land use changes will modify the cycle...'. In each section of this book a great variety of techniques for analyses are presented, based upon experiences from around the world.

*Price:* FF 60.00 in France.

*Orders to:* Unesco National Distributors around the world, or, in case of difficulties, Unesco Press, 7 Place de Fontenoy, 75700 Paris, France.

**Beiträge zur Geomorphologie der Tropen – Contributions to Tropical Geomorphology.** Catena Supplement 2. F. Ahnert, H. Rohdenburg and A. Semmel. Catena Verlag, Cremlingen, 1982. This Supplement: ISBN 3-923381-01-8.

This supplement to the journal Catena comprises three articles. The first discusses the morphoclimate and the morphology of the Inselberg region of Machakos in the south-eastern part of the Kenyan highlands. In the second articles a comparison is made between the geomorphology and soil mantle in the dry zone of north-eastern Brazil and the humid zone of southern Brazil, special attention being given to differences in planation processes, and resulting planation surfaces, pediments, and soils. The last article discusses differences and similarities in soil catenas in perhumid rainforests and humid savannas, in relation to rock types. It is based on work carried out in West and East Africa and south Brazil. This issue has many instructive photographs, some in colour.

*Price:* DM 120.00; standing order price DM 84.00, including postage.

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

**The Nature of Soil Piping – A Review of Research.** BGRG Research Monograph 3. J. A. A. Jones. Geo Books, Norwich, 1981, xiv + 301 p. ISBN 0-86094-077-2.

Soil piping may be defined by the formation of natural pipes in soil and other unconsolidated deposits. These pipes form an important route for slope runoff. In this British Geomorphological Research Group publication the author provides an extended research review of a range of literature on piping from geomorphology, hydrology, soil conservation and civil engineering. The review synthesises evidence on distribution, frequency, severity, morphometry and causal mechanisms of piping. It provides an assessment of current knowledge and research. It indicates that soil piping can be a major process in soil erosion and in landsurface drainage network development, but also that it has been very largely ignored. Suggestions are made regarding the fundamental significance of piping to established theories of hillslope hydrology and geomorphology, stream response and process dominance domains.

*Price:* £ 12.40 or US\$ 24.80. Standing orders for the series: 25% discount.

*Orders to:* see below.

**Soil Pipes and Pipeflow. A hydrological Study in Upland Wales.** BGRG Research Monograph 1. K. Gilman and M. D. Newson. Geo Books, Norwich, 1980, vi + 110 p. ISBN 0-86094-041-1.

This research report is an account of intensive field work undertaken in an experimental catchment in mid-Wales. The concern is with the hydrological significance of soil pipes and has a specific regional context. Soil pipes form an important route for slope runoff. The present study is the first comprehensive presentation of the material on soil pipes. The authors hope that the interest of soil scientists and geomorphologists will be stimulated, and that piping in other forms and in other areas will be studied as a result of their publication.

*Price:* £ 4.40 or US\$ 8.80. Standing orders for the series: 25% discount.

*Orders to:* Geo Books, Regency House, 34 Duke Street, Norwich NR3 3AP, England.

**Introduction to Environmental Remote Sensing. Second Edition.** E. C. Barrett and L. F. Curtis. Chapman & Hall, London, New York, 1982, xiii + 352 p. ISBN 0-412-23090-9 (paperback), 0-412-23080-1 (hardback).

Environmental remote sensing is an amalgam of observational techniques of which some (i.e. aerial photography, photogrammetry, air-photointerpretation) are long established, whilst many more (e.g. satellite sensing of the earth and its atmosphere) are new. The physical basis of remote sensing and the applications of these techniques are the subjects of this book.

This volume is a completely revised version of the text first published in 1976. The present book ranges widely across the subject, leading the reader logically from physical principles through platforms and sensors, data preprocessing, processing, analyses and interpretation, to a review of the many applications of remote sensing in clearly defined areas of environmental science. Topics considered are weather analysis and forecasting, global climatology, water and ice in the environment, soils and terrain, rocks and mineral resources, ecological studies and resource management, crops and land use, the built environment, and hazards and disasters. All this is set in a framework of objective assessment of the costs and benefits of remote sensing and its likely future role in environmental monitoring and management.

This remains a broad and well balanced book, suitable for all students of remote sensing. Like its predecessor, it is well written and illustrated with many photographs, tables and graphs.

*Price:* £ 12.95 (paperback), £ 25.00 (hardback) in U.K.

*Orders to:* Chapman & Hall-ABP, North Way, Andover, Hamps. SP10 5BE, England; or: Chapman & Hall, 733 Third Avenue, New York, NY 10017, U.S.A.

**Flow-diagram Keys for 'Soil Taxonomy', G. Ultisols.** R. F. Thomas, L. C. Blakemore and D. I. Kinloch. New Zealand Soil Bureau Scientific Report 39G. Dept. of Scientific and Industrial Research, New Zealand, 1982, xiv + 51 p. Series ISSN 03404-1735.

This is the seventh volume in a series which seeks to explain, in flow diagram form, the definitions and keys in the USDA Agriculture Handbook Soil Taxonomy. The flow diagrams permit determination, down to subgroup level, of the taxonomic classes of soils in the Ultisols order. They are derived from the relevant keys and definitions in 'Soil Taxonomy' and incorporate USDA-approved amendments dated 5 May 1978.

The flow diagrams are intended to permit easy stepwise interpretation of the keys and definitions, thereby helping to clarify the logic that is implicit in the text. They are likely to be useful in a variety of ways to persons working with 'Soil Taxonomy', whether in assisting initial familiarisation or in facilitating evaluation of proposed changes to the taxonomy. They are not, however, intended to replace the original formal text.

Earlier volumes were flow diagrams for diagnostic horizons and properties of mineral soils (vol. A), for soil moisture and soils temperature regimes and diagnostic horizons and properties of organic soils (vol. B), for the key to soil orders (vol. C), for the soil orders Histosols and Spodosols (vol. D), Oxisols and Vertisols (E), and Aridisols (F).

*Price:* NZ\$ 3.00 per volume + NZ\$ 1.50 for postage.

*Orders to:* New Zealand Soil Bureau, DSIR, Private Bag, Lower Hutt, New Zealand.

**Acid Sulfate Weathering.** SSSA Special Publication Number 10. Soil Science Society of America, 1982, 234 p. ISBN 0-89118-770-7.

Acid sulfate weathering is a subject of increasing interest both nationally and internationally. Acid sulfate soils, in general, result from processes that release sulfuric acid into the soil system as the soil forms. This term is in turn applied to soils in which sulfuric acids have been, are being or will be produced in amounts that have a lasting effect on principal soil characteristics. An in-depth understanding of the nature and properties of acid sulfate soils is necessary if they are to be reclaimed as a resource to be used in crop production. Reclamation is of increasing importance because of the expanding areas of potentially acid sulfate soils associated with expanded mining activities. But while reclamation is important, it is far from simple because of the complexity of their chemical, microbiological and mineralogical relationships. Increased understanding of these relationships must be developed so that these lands may be made productive instead of serving as sources of pollution.

A recent SSSA symposium focused on the topic of acid sulfate soils. This publication contains the papers presented, showing the wide application of the principles of acid sulfate weathering in understanding and managing soils and geologic columns – particularly those that are subject to major manipulation in construction, in recovering mineral resources, etc. At the same time, the publication clarifies the pedogeochemistry of acid sulfate weathering and implies that many soils have been affected by this weathering.

More specifically, the papers: (1) explain how sulfide bearing sediments accumulate; (2) describe the physical chemistry, microbiology and mineralogy of acid sulfate weathering; (3) illustrate effects of acid sulfate weathering and associated pedogeochemical changes upon young and old soils and associated substrata; and (4) present examples of how this knowledge is being applied in man's manipulations of the earth's surface and of undesirable situations that may develop after such manipulations when this knowledge is ignored.

*Price:* US\$ 12.50. Advance payment and 75 cents per book required on orders outside the U.S.A.

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



**Environmental Microbiology.** W. D. Grant and P. E. Long. Blackie, Glasgow and London, 1981, 215 p. ISBN 0-216-91152-4 (Paperback), 0-216-91153-2 (cased).

This book succeeds in being both concise and comprehensive while at the same time offering a level of discussion which is neither trivial or shallow. The authors have brought together topics in environmental microbiology which show both the wealth of academic knowledge available and the practical application of that knowledge.

Part 1 sets the scene with discussion of the principal habitats, soil, water, and those environments seen to be extreme by nature of their temperature, their chemistry or other environmental variables. In Part 2, the influence of microorganisms on the carbon and nitrogen cycles are discussed at length, with briefer mention of the sulphur cycle, iron, manganese, phosphorous and calcium. 'Microorganisms and pollution' is the theme of Part 3, reviewing the reactions of microorganisms to pollution and discussing the opportunities for, and realities of, microbial methods of waste and sewage treatment.

Although written principally for students of microbiology, ecology, environmental science and environmental health, the book should also appeal to lecturers and researchers wishing to acquaint themselves with the range of topics which make up environmental microbiology. The authors have assumed that the reader has a basic knowledge of the major microbial groups and of the main features of prokaryote structure and function.

*Price:* £ 8.50 (paperback), £ 17.50 (cased).

*Orders to:* Blackie & Son, Wester Cleddens Road, Bishopbriggs, Glasgow G64 2NZ, Scotland; or: 14-18 High Holborn, London, WC1V 6BX, England. In the USA: John Wiley & Sons, 605 Third Avenue, New York, NY 10016, U.S.A.

**Advances in Drainage.** ASAE Publication 12-82, American Society of Agricultural Engineers, St. Joseph, 1983, 177 p. ISBN 0-916150-47-X.

Improvements in drainage design and installations as keys to increased crop production and resource conservation, is the subject of this new publication. It contains information presented at the 4th US National Drainage Symposium, held in Chicago in December 1982.

Twenty-one papers, presented by leading experts in the fields, discuss drainage design, construction techniques and materials, and drainage of heavy soils. The Proceedings reflect the continuing changes and growth in technology that have occurred since the last conference in 1976. The book emphasises the use of computers in design and application, the use of trenchless installation techniques, and problems associated with drainage of heavy soils. Engineers, scientists, technicians, and contractors will find this book helpful in designing and installing more efficient drainage systems.

*Price:* US\$ 18.50, postpaid.

*Orders to* American Society of Agricultural Engineers, 2950 Niles Road, St Joseph, MI 49085, U.S.A.

**Land Drainage.** M. J. Gardiner, editor. A. A. Balkema, Rotterdam, 1982, vii + 335 p. ISBN 90-6191-245-8.

This work is the result of a seminar on Land drainage, held in Cambridge, United Kingdom, under the auspices of the Land Use and Rural Resources Programme Management Committee which is an advisory body to the Commission of the European Communities.

A subdivision is made into the following main topics: Drainage and reclamation of soils of low permeability (6 papers); monetary aspects and planning of drainage (4 papers); drainage in problem areas (5 papers); and research and development (5 papers). The volume contains papers by experts from throughout the European Community but particularly from regions where land drainage is a serious problem. It also reports on visits to the Field Drainage Experimental Unit, Cambridge, to the ARC Letcombe Laboratory and to the Field Drainage Farm, Brimstone, Farrington.

The volume concludes by reporting the results of discussions on future research and development needs. It therefore presents an overall view of the current position in these aspects of land drainage and reclamation on an European Community basis.

The book is hard bound, has 83 figures and a colour map showing types of soil water regime in England and Wales.

*Price:* Dfl. 85.00, \$ 35.00 or £ 19.00.

*Orders to:* A. A. Balkema Publishers, P.O. Box 1675, 3000 BR Rotterdam, the Netherlands. In U.S.A. and Canada: A. A. Balkema, 99 Main Street, Salem, NH 03079, U.S.A.

**Progress in Pesticide Biochemistry, Volume 2,** D. H. Hutson and T. R. Roberts, editors. John Wiley & Sons, Chichester, New York, 1982, 226 p. ISBN 0-471-10118-4.

Primary publications on the biochemistry of pesticides are distributed throughout the scientific literature and the subject matter ranges from insect, plant, and soil biochemistry through the mammalian toxicology. This new series is one in which selected aspects will be reviewed and, where possible, be interrelated by experts in the various fields. Volume 1 appeared in 1981 (see Bulletin 60, p. 49).

The following areas are covered: mode of action, biotransformation in target species, biotransformation in non-target species (which may include soils, bacteria, plants, mammals, etc.), environmental effects, environmental chemistry, and biochemical toxicology in mammals.

*Price:* £ 22.50

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

**Determinants of Soil Loss Tolerance.** ASA Publication Number 45. American Society of Agronomy and Soil Science Society of America, 1982, 153 p. ISBN 0-89118-071-0.

In order that the world food demand can be met by the year 2000, it is mandatory for food production to increase at an annual rate of at least two percent to maintain the same food supply/world population ratio which exists today. However, to meet the world's need for food, millions of acres of unsuitable land are being used for food production – at the expense of severe soil erosion.

This combination of events has led many individuals to believe that losses in soil productivity due to erosion such that it will not be possible to maintain current levels of agricultural production, much less to meet the growing needs of the future. Yet, in spite of obvious soil erosion losses, the productivity of much of our land has steadily increased during the past 40 to 50 years. This increased productivity, in spite of erosion losses, has supported the concept of tolerable rates of erosion for given soils – below which there is no significant decrease in productivity.

The T-value (soil loss tolerance) has been used since 1962 as a soil conservation planning guide in the USA. However, numerous factors in the past few years have united to warrant a critical evaluation of the true meaning and use of the T-value. This background of an ambiguous T-value definition, differing opinion of intended use and more pressures on limited soil resources prompted the SSSA to hold a symposium on this topic.

The objectives of the publication with 12 chapters are to: (1) review the perspective of accelerated erosion and its effect on world civilization; (2) review current guidelines and rationale for the determination and use of soil loss tolerance; (3) suggest improved criteria for determining soil loss tolerance values for cropland, forest and rangeland and (4) define areas of research needs to support and improve criteria for soil loss tolerance.

*Price:* US\$ 8.50. Advance payment and 75 cents per book required on orders outside the U.S.A.

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

**Periglacial Mass-Wasting. A review of Research.** BGRG Research Monograph 4. C. Harris. Geo Books, Norwich, 1981, vi + 204 p. ISBN 0-86094-078-0.

Mass-wasting is taken to include those processes causing downslope mass displacement of sediment in the active layer, generally associated with thawing soil ice. Excluded therefore are: deep seated landslides, which penetrate below the level of seasonal freezing and thawing; movements of sediments due to slush and snow avalanches; rock glaciers, which may move as a result of deformation of interstitial ice rather than as a result of active-layer thawing.

The importance of mass-wasting processes in the periglacial zone is widely acknowledged. Mass-wasting is of interest not only to the geomorphologist, but also to the engineer and those concerned with land-use and development in cold-climate regions. Research by physicists, engineers, geologists and geomorphologists into frozen ground phenomena has accelerated over the past ten or fifteen years and now provides a considerable fund of basic knowledge. This monograph attempts to bring together some of this research in a review of periglacial mass-wasting processes, their resulting sediments, and the landforms they produce.

*Price:* £ 8.40 or US\$ 16.80, hardback. Standing orders for the series: 25% discount.

*Orders to:* Geo Books, Regency House, 34 Duke Street, Norwich NR3 3AP, England.

**Nitrogen in Agricultural Soils.** Agronomy Monograph 22. F. J. Stevenson, editor. American Society of Agronomy, Crop Science Society of America and the Soil Science Society of America, Madison, 1982, xx + 940 p. ISBN 0-89118-070-2.

For many soils and crops, farmers increase the nitrogen supply by incorporating various forms of nitrogen into the soil or by biological fixation with legumes. However, plants consume only about 50 percent of the added nitrogen utilization. The nitrogen cycle in soils follows a complex series of reactions that require continual study to utilize this nutrient more efficiently and to assume an adequate supply of the nutrient for crop production.

The present publication provides an authoritative review of the principles governing the behavior of nitrogen in the soil-plant system. This Monograph 22 replaces Soil Nitrogen, Monograph 10, which was published in 1965. Significant advances have been made in all areas of soil nitrogen study since 1965. Material contained in Soil Nitrogen has been extensively revised and updated. In addition, new chapters have been included in response to increasing concern about energy conservation and preservation of the environment.

The monograph with 23 chapters covers many facets of soil nitrogen for which both panoramic and specific views are presented for each major component of the soil nitrogen cycle. Thirty-four of the world's leading soil nitrogen specialists cover topics such as: forms and distribution; biological and non-biological transformations; gains, losses and recycling; plant availability and uptake; modeling and transport; pesticide interactions; experimental approaches and economic implications of restrictions on nitrogen fertilizer use. This is an excellent reference book for researchers, teachers, students and other individuals interested in soil nitrogen.

*Price:* US\$ 30.00. Advance payment and 75 cents per book required on orders outside the U.S.A.

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

**Soil Erosion and Sedimentation in Semi-arid Tanzania. Studies in Environmental Change and Ecological Imbalance.** C. Christiansson. Scandinavian Inst. of African Studies and Dept. of Physical Geography, Univ. of Stockholm, 1981, xii + 208 p. ISBN 91-7106-197-5.

This thesis is based on studies of historical and contemporary soil erosion and sedimentation in the semi-arid savanna areas of central Tanzania. Detailed recording of the soil erosion complex was made within five selected catchments, four of which with reservoirs. The principal methods employed include field surveying and air photo interpretation. Thus, the main approach is physical geographical but is not primarily an investigation of the processes as such but a study of existing features of soil erosion and sedimentation and an analysis of the underlying causes of the processes. For the first time the 19th century East African caravan trade is analysed from the viewpoint of its direct and indirect impact on the natural environment and its possible role in the initiation of soil erosion.

The traditional type of agriculture in the study area is shifting cultivation and animal husbandry based on seasonal movements between settlement areas and areas of dry season grazing and water supplies. Due to the increasing population pressure, mobility has become limited; the available land is being cultivated more intensely, and new fields are being cleared on the upper pediments around the inselbergs. Soils in this position are highly erodible. Thus the fields lose their topsoil and rills and gullies dissect the slopes.

Since the early 1970s a new factor has become involved as the entire population of the area has been moved from scattered homesteads into villages. This causes overgrazing and accelerated land degradation around the villages.

*Price:* Sw. Kr. 87.50

*Orders to:* Almqvist & Wicksell International, P.O. Box 62, S-10120 Stockholm, Sweden.

**Fertilizing for Maximum Yield. Third Edition.** G. W. Cooke. Granada Publishing, London, 1982, xiv + 456 p. ISBN 0-246-11788-5.

This classic textbook was first published in 1972. The present third edition has been completely reorganised, reset and expanded to include six additional chapters. Four new chapters deal with the problem of producing more food for the rapidly expanding world population, the role of fertilizers, how maximum yields can be obtained and the environmental implications of intensified agriculture. Two new chapters discuss in more detail the possibilities of expanding food production in tropical countries. The remaining chapters have been fully brought up to date and take into account the many advances made in this subject.

The author has given much consideration to fertilizers in the tropics. Special attention is given to India, as an example of what can be achieved in a developed country. The book has many illustrative tables and line-diagrams, and is very reasonably priced.

*Price:* £ 9.95 in U.K.

*Orders to:* Granda Publishing, P.O. Box 9, Frogmore, St. Albans, Herts. AL2 2NF, England; or: 866 United Nations Plaza, New York, NY 10017, U.S.A.

**Inventory of Data Sources in Science and Technology. A preliminary survey.** Unesco, 1982, v + 229 p. ISBN 92-3-102048-X.

The present Inventory is intended to facilitate the access of scientists, engineers and information specialists – particularly those in the developing countries – to sources of numerical or factual data in science and technology. It was prepared for Unesco under contract by the Committee on Data for Science and Technology (CODATA) of the International Council of Scientific Unions (ICSU). The Coordinator of the project for CODATA was Dr. Gérard Emptoz.

The Inventory represents an attempt to identify data sources in selected fields of basic science, applied science and technology, and its aim is to provide organizations and individuals needing numerical or factual data, especially those in the developing countries, with basic data sources which are relevant to their scientific or technological problems. Information centres which are essentially bibliographic in character are therefore not included unless they are specialized in guiding users to appropriate sources of scientific data, i.e. unless they can act as data referral centres.

This preliminary inventory consists mainly of chapters covering six specific topics, chosen by CODATA and Unesco for their major interest to many developing countries: (a) renewable energy sources; (b) fertilizers; (c) hydrological sciences and water resources; (d) nutrition; (e) pesticides; (f) soil science.

A choice of more general data sources is also presented as Annex I. Each of these data sources covers a large field of interest in the overall area of science and technology, which is considered to include both agriculture and industrial applications. The Annex does not however, cover the field of medicine.

Approximately 1,500 organizations in 129 countries were contacted during the survey, all topics included. The final Inventory includes description of 652 institutional sources in 94 countries.

This publication is part of the continuing activities of Unesco to promote the establishment and use of information sources which can provide scientific data needed in development, and it is hoped that comments on its usefulness and on how it might be improved will be received from data users and providers.

*Price:* \$ 7.00, FF 50.00 or £ 5.50 incl. postage; prepayment required.

*Orders to:* CODATA, 51 Boulevard de Montmorency, 75016 Paris, France, or to Unesco national distributors around the world.

**Pedology.** P. Duchaufour. Translation from the French edition, 1977 by T. R. Paton. George Allen & Unwin, London, 1982, xiv + 449 p. ISBN 0-04-631016-9 (paperback), 0-04-631015-0 (hardback).

This book is the English translation of 'Pédogenèse et classification', the first volume of 'Pédologie', published by Masson, Paris in 1977. The English translation of the second volume, subtitled 'Constituant et propriétés' (Constituents and Properties of Soils), is published by Academic Press, London and New York, in 1982. See for an announcement Bulletin 62, p. 60.

This book is based on the concept of soil as the interface between biological and physical systems. The approach is genetic, with a marked emphasis on the organic cycle. The book consists of two parts. The first sets up a model of soil development and the second applies this model in differentiating particular groups of soil. The main elements of the genetic model are: the weathering of the mineral fraction, the organic cycle, and the movement of the soil. These elements are integrated with one another by means of the time factor which allows long cycles, dominated by processes of weathering, to be differentiated from short cycles which are controlled by organic matter. The concept of long and short cycles is the main factor used in differentiating the various groups of soils in Part 2. After a preliminary statement on classification systems and how they are related to the one used in this book, the next five chapters deal with soils in order of increasing profile differentiation: those with little differentiation, calcimagnesian soils, isohumic soils, brunified soils and podzolised soils. The final three chapters deal with hydromorphic, sesquioxide-rich and salsodic soils.

This major statement of French pedological opinion has been updated and slightly revised during translation. It is well illustrated and has many bibliographical references.

The present volume and its companion are two independent volumes, both of which will prove to be invaluable publications with stimulating contents for English-speaking soil scientists.

Price: £ 12.95 (paperback).

Orders to: George Allen & Unwin, P.O. Box 18, Hemel Hempstead, Herts. HP2 4TE, England.

**World Directory of Collections of Cultures of Microorganisms. Second edition.** V. F. McGowan and V. B. D. Skerman, editors. World Data Center, Univ. of Queensland, Brisbane, 1982, 641 p.

Culture collections occupy a central position in microbiology because effective research demands adequate and reliable sources of properly preserved cultures. As a result of their function as repositories of living organisms, culture collections promote microbiological research. Increased demands for historical information and strain data have created a need for easily accessible and up-to-date files of important information on the location and characteristics of cultures. Such needs can be met by the development of an adaptable system for storing, retrieving and exchanging information which can be used by all microbiologists. The obvious benefits to be derived from a greater degree of international cooperation prompted the then International Association of Microbiological Societies (I.A.M.S.) to approve the formation of a 'Section on Culture Collections' in 1963 - reorganised as the World Federation for Culture Collections in 1970. The first Directory was published in 1972 by John Wiley, New York. The second edition contains an index of collections, a geographic index of the collections, an index of main interests of the collections, and a list of personnel. The lists of names are arranged under the following heading: algae, blue-green algae-Cyanobacteria, bacteria, fungi, yeasts, lichens, Protozoa, tissue cultures, and viruses. This publication should prove very useful in this age of biotechnology, especially for scientists in developing countries not having easy access to culture collection catalogues.

Price: US\$ 25.00, incl. airmail postage.

Orders to: Dr. T. Rosswall, Dept. of Microbiology, Swedish University of Agricultural Sciences, S-75007 Uppsala, Sweden

**Proceedings of the XIV International Grassland Congress.** J. A. Smith and V. W. Hays, editors. Westview Press, Boulder, 1983, xviii + 878 p. ISBN 0-86531-280-X.

Approximately 1500 scientists from around the globe participated in the International Grassland Congress at the University of Kentucky, U.S.A. in 1981, sharing existing knowledge of grasslands and exploring methods for increasing the productivity of livestock/forage systems so as to better feed mankind while maintaining or improving environmental quality. Of the nearly 500 papers presented on previously unpublished original research or experimental research and development projects, 273 were selected for inclusion in this book. They cover the current basic and applied research on production and utilization of forages from grasslands the world over.

After 10 plenary papers and 2 invited papers, contributions were given in the following sections: plant introduction, evaluation, and breeding (53 papers), seed production (9 papers), soil fertility (16 papers), the nitrogen cycle (8 papers), multiple use of grassland (11 papers), physiological processes (16 papers), grassland ecology (22 papers), evaluation techniques (17 papers), management of grazed and conserved forages (28 papers), mechanization and treatment of forages (17 papers), utilization of forages in animal production (25 papers), tropical grasslands (17 papers), transfer of grassland research findings (11 papers), and socio-economic aspects (10 papers). The book is well edited. Printing and binding are of a high quality.

Price: US\$ 52.00

Orders to: in USA and Canada: Westview Press, 5500 Central Avenue, Boulder, CO 80301, U.S.A.; in the rest of the world: Bowker Publishing Company, Erasmus House, Epping, Essex CM16 4BU, England.



**Introduction to Soil Physics.** D. Hillel. Academic Press, New York, London, 1982, xiii + 364 p. ISBN 0-12-348520-7.

This book is a unified, condensed, and simplified version of the recently issued twin volumes 'Fundamentals of Soil Physics' (1980, see Bull. 59, p. 52) and 'Applications of Soil Physics' (1980, see Bull. 59, p. 54). It is meant to serve as a textbook for undergraduate students in the agronomic, horticultural, silvicultural, environmental, and engineering sciences. Nonessential topics and complexities have been deleted, and little prior knowledge of the subject is assumed. An effort has been made to provide an elementary, readable, and self-sustaining description of the soil's physical properties and of the manner in which these properties govern the processes taking place in the field. Consideration is given to the ways in which the soil's processes can be influenced, for better or for worse, by man. Sample problems are provided in an attempt to illustrate how the abstract principles embodied in mathematical equations can be applied in practice.

The book is well written and illustrated with many drawings. It has a large bibliography.

Price: \$ 22.50

Orders to: Academic Press, 111 Fifth Avenue, New York, NY 10003, U.S.A.; or: 24/28 Oval Road, London NW1 7DX, England.

**Analytical Techniques in Environmental Chemistry 2. Proceedings of the Second International Congress, Barcelona, Spain, November 1981.** Pergamon Series on Environmental Science Volume 7. J. Albaiges, editor. Pergamon Press, Oxford, New York, 1982, x + 473 p. ISBN 0-08-028740-9.

The aim of environmental chemistry is the understanding of the nature, distribution and fate of those compounds that specially effect the quality of our environment. Analytical techniques play a fundamental role in the achievement of these objectives and their continuous development is necessary to cope with the new problems that are constantly arising.

The 51 papers assembled in these Proceedings cover recent advances in analytical methodologies and instrumentation for the determination of organic and inorganic pollutants in air, water and sediments. Monitoring strategies and some case histories are also presented. In spite of the vastness of these topics the book includes selected information, in the form of reviews or current research reports, that will provide a useful introduction to the literature and illustrates the general trends in the establishment of analytical techniques for environmental monitoring. The papers are equally divided between organic and inorganic analysis. Special emphasis is given to the problem of detection and measurement of specific pollutants in atmospheric emissions, drinking waters, industrial effluents and biological samples. Sampling and preconcentration techniques are also covered.

The broad scope of topics discussed involves the application of both well established and new analytical techniques, such as chromatography and spectroscopy, including GC, HPLC, GC-MS, MS-MS, atomic absorption, neutron activation, ICP, X-rays, electrochemistry, etc.

Price: US\$ 75.00

Orders to: Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England; or: Fairview Park, Elmsford, NY 10523, U. S. A.

**Modelling. Outline Studies in Ecology.** J. N. R. Jeffers. Chapman and Hall, London, New York, 1982, 80 p. ISBN 0-412-24360-1.

Many problems in scientific research are too complex to be solved by commonsense rules-of-thumb or by intuition, and the use of words by themselves is not usually a satisfactory way of describing relationships between defined entities. *Mathematical models provide ways of expressing such relationships, even when they are complex and extensive.*

Ecological research has a particular need for the use of models because of its concern with the interactions between a wide variety of organisms, habitats, and physical constraints. This publication explains why models are used, how they are constructed, and describes some of the types of models in common use. The role of computers in modelling is also discussed.

This outline is a simple introduction to the application of mathematics of ecology, and is written for advanced undergraduates, postgraduates and lecturers in departments of ecology and biology.

Price: £ 2.75 in U.K.

Orders to: Chapman & Hall, 11 New Fetter Lane, London EC4P 4EE, England; or: 733 Third Avenue, New York, NY 10017, U.S.A.

**Planning Future Land Uses.** ASA Special Publication Number 42. American Society of Agronomy, Crop Science Society of America and Soil Science Society of Agronomy, 1981, 71 p. ISBN 0-89118-067-2.

With a strong world demand placed on land for food, fuel, and fiber products, the diversion of prime agricultural land to other uses has made the task of planning the uses and management of land a major responsibility for local, state, and federal officials. Since much land is being diverted to non-agricultural uses, a proper use and management of land is needed for preserving it for present and future generations. Specific types of management are needed for many significant land uses. In view of these needs, the various uses and policies which will affect future land management were addressed at a US Conference 'Planning the Uses and Management of Land'.

This publication contains seven papers which were presented during a special conference session 'Plans for the 1980's'. The speakers focused on present and future land use problems and offered possible solutions.

Price: US\$ 5.50. advance payment and 75 cents per book required on orders outside the U.S.A.

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

**Predicting Tillage Effects on Soil Physical Properties and Processes.** ASA Special Publication Number 44. American Society of Agronomy, Soil Science Society of America, 1982, 198 p. ISBN 0-89118-069-9.

Throughout the world, much of the current level of agricultural production is achieved at the expense of nonrenewable soil resources. One can no longer afford to ignore the fact that past and current losses in soil productivity have been masked by an increased technological base. This is not to diminish the importance of past advances or the need for future advance. Instead, one must develop technology that allows to at least sustain and hopefully expand the level of agricultural production and at the same time help regenerate-not deplete-our precious soils.

Reduced tillage systems offer some of the most promising alternatives for reducing both soil erosion losses and time and energy requirements for agricultural production. Although it is proven that alternative tillage systems reduces soil erosion, it is much less clear as to the effect the systems have on soil physical properties and processes. With the adoption of alternative tillage systems, it is necessary to be able to predict and also measure the effect of these systems on soil physical properties and yield. Farmers cannot afford to introduce another element of uncertainty in their already risky operations.

This ASA Special Publication pursues the goal of predicting the effect of tillage on soil physical properties that are important for plant growth and yield. The information will be especially helpful to individuals engaged in planning and executing applied research in tillage and crop production.

*Price:* \$ 10.00. Advance payment and 75 cents per book required on orders outside the U.S.A.

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

**Land Evaluation of Valleys in a Tropical Rain Forest area – a case study.** W. J. Veldkamp. Thesis Agricultural University Wageningen, 1979, 266 p.

The forest zone of south-western Nigeria was investigated for the agricultural land use potential of its hydromorphic and adjacent land types. These land types are found in valley bottoms and on lower slopes. To make the study more complete, the more common well-drained soils were partly included for comparisons. With a few exceptions, the hydromorphic land is not used for agriculture but only for the provision of forest products which are gathered rather than cultivated. This study concentrates on feasible ways of farming these land types in the context of the current conditions.

Two methodologies were used for the investigation: a) the performance of crops as a function of the location on toposesquences, in particular the drainage conditions, and b) the ecological land suitability classification, in which land qualities are related with the ecological and agricultural requirements of crops. To determine the potential of the hydromorphic and adjacent land types, the soils, groundwater regimes and soil moisture regimes were studied, together with the social environment, geology, hydrology, climatology and natural vegetation. Crop performance, especially in relation to the groundwater regime, was studied in toposequence experiments. In an ecological suitability classification, land qualities, management levels, and crop performance were considered, resulting in ecological crop suitabilities for specific management units. For some management units suitabilities, including some socio-economic aspects, have been evaluated.

The study revealed a.o. that the results of the evaluation of the well-drained upper slopes resembles the current land use of these soils. On the other hand, the results for the hydromorphic land types can be regarded as a real evaluation of the potential land use. Of the hydromorphic and adjacent land types, the heavier textured soils have a greater potential for cultivation. The main crops suited to hydromorphic valley-bottom land are rice and (*Colocasia*) cocoyam; additional dry season crops are tomato, okra, and soybean. The adjacent somewhat better drained land types, occurring on a strip with a varying width along the lower slope, have a high potential; many crops are suited to cultivation. Although differing over short distances, the ecological crop suitabilities on lower slope positions are strongly dependent on groundwater regimes and soil texture.

*Requests to:* Dept. of Soils and Geology, Agricultural University, P.O. Box 37, 6700 AA Wageningen, the Netherlands.

**Towards a Newer World.** B. R. Sen. Tycooly International Publishing Company, Dun Laoghaire, 1982, x + 342 p. ISBN 0-907567-27-4 (paperback), 0-9075567-26-6 (library edition).

The book concerns itself with the life and times of B. R. Sen, a senior Indian diplomat and former Director-General of the FAO. Rather than providing a conventional autobiography, the author describes his reactions and responses to the enormous social and technological changes of the present century. His memoirs are set out in two parts: the first describes Sen's youth and deals with his experiences both as an administrator in India and as India's Ambassador to Italy, Yugoslavia, the United States, Mexico and Japan; the second describes the FAO's 'Freedom from Hunger Campaign' and Sen's involvement with the FAO's transformation from an essentially technical UN organization into a development agency.

Dr. Sen's travels, his experience of civil service procedures, international diplomacy and the workings of the UN give him an exceptionally privileged vantage point from which to write his memoirs. 'Towards a Newer World' is the story of B. R. Sen. It is also the story of the great events of our time.

*Price:* paperback: £ 17.50, library edition £ 27.50. Developing countries: \$ 19.50. Postage £ 1.40 or \$ 2.50 extra.

*Orders to:* Tycooly Int. Publ. Comp. 6 Crofton Terrace, Dun Laoghaire, Co. Dublin, Ireland.



**Aridic Soils.** Special Issue *Geoderma*, Vol. 28, no. 3/4, December 1982. Elsevier Scientific Publishing Company, Amsterdam. ISSN 0016-7061.

This special issue of *Geoderma* consists of eight papers presented at the International Conference on Aridic Soils—properties, genesis, and management—held at Kiryat Anavim near Jerusalem, March 29–April 4, 1981. The conference was sponsored by the Israel Society of Soil Science within the framework of activities of the Intern. Society of Soil Science. Abstracts of papers, posters and a guide book providing an overview of the arid landscapes of Israel and a detailed record of the soils and their characteristics (Dan et al., 1981, see *Bulletin* 59, p. 59) were published for the conference. Some 49 invited and volunteer papers and 23 posters were presented during the conference, after which seven days were devoted to field excursions.

The set of papers in this issue provides discussions of processes of horizon differentiation in aridic soils, of effects of environmental factors in soil genesis, of characteristics of soils in arid regions, of related geological features and of certain water relations in aridic soils. Additional papers, focused on geomorphic processes and their relationships to soils of arid regions, were published in a special issue of the journal *Catena* (see *Bulletin* 61, p. 64).

*Price:* Dfl. 105.00 plus postage.

*Orders to:* Elsevier Scientific Publishing Company, P.O. Box 211, 1000 AE Amsterdam, the Netherlands; or: 52 Vanderbilt Ave., New York, NY 10017, U.S.A.

**Cotton Irrigation in Israel. An annotated bibliography 1975–1981.** International Irrigation Information Center, Bet Dagan, n.y., 33 p.

The information contained in the one hundred publications mentioned in this bibliography has been analysed and evaluated on the basis of several categories, increasing the usefulness of such listings.

It not only has an indicative abstract, but also such items as the irrigation system, soil, breadth of the publications, type and level of research and presentation of the information. All publications can be ordered.

*Price:* US\$ 5.00

*Orders to:* IIIC, P.O. Box 49, 50250 Bet Dagan, Israel; or: IIIC, P.O. Box 8500, Ottawa, Canada K1G 3HG.

**Irrigation in Israel, a comprehensive bibliography 1974–1980.** International Irrigation Information Center, Bet Dagan, n.y., 25 p.

This is a listing of about 400 books, journal articles, theses, reports and meeting papers, which have mostly appeared in English and partly in Hebrew. IIIC can provide the reader with photocopies of all items mentioned and also provides translation services from Hebrew into English.

*Price:* US\$ 5.00

*Orders to:* IIIC, P.O. Box 49, 50250 Bet Dagan, Israel; or: IIIC, P.O. B. 8500, Ottawa, Canada K1G 3HG.

**Resource Conservation Glossary. Third Edition.** Soil Conservation Society of America, Ankeny, 1982, 193 p. ISBN 0-935734-09-0.

Compared to the second edition of 1976, this third edition represents an increase of 1300 in the number of entries. It now includes 4000 terms commonly used in some phase of resource management. Terms from 34 technologies are represented. The glossary is written for the student, practitioner and layman. It only contains terms used in the United States.

*Price:* US\$ 7.00, prepayment is US funds required.

*Orders to:* Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa 50031-9764, U.S.A.

**Farming Systems Research and Development: Guidelines for Developing Countries.** W. W. Shaner, P. F. Philipp, and W. R. Schmehl. Westview Press, Boulder, 1982, 414 p. ISBN 0-86531-389-X (hardback), 0-86531-425-X (paperback).

Farming systems research and development (FSR&D) is an approach that is being used increasingly to meet the need for greater food production and a better standard of living of small-scale farmers in developing countries. This book synthesizes the FSR&D procedures used by national governments and international research centers around the world, emphasizing methodologies that have proved successful in practice.

The authors describe the characteristics and objectives of FSR&D, then present information on selecting target and research areas, problem identification and development of a research base, research design, on-farm research, extending research results, and implementation and training procedures. They emphasize that the FSR&D approach requires a clear understanding of farmers and their families, farmers' conditions, and governmental staffing and organizational capabilities, and in one chapter discuss how to determine whether an FSR&D approach is in a particular country's best interests. Appendices present detailed examples of procedures described in the text, covering a variety of countries with different cropping and livestock systems, environmental conditions, and research and development capabilities.

*Price:* US\$ 32.50 or £ 18.00 hardback, US\$ 14.50 or £ 8.00 paperback.

*Orders to:* USA and Canada: Westview Press, 5500 Central Avenue, Boulder, CO 80301, U.S.A.; rest of the world: Bowker Publishing Co., P.O. Box 5, Epping, Essex CM16 4BU, U.K.

**Multiple Cropping and Tropical Farming Systems.** W. C. Beets. Gower, Aldershot, and Westview Press, Boulder, 1982, xiv + 156 p. ISBN 0-566-00567-0 (U.K.), 0-86531-518-3 (U.S.A.).

This book brings together relevant research and development strategies for integrated multiple cropping systems throughout the tropical world. It describes the history, agronomy, crop husbandry, management economics and planning of those multiple cropping systems which are presently practiced or feasible. Included are special sections on plant interrelationships and competition as well as on economic and social aspects of multiple cropping. For readers without an agricultural background the more general problems of tropical farming systems are discussed. Special technical and socio-economic problems connected with low-level technology farming and the economics of the rural developing tropics are also considered.

The different multiple cropping systems e.g. mixed cropping, intercropping, relay cropping, strip croppings and multi-storey cropping are fully described together with their agricultural operations such as cultivation, fertilization and irrigation. The role of multiple cropping systems in tropical subsistence farming, the problems of land-use and requirements of resources and the interactions between different agricultural systems and the farming community are important parts of the book.

The intention of the book is to make available to researchers, agricultural policy makers and educators, planners and administrators, a body of knowledge about multiple cropping and farming systems in the tropics that can serve as a library tool and desk reference for professionals and students in this field.

*Price:* £ 12.50

*Orders to:* Gower Publishing Company, Gower House, Croft Road, Aldershot, Hants GU11 3HR, England; or: Westview Press, 5500 Central Avenue, Boulder, CO 80301, U.S.A.

**Tropical Agriculture. The development of production. Fourth edition.** G. Wrigley. Longman, London, New York, 1982, 496 p. ISBN 0-582-46037-9.

As the steady growth in population outstrips the increase in food production, the world is facing the biggest famine in history. This highly respected book, now in its fourth edition, explains how agricultural production in the tropics can be increased and soil fertility maintained.

The author has completely revised the text both to include new material and to bring up to date the scientific aspects of crop and cattle production. Based on his thirty-five years' experience in tropical agriculture, he gives clear and readable explanations of crop ecology, crop culture, crop improvement, crop protection and cattle. The text is illustrated with numerous photographs and line drawings, and there are also many tables which provide a valuable source of quick reference.

In its new edition this book will continue to be an invaluable source of information to agriculturalists, students and administrators as well as to geographers and planners and all those who are interested in increasing production in tropical regions.

*Price:* £ 24.00 in U.K.

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

**Soil Information Systems – Informatique et Pédologie.** Proceedings of the 3rd ISSS International Symposium on Soil Information Systems, Paris, 14–17 September 1981. Actes de Colloque AISS sur le Traitement Informatique des Données de Sol, Paris, 14–17 Septembre 1981.

These proceedings in 3 volumes of 'Sols', edited by M.-C. Girard, have 28 articles, 11 in English and 17 in French. Many illustrations. In total 381 pages.

*Price/Prix:* FF 87.00

*Orders to/Commandes à:* Laboratoire de Pédologie 'Sols', I.N.A. Paris-Grignon, 78850 Thiverval-Grignon, France.

**Application of Electro-Ultrafiltration (EUF) in Agricultural Production.** K. Németh, editor. M. Nijhoff/Dr. W. Junk Publishers. The Hague, Boston, London, 1982, 138 p. ISBN 90-247-2641-7. (reprinted from *Plant and Soil*, vol. 64, no. 1, 1982).

The objective of this First International Symposium was to present the first results and experience gained with the EUF procedure. The procedure of electro-ultrafiltration as suggested by Beehold in 1925 has been further developed and improved over the past ten years. The introduction of varying voltage and temperature during the extraction process gives this method a considerable advantage in plant nutrition analysis, as it is now possible to obtain several nutrient fractions of different plant availability in one extraction run and to determine at the same time other soil properties such as K selectivity of clay minerals, content of K selective minerals, content of CaCO<sub>3</sub>, etc. These data, in fact, make it possible to characterize a soil comprehensively and thus to ensure optimal plant nutrition, so meeting the economic requirements of agricultural production. The EUF procedure is now being used in over 20 countries worldwide either on test of for the practical improvement of fertilizer advice. The worldwide interest in the method suggested that the time was ripe to collate existing information in a Symposium. It was organized in Budapest in May 1980 and attracted over 100 persons from 15 countries in Europe, Asia and Africa.

The proceedings of this Symposium form the content of this book, and consists of 15 contributions, selected from the 35 papers presented.

*Price:* Dfl. 50.00 or US\$ 22.00.

*Orders to:* In U.S.A. and Canada: Kluwer Boston, 190 Old Derby Street, Hingham, MA 02043, U.S.A. In all other countries: Kluwer Distribution Center, P.O. Box 322, 3300 AH Dordrecht, the Netherlands.

**The Handbook of Environmental Chemistry**, O. Hutzinger, Editor. Springer Verlag, Berlin, Heidelberg, New York.

Environmental Chemistry is a relatively young science. There appears to be increasing interest in seeing environmental topics which are based on chemistry embodied in this subject. One of the first objectives of Environmental Chemistry must be the study of the environment and of natural chemical processes which occur in the environment. A major purpose of this series, therefore, is to present a reasonably uniform view of various aspects of the chemistry of the environment and chemical reactions occurring in it.

The present Handbook is the first advanced level compendium of environmental chemistry to appear to date. It covers the chemistry and physical behavior of compounds in the environment. Under the editorship of Prof. O. Hutzinger, director of the Laboratory of Environmental and Toxicological Chemistry at the University of Amsterdam, many international specialists have contributed to the first three volumes, each consisting of two parts. Part A of the three volumes appeared in 1980; Part B followed in 1982. Each volume contains a subject index. Future volumes are planned and will cover analytical chemistry, toxicology, and environmental engineering.

The Handbook of Environmental Chemistry is a critical and complete outline of our present knowledge in this field and will prove invaluable to a wide range of chemists and scientists in related disciplines, geologists, meteorologists, etc. Most chapters are written to a fairly advanced level and should be of interest to the graduate student and practising scientist. The ISBN entries below are of the German and U.S.A. editions respectively.

Volume 1, Part A

**The Natural Environment and the Biogeochemical Cycles, 1980**, 258 p., 54 figures, ISBN 3-540-09688-4/0-387-09688-4.

Price: DM 98.00

This part has chapters on the chemical composition of the atmosphere, hydrosphere, and soil; cycles of oxygen, sulfur, phosphorus, and metals; and on natural organohalogen compounds.

Volume 1, Part B

**The Natural Environment and the Biogeochemical Cycles, 1982**, 317 p., 84 figures. ISBN 3-540-11106-9/0-387-11106-9.

Price: DM 168.00

This part has chapters on: the basic concepts of ecology; natural radionuclides in the environment; the nitrogen and carbon cycles; molecular organic geochemistry; and on radiation and energy transport in the earth atmosphere system.

Volume 2, Part A

**Reactions and Processes, 1980**, 307 p., 66 figures. ISBN 3-540-09689-2/0-387-09689-2.

Price: DM 126.00

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Volume 3, Part B

**Anthropogenic Compounds, 1982**, 210 p., 38 figures. ISBN 3-540-11108-5/0-387-11108-5.

Price: DM 116.00

This part has chapters on: lead; arsenic, beryllium, selenium and vanadium; halocarbons; halogenated aromatics; volatile aromatics; and surfactants.

Orders to: Springer Verlag, Heidelberger Platz 3, Postfach, D-1000 Berlin 33, Fed. Rep. of Germany, or 175 Fifth Avenue, NY 10010, U.S.A.

**Biofertilizers in Agriculture.** N. S. Subba Rao. A. A. Balkema, Rotterdam, 1982, 200 p. ISBN 90-6191-405-1.

A key problem in increasing agricultural production, particularly in developing countries, is how to minimize the consumption of non-renewable forms of energy. One very promising strategy is the use of biofertilizers as supplements to chemical fertilizers and organic manures. These biofertilizers harness atmospheric nitrogen with the help of specialised soil microorganisms which are either free living in soil or symbiotic with plants. They thereby contribute directly or indirectly to the nitrogen nutrition of plants. These microbial processes are not only quicker but also consume relatively less energy than industrial processes. Moreover, they have the advantage of being diversified into small units to meet the demands of location-specific agricultural problems. Dr. Subba Rao provides an up-to-date account of fundamental and applied research on biofertilizers, with appropriate references, for the benefit of both the biologist and the scientists interested in alternative sources of energy in agriculture.

*Price:* Dfl. 35.00, US\$ 14.00.

*Orders to:* A. A. Balkema Publishers, P.O. Box 1675, 3000 BR Rotterdam, the Netherlands. In U.S.A. and Canada: A. A. Balkema, 99 Main Street, Salem, NH 03079, U. S. A.

**Proceedings of the Hungaro-Indian Seminar on Salt Affected Soil, Budapest, 1981.** I. Szabolcs and J. S. P. Yadav, editors. *Agrokémia és Talajtan (Agrochemistry and Soil Science)*, vol. 30, 1981, pp. 1-256. Supplementum.

This seminar took place in 1981 in Budapest and it was followed by field trips to salt-affected soils in the Danube and Tisza valleys. In spite of different ecological and socio-economical conditions, in both India and Hungary soil salinization and alkalinization have not only great theoretical interest, but there appears to be a lot in common in practices and methods of reclamation of these salt-affected soils.

This issue of 'Agro-chemistry and Soil Science' contains the proceedings of the Seminar and has the texts of 21 papers by Hungarian and Indian soil scientists. A limited number of copies is still available, without charges.

*Requests to:* Editor-in-Chief, *Agrokémia és Talajtan*, Hermann Ottó ut 15, Budapest 1022, Hungary.

**Inorganic Chemistry and the Earth.** Chemical Resources, Their Extraction, Use and Environmental Science Volume 6. J. E. Fergusson. Pergamon Press, Oxford, New York, 1982, 400 p. ISBN 0-08-023995-1 (hardcover); 0-08-023994-3 (flexicover).

The interest in, and the study of, the chemistry of natural systems of the earth is growing over the last two decades. Reasons for this are an increasing concern for the future of the world's resources and the effect of pollution on the environment and people. The rapid development in methods of fast instrumental analysis, enabling trace amounts of material in a complex matrix to be determined, has also been a significant factor.

Much of the chemistry encountered in a study of the earth and environmental pollution is basic chemistry. For example oxidation-reduction processes feature significantly and solubility is an important aspect. The chemistry of the gaseous oxides features prominently in air-chemistry. As a consequence there has been a rebirth in interest in this type of chemistry, as well as in analysis; two areas which have been over-shadowed in the last 30 years by the developments in the chemistry of the transition metals.

This book presents inorganic chemistry within the context of the environment and the needs and problems of society. It covers the origin and distribution of the chemical elements in the earth, the world's resources, their extraction and some of the chemical processes involved in producing useful commodities, and, finally, the impact the latter has on the earth. The reader is assumed to be familiar with basic chemical theory enabling him to study at a greater depth than is usual with environmental problems.

*Price:* US\$ 40.00 hardcover, \$ 19.95 flexicover.

*Orders to:* Pergamon Press, Headington Hill Hall, Oxford, OX3 0BW, England; or: Fairview Park, Elmsford, NY 10523, U.S.A.

**Fertilization of Dryland and Irrigated Soils.** J. Hagin and B. Tucker. Springer Advanced Series in Agricultural Sciences volume 12. Springer Verlag, Berlin, Heidelberg, New York, 1982, vii + 188 p. ISBN 3-540-11121-2 (Germany), 0-387-11121-2 (U.S.A.).

Much has been learned about the proper and judicious use of fertilizers. The modern fertilizer industry and with it fertilization practices began in the humid countries of the world. The use of fertilizers in arid and semi-arid regions was later in development, although agriculture had its beginning in semi-arid and arid regions.

The purpose of this book is to supply information and knowledge specifically concerning the proper and judicious use of fertilizers in arid and semi-arid climates. Enough background information is given on soil chemical processes and plant nutrition to provide the reader with an understanding of the rates of plant food needed and allows for the proper selection of fertilizer materials and methods of applications.

The book is most complete on those subjects important to low or erratic rainfall areas. Conciseness has, however, been achieved by eliminating soil fertility considerations which are not pertinent to arid and semi-arid regions.

*Price:* DM 98.00 (approx. US\$ 40.00).

*Orders to:* Springer Verlag, Heidelberger Platz 3, D-1000 Berlin 33, Fed. Rep. of Germany; or: 175 Fifth Avenue, New York, NY 10010, U.S.A.

**Flow and Transport in Porous Media.** A. Verruyt and F. B. J. Barends, editors. A. A. Balkema, Rotterdam, 1981, vii + 232 p. ISBN 90-6191-216-4.

In March 1980 the European Mechanics Committee decided to include a colloquium on Flow and Transport in Porous Media in the program. It took place in Delft, the Netherlands, in September 1981. Containing the proceedings of this colloquium, the present book gives an up-to-date review of the state of the art in this field. This branch of science is rapidly growing, especially because of the importance of problems of pollution of groundwater, of heat transport and storage of solar energy in the ground, of hydraulics and mechanics in large granular structures, and of the simultaneous flow of different fluids in porous media. All these subjects are covered in this volume, together with a number of papers on the fundamental aspects of flow through porous media. The following sessions were held: dynamics of fluids in porous media (8 papers), multiphase flow (9 papers), transport of contaminants and heat (8 papers), and hydrodynamic dispersion (7 papers).

*Price:* Dfl. 95.00, clothbound.

*Orders to:* A. A. Balkema, P.O. Box 1675, 3000 BR Rotterdam, the Netherlands. In U.S.A. and Canada: MBS, 99 Main Street, Salem, NH 03079, U.S.A.

**Soil Erosion and Conservation in the Tropics.** ASA Special Publication Number 43. American Society of Agronomy and Soil Science Society of America, 1982, 149 p. ISBN 0-89118-068-0.

Soil erosion is a major threat to all phases of land productivity, and the significance of this problem is increasing at a rapid rate. As population increases, the portion of available cropland to each individual decreases. The projected world food demand for the year 2000 is roughly double the amount food produced in 1975. To meet this, cultivation of our land resources must be both intensified and extended onto marginal lands – much of this land is located in the tropics. However, nowhere is the problem of soil erosion more of a reality than in the tropics where land, without, adequate protective measures, is too fragile to be disturbed. The present publication examines the problem of soil erosion in the tropics, giving information on the erosion problem, its components and its impacts, conservation planning and its implementation. Although this publication focuses on soil erosion and conservation in the tropics, the principles and many of the technologies discussed apply worldwide.

*Price:* US\$ 8.50. Advance payment and 75 cents per book required on orders outside the U.S.A.

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

**X-ray Diffraction by Disordered and Ordered Systems.** D. W. L. Hukins, Pergamon Press, Oxford, New York, 1981, 164 p. ISBN 0-08-023976-5.

A simple unified approach to X-ray diffraction by disordered (liquid, glasslike, etc), partially ordered (fibre, liquid-crystalline, etc.) and ordered (perfectly crystalline) systems shows the kind of information which the technique can provide about structure in these states of matter. It is intended for those readers, especially beginning research students, who wish to interpret X-ray diffraction patterns from specimens which may not be crystalline and for advanced undergraduate or postgraduate students attending lecture courses on the technique. Interference effects between scattered X-rays which give rise to the diffraction patterns, development of structural models and diffraction geometry are introduced as generally as possible. These ideas are then applied to systems of progressively increasing order of complexity. Thus diffraction by solutions of macromolecules, liquids, amorphous solids, liquid crystals, fibres, etc., is covered before conventional X-ray crystallography which emerges as a special case of diffraction by a highly ordered system. SI units are used throughout.

*Price:* £ 11.95 or US\$ 28.75.

*Orders to:* Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England; or: Fairview Park, Elmsford, NY 10523, U.S.A.

**Recent Developments in the Explanation and Prediction of Erosion and Sediment Yield.** IAHS Publication No. 137. D. E. Walling, editor, International Association of Hydrological Sciences, 1982, ix + 430 p.

Like all branches of hydrology, erosion and sediment yield studies have shown many advances and developments during the last decade. To some extent these have reflected the improvements and innovations in measurement techniques high-lighted at the Florence Symposium on Erosion and Sediment Transport Measurement in 1981 (proceedings published 1981 as IAHS Publ. 133, see Bull. 60, p. 51), and the general advance of techniques of analysis and modelling. Equally they are a response to an increasing concern for the economic and social problems associated with soil erosion and land degradation and for the environmental problems involved in developing new areas of the globe for agricultural production, and to the growing incidence of sedimentation problems in water development projects. In addition, recent emphasis on the role of suspended sediment in the transport of nutrients and contaminants and in non-point pollution has introduced a new dimension to sediment studies. Attention must now also focus on such considerations as the geochemistry of the sediment and source material properties, and the mechanisms involved in the preferential enrichment of certain sediment fractions during erosion and conveyance.

The present publication contains the proceedings of the Exeter Symposium, organized by the IAHS International Commission on Continental Erosion, held in July 1982. It has 45 papers.

*Price:* US\$ 35.00

*Orders to:* Office of the Treasurer IAHS, 2000 Florida Avenue, NW, Washington, DC 20009, U.S.A.; or IUGG Publications Office, 29 ter Rue Gay Lussac, 75005 Paris, France.



**Soil Groups of New Zealand. Parts 4 and 5.** New Zealand Society of Soil Science, Lower Hutt, 1980.

The main function of the NZSSS 'soil group' issues is to present the current 'state-of-play' in relation to the soil groups under discussion. They attempt to present what is known at the date of issue about classification, definition, distribution, properties and use. The first three parts were concerned with 1. Yellow-Brown Pumice Soils; 2. Yellow Brown Sands; and 3. Gley Soils. New parts are: 4. Organic Soils, published in 1980, 116 p.; price NZ\$ 6.50; and 5. Podzols and Gley Podzols, published in 1980, 452 p.; price NZ\$ 13.50, including surface mail charges. Prepayment required. These 'soil group' publications are printed for limited distribution and only a few copies are left.

*Orders to:* New Zealand Society of Soil Science, c/o Soil Bureau, Private Bag, Lower Hutt, New Zealand.

**Optimal Allocation of Water Resources.** IAHS Publication No. 135. M. J. Lowing, editor. International Association of Hydrological Sciences, 1982, viii + 416 p.

The present publication contains the proceedings of the Exeter Symposium, organized by the IAHS International Commission on Water Resources Systems, held in July 1982. The overall objective of the symposium was to consider how limited water resources may best be used to meet demands made on them; in other words to examine hydrological aspects of water management. In selecting and grouping the 40 papers in this volume emphasis has been given to the more urgent problems which still need to be solved. Some of the papers address problems that are wider than its title would imply; however, the field is so complex and the experience of the authors so rich that it was considered preferable to include papers relevant to the spirit of the symposium, even if they did not strictly conform to the title.

The papers have been arranged under four headings: (1) supporting techniques and investigative methods for primary resource development; (2) methods of analysis for developing regional and national water policies; (3) techniques of analysing existing systems for operational purposes; and (4) case studies.

*Price:* US\$ 35.00

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**Experimental Designs for Predicting Crop Productivity with Environmental and Economic Inputs for Agrotechnology Transfer.** Departmental Paper 49. J. A. Silva, editor. Hawaii Institute of Tropical Agriculture and Human Resources, Univ. of Hawaii, 1981, 184 p.

The papers compiled here were presented at a Workshop which was held in May 1974, at the University of Hawaii. The major objective of the workshop was to develop a reliable experimental methodology for generating data to be used by the Benchmark Soils Project in scientifically determining the transferability of agrotechnology. Participants at the workshop included scientists in soil science, agronomy, statistics, agricultural economics, and tropical agricultural research.

The fact that agrotechnology can be transferred from one geographic area to another has long been generally accepted by scientists; however, there has been no scientific evaluation of the success of such transfer and the basis for transfer had not been well defined. The development and publication of the US Soil Taxonomy system of soil classification in 1975 opened a perspective to use the 'soil family' as a transfer vehicle, because that particular classification category is meant to identify similar agro-environments.

The papers presented have been organized for publication into three major sections. The first includes papers that describes the Benchmark Soils Project and give the rationale for the Project as well as a preliminary research approach (3 papers). Papers in the second section describe general approaches to and results from field experimentation in developing countries (3 papers). The third section includes descriptions and discussions of experimental designs suitable for soil fertility experiments (8 papers). Several designs are evaluated and models for production functions are described and compared. A limited number of copies is left for free distribution.

*Requests to:* College of Tropical Agriculture and Human Resources Order Desk, Room 108, Krauss Hall, 2500 Dole Street, Honolulu, Hawaii 96822, U.S.A.

**Decomposition of toxic and nontoxic organic compounds in soils.** M. L. Overcash, editor. Ann Arbor Science Publishers, Ann Arbor and Butterworths, Sevenoaks, 1981, 455 p. ISBN 0-250-40333-1.

This book contains translations into English of 43 research reports that were published earlier in various languages. Most of the papers were translated from German, Italian, Japanese and Russian, a few papers from Czech, Danish, Dutch, French and Polish. Sections on organochlor and agricultural chemicals contain results of research on quintozene (PCNB), hexachlorobenzene, DDT, hexachlorocyclohexane (lindane and isomers), polychlorinated biphenyls, captan, thiram, maleic hydrazide, methabenzthiazuron and diphenyl ether herbicides. Investigations on the degradation of industrial wastes that are sometimes applied to land surfaces are reported, particularly on phenol, *p*-benzoquinone, indole, chlorinated benzenes, benzidine dye and polycyclic hydrocarbons. Various articles from Eastern European countries pay attention to the degradation and effects of urea formaldehyde resin foam as a soil conditioner. In the last section, various papers from Italy are included on the degradation and movement of synthetic detergents in soil.

Although the main emphasis is on degradation of the organic chemicals in soil, the papers also deal with one or more of the following environmental aspects: adsorption, movement in soil, uptake by plants, effects on plants and effects on microbial activity in soil.

*Price:* £ 40.00 in U.K.

*Orders to:* The Butterworth Group, Boreham Green, Sevenoaks, Kent TN15 8PH, England.

M. Leistra, Wageningen



**Exploratory Soil Map and Agro-climatic Zone Map of Kenya, 1980. Scale 1:1,000,000.** W. G. Sombroek, H. M. H. Braun and B. J. A. van der Pouw. Exploratory Soil Survey Report no. E1, Kenya Soil Survey, Nairobi, 1982. 4 maps, all of size 115 × 95 cm, and 60 pages explanatory text. ISBN 90-327-0162-2.

The present 1:1 million exploratory soil map supersedes the 1:3 million map of Kenya of 1959 by Gethin Jones and Scott. The legend is composed of a) landforms, b) nature of the parent materials, c) the soil(s), in short descriptive form, d) the soil classification. The latter follows the terminology of the Legend of the FAO-Unesco Soil Map of the World, with some modifications and elaborations to suit local conditions.

The soil map is accompanied by an agro-climatic map at the same scale. It delineates zones characterized by two components: moisture availability (seven zones were distinguished) and temperature (nine zones); their values are related to regional crop suitabilities.

Two additional maps, at the same scale, have been incorporated in the set. One is a black-and-white map with the soil mapping units and a red overprint of the agro-climatic zones; for the purposes of land evaluation at different relevant utilization types. The fourth map presents the existing coverage of soil maps at different scales, as well as all observations points utilized specifically for the preparation of the exploratory soil map and agro-climatic zone map.

The explanatory text contains the legend of the soil map (390 units); supporting agro-ecological information; an account on the mode of preparation of the maps, and two comprehensive lists of references (260).

Price: in sturdy plastic binder, set of 4 maps and explanatory text: Kenya Shs 250/00 or Dfl. 75.00.

Orders to: Kenya Soil Survey, P. O. Box 14733, Nairobi, Kenya; or: Netherlands Soil Survey Institute, P.O. Box 98, Wageningen, the Netherlands.

**Report on the agro-ecological Zones Project. Volume 3. Methodology and Results for South and Central America.** World Soil Resources Report 48/3. FAO, Rome, 1981, 251 p., maps and figures. ISBN 92-5-101081-1 (English Edition).

Previous appraisals of the global extents of arable lands, to support present and future human populations, vary from 3 to 7 thousand million hectares. Estimates of the population these lands can support, vary from 7.5 to 40 thousand million. These estimates however, do not take into account differences in production potential when it is calculated for different crops and different levels of inputs and technology. Such factors must be taken into account to arrive at realistic estimates of the agricultural production potential of the various lands of the world.

FAO initiated, in September 1976, a study of potential land use by agro-ecological zones to obtain a first approximation of the production potential of the world's land resources, and to provide the physical data base necessary for planning future agricultural development. Initially the project deals with rainfed production potential, at two levels of inputs, for eleven crops in developing countries.

Volume 1 gives general and technical accounts of the overall methodology employed in the assessment and gives the results for Africa (report available in English and French). Volume 2 contains results for Southwest Asia (available in English and Arabic). Volume 4 reports results for Southeast Asia (available in English). The present Volume 3, which is available in English and Spanish, sets out the methodology of the assessment of the potential agricultural use of the land resources in South and Central America. The study concentrates on physical and some economic land aspects only, providing the essential base for sound physical land planning of agricultural developments, upon which more detailed economic and social considerations may be later superimposed. The following crops are considered: millet, sorghum, maize, wheat, soybean, Phaseolus bean, sweet potato, white potato, cassava, cotton and rice.

Price: US\$ 11.00.

Orders to: official country FAO sales representatives, or, in case of difficulties, through Sales and Distribution Section, FAO, Via delle Terme di Caracalla, 00100 Rome, Italy.

**Case Studies on Desertification.** J. A. Mabbutt and C. Floret, editors. Natural Resources Research 18. Prepared by Unesco, UNEP and UNDP. Unesco Paris, 1980 279 p. ISBN 92-3-101820-5.

The drought which affected the Sahel and adjacent parts of Africa in the late 1960's and early 1970's, drew world attention to the apparent extension or intensification of desert conditions in many parts of the arid zones of the world.

In preparation of the U.N. Conference on Desertification, which was held in Nairobi in 1977. Unesco presented a number of case studies that would illustrate the various processes of desertification and their causes and, more particularly, give an account of measures to combat desertification. The case studies are as follows: Cool season rainfall areas in Tunisia and Chile; hot rainfall areas in Niger and India; waterlogging and salinization of irrigated arid and semi-arid land in Iraq and Pakistan. In addition, the publication contains a number of associated case studies in Australia, China, Iran, Israël, the USSR and the USA. Each case study forms a complete background document in sufficient detail to give a comprehensive account of the regional processes of desertification and their causes, the ecological aspects, and a review of the measures already taken or still required to be taken to reverse the processes. Each study includes a map of regional desertification which follows an approach similar to that used for the World Map of Desertification 1:25 million. These well-documented studies are followed by a final chapter on the conclusions which could be drawn from them.

Price: FF 120.

Orders to: Unesco National Distributors around the world.

**Soil Erosion.** Development in Soil Science Volume 10. D. Zachar. Elsevier Scientific Publishing Company, Amsterdam and New York. 1982. 547 p. ISBN 0-444-99725-3.

An integrated survey of soil erosion, this book has been written for workers in soil science, land reclamation, improvement and conservation and for many others concerned with the problems of soil erosion.

The author has drawn on a vast amount of literature published throughout the world as well as on his 25 years' research experience. Of the many aspects of soil erosion that are covered in this book, particular emphasis is laid on: terminology, classification of erosion phenomena, methodology of research, evaluation of the main factors and conditions of soil erosion, and an evaluation of current knowledge about the occurrence of soil erosion. The text is supplemented by numerous tables, graphs and over 200 photographs, partly in colour.

There is an extensive list of references, including many of East European origin not readily accessible outside this region. The majority of publications mentioned is at least 10 years old, however.

*Price:* Df. 220.0 (about US\$ 90.00).

*Orders to:* Elsevier Scientific Publishing Company, P.O. Box 211, 1000 AE Amsterdam, the Netherlands; or: Elsevier/North Holland, 52 Vanderbilt Avenue, New York, NY 10017, U.S.A. For Eastern Europe, China, N. Korea, Cuba, Vietnam: VEDA Publishing House of the Slovak Academy of Sciences, Bratislava, Czechoslovakia.

**World Systems of Traditional Resource Management.** G. A. Klee, editor. Edward Arnold, London, 1980, 290 p. ISBN 0-7131-6296-1.

At a time when the world is moving into an age of resource scarcity, the need for wise dependence on renewable resources becomes all too apparent. The ways in which cultures have traditionally practised conservation is this clearly an important subject, made more so as many cultures are threatened by the influx of other methods and values.

Professor Klee introduces the need to explore and evaluate the traditional ways of resource management. There follow nine chapters, prepared by specialists, that describe the resource base and the systems of resource conservation particular to major regions of the world (Africa, the Middle East, South Asia, East Asia, the Soviet Union, Europe, North America, Latin America, Oceania). The implications of transition as a result of outside pressures are examined and each chapter concludes with an assessment as to the present performance of each region in terms of its conservation practices and what improvements might be brought. Professor Klee finally draws together the general principles regarding scale, traditional land use planning, and strategies to make the systems reliable and productive.

The great virtue of this book is the clear and full analysis it presents of a subject on which up until now, only fragmented comments have been available. Although the information it provides will primarily concern those involved in resource and conservation geography, the book will also be of the interest to anyone involved in work on the environment and its preservation.

This well produced book has many tables, line diagrams and photographs. This book has also been published in the U.S.A. by Halsted Press, a division of John Wiley & Sons, New York.

*Price:* £ 16.50 in U.K.

*Orders to:* Edward Arnold, 41 Bedford Square, London WC1B 3DQ, England; or: John Wiley & Sons, 605 Third Avenue, New York, NY 10016, U.S.A.

**Water in Desert Ecosystems.** D. E. Evans and J. L. Thames, editors. Hutchinson Ross Publ. Comp., Stroudsburg, 1981, 304 p. ISBN 0-12-786451-2.

This volume, number 11 in the US/IBP Synthesis series, covers the hydrologic properties and processes of deserts as they relate to desert ecosystems. It gives a general presentation of desert and desert hydrologic systems and discusses their various components in particular. The components discussed include: climatic features of deserts; soils, geology, and hydrology of deserts; morphological and physiological characteristics of desert plants; flow of water and energy under desert conditions; water as a factor in the biology of North American desert plants; potential and actual evapotranspiration under desert conditions; and precipitation in the desert.

The book also considers computer modeling of desert systems for the soil-water-plant-atmosphere system, the desert soil water system, and desert water runoff. The experimental data cited are primarily those resulting from the Desert Biome Studies in the western United States as part of the International Biological Program. This book will be of interest to workers in the fields of ecology, watershed management, hydrology and plant physiology.

*Price:* \$ 35.00.

*Orders to:* Academic Press, 111 Fifth Avenue, New York, NY 10003, U.S.A.; or: 24/28 Oval Road, London NW1 7DX, England.

**Bibliography on Paleopedology. Third list: 1971/72-1979/80.** A. Bronger, editor. Mitteilungen Deutsche Bodenkundliche Gesellschaft, 1982, vol. 35, pp. 1-314.

The first and second lists were edited by A. Ruellan in 1974, containing bibliographies up to 1971/72 from 27 countries. The present list contains references of 29 countries, adding China, the German Democratic Republic and Poland as new countries from which also older literature is given. After a country-wise listing, a classification by 28 subjects is given.

*Price:* DM 8.50

*Orders to:* Deutsche Bodenkundliche Gesellschaft, Von-Siebold-Strasse 4, D-3400 Göttingen. F. R. G.

**Environmental Chemical Analysis.** I. L. Marr and M. S. Cresser. International Textbook Company, 1983, 258 p. ISBN 0-7002-0282-X (UK); 0-412-00201-9 (USA).

In dealing with the real problems likely to be encountered in environmental chemical analysis, this book will encourage greater understanding between the analytical chemist and the environmental scientist. For the chemist, it offers a review of familiar techniques and puts them in an environmental context. For the environmental scientist, the book provides guidance on the strengths, susceptibilities and advantages of the range of analytical techniques now available.

Much of the book is concerned with the four major environmental 'spheres' – air, water, solid ground and the biological environment – and the methods and techniques used to analyse them. In addition, one chapter is devoted to the analysis of food, while the final chapter illustrates some of the pitfalls – both human and experimental – inherent in analytical chemistry. Extensive lists of references to further reading are included at the end of each chapter. The publication is profusely illustrated with many figures.

This book will be a useful complement to courses on analytical and environmental chemistry, and a practical sourcebook for environmental scientists – such as ecologists, botanists, and agriculturalists.

Price: £ 21.00

Orders to: International Textbook Company, Bishopbriggs, Glasgow G64 2NZ, Scotland and 14–18 High Holborn, London WC1V 6BX, England. In the U.S.A.: Chapman and Hall, 733 Third Avenue, New York, NY 10017, U.S.A.

**Soil Analysis: Instrumental Techniques and Related Procedures.** K. A. Smith, editor. Marcel Dekker Inc., New York and Basel, 1983, 576 p. ISBN 0-8247-1844-5.

Over the past two decades many analytical techniques have been introduced with a diverse array of applications. Until now, the information on these new instrumental techniques has been scattered throughout the literature. The present volume in the series 'Books in Soils and the Environment' provides a comprehensive examination of the latest techniques and procedures relevant in soil science and related disciplines. It provides basic theory for each technique with diagrams and fundamental formulas clarifying instrumental design; features available methods and instruments and their suitability for particular applications, tackling problems presented by complex sample matrices; unites technical explanations with state-of-the-art reviews, *demonstrating the potential of each technique; and offers solid principles applicable to future instrumentation advances.*

Price: SFr. 198.00

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

**Manual of Soil Laboratory Testing.** Vol. 2: Permeability, Shear Strength and Compressibility Tests. K. H. Head. Pentech Press, London and Plymouth, 1982, 426 p. ISBN 0-7273-1305-3.

This volume is the second of a new series which is designed to present current accepted laboratory practice in geotechnology. For Volume 1 see Bulletin 61, p. 67. The series will provide step-by-step details of procedures for carrying out tests on soils, including not only those covered by British Standards but also some based on accepted practice or on U.S. (ASTM) Standards. Background knowledge, and reference to testing experience, which are necessary for the full appreciation of the engineering context of the tests, will be a feature of the series. The basic theory underlying the tests will also be presented.

The volumes are intended to act as a working manual for all those involved in geotechnical laboratory testing.

Volume 2 covers standard laboratory tests for the measurement of soil permeability, CBR value, shear strength, and consolidation characteristics. References are made to British Standards and U.S. (ASTM) Standards. A third and final volume will cover effective stress triaxial tests of various kinds.

Price: £ 16.00.

Orders to: In U.S.A.: Halsted Press, 605 Third Avenue, New York, NY 10158, U.S.A. Elsewhere: Pentech Press, 3 Graham Lodge, Graham Road, London NW4 3DG, England.

**Karst Bauxites. Bauxite deposits on carbonate rocks.** Developments in Economic Geology 14. G. Bárdossy. Joint edition Elsevier Scientific Publ. Comp., Amsterdam, and Akadémiai Kiadó, Budapest, 1982, 441 p. ISBN 0-444-99727-X (this volume), 0-444-41250-6 (series).

This book, translated from the 1977 Hungarian edition, represents an authoritative view on bauxite deposits on carbonate rocks. Among the major topics covered in detail are: the classification of bauxite deposits, the geographic and stratigraphic distribution, the classification of karst bauxite deposits, the lithology, the mineral composition, the structural position and the genetic assessment of karst bauxites.

This interesting book will become a reference work for geologists, mineralogists, soil scientists, mining engineers and all professionals dealing with karst bauxites for years to come. The book has an exhaustive list of references. Appendices include some small scale distribution maps, a few geological cross sections, and tables.

Price: Dfl. 195.00 or US\$ 90.75.

Orders to: In U.S.A. and Canada: Elsevier, 52 Vanderbilt Avenue, New York, NY 10017, U.S.A. In Eastern Europe, China, Korean People's Republic, Vietnam: Akadémiai Kiadó, Budapest, Hungary. Elsewhere: Elsevier Scientific Publ. Comp., P.O. Box 211, 1000 AE Amsterdam, the Netherlands.

M. L. Moura, Wageningen

## New Journals/Nouveaux Périodiques/Neue Zeitschifte

**Agriculture, Ecosystems & Environment.** Elsevier, Amsterdam. ISSN 0167-8809.

Over the past seven years, the contents of the journals 'Agriculture and Environment' and 'Agro-Ecosystems' converged to the extent that it was becoming more and more difficult to distinguish between the two. Increasingly, both authors and readers as well as the range of topics covered overlapped so that papers submitted to one journal were often equally applicable to the other. It was therefore decided to amalgamate the two to form the 'new' journal: Agriculture, Ecosystems & Environment.

The journal is concerned with the interaction of methods of agricultural production, agro-ecosystems, and the environment. Topics covered include: (1) the comparison of different methods of production (intensive, extensive, linear, cyclic) in terms of their ecology; (2) how agricultural production methods affect pollution of soil, water, and air, the quality of food, and the use of energy and non-renewable resources; (3) the effects of industrial pollutants on agriculture; and (4) the policy issues involved in the change and development of agriculture. It publishes original scientific papers, review articles, and occasional comments.

*Subscription:* (1983) Dfl. 360.00 or about US\$ 144.00 (8 issues).

*Orders to:* Elsevier Scientific Publishing Company, P.O. Box 211, 1000 AE Amsterdam, the Netherlands.

**Applied Geography.** An International Journal, Quarterly. Butterworth. ISSN 0143-6228.

The underlying principle of this journal, devoted to research into man's evaluation, exploitation and management of the world's resources, is that only through a clear understanding of the relevant physical and information systems can man optimise his use of these resources. It is the aim of the journal to contribute to this understanding and to work towards that goal by bringing together the results of current studies of both human and physical geography as well as parts of agriculture, ecology, planning and politics.

*Subscriptions:* (1983) Institutions £ 40.00; Individuals £ 20.00, including packing and postage.

*Orders to:* MAGSUB, Oakfield Hse, Perrymount Road, Haywards Heath, West Sussex RH16 3DH, UK.

**The Environmentalist.** Elsevier Sequoia, Lausanne, Quarterly. ISSN 0251-1088.

Diminishing energy and non-renewable resources, toxic wastes, loss of agricultural land and potable water supplies are key concerns shared by industry, governmental leaders and environmental professionals. The conflict of interests and goals that was once a gap is now bridged by The Environmentalist. This new international journal will act as a catalyst for environmental education, identifying available education opportunities, and providing necessary guidelines and the missing framework for defining the more viable management mechanisms useful to industry, governmental policy-makers and environmental professionals.

The Environmentalist can publish the critical but constructive views from both the industrialists and ecologists. Through guest editorials, in depth articles, interviews and the news and comments columns, it contains elements applicable to education and training of mankind at one level or the other, be it in formal or nonformal schooling, specialist training, retraining of decision-makers or communication to the public at large.

*Subscription:* (1983) Sfr. 165.00, including postage.

*Orders to:* Elsevier Sequoia, P. O. Box 851, 1001 Lausanne 1, Switzerland. In U.S.A. and Canada information from: Elsevier Scientific Publishing Company, 52 Vanderbilt Avenue, New York, NY 10017, U.S.A.

**Soils and Fertilizers.** New Coverage. Commonwealth Agricultural Bureaux, Farnham Royal.

Arrangements have been made with the Tennessee Valley Authority for the collaborative coverage of the fertilizer technology literature. Under these arrangements TVA will provide about one thousand abstracts per year for inclusion in Soils and Fertilizers; these abstracts will be printed mainly in the 'Fertilizer Technology' and 'Fertilizer Analysis' sections of the journal.

The restyled journal should be of particular interest to fertilizer manufacturers since it gives worldwide coverage of the literature dealing with fertilizer technology, analysis, economics, use and envir. aspects.

*Annual Subscription Rate:* £ 206.00 in 1983; concessional rate in countries contributing to CAB.

*Orders to:* Central Sales, CAB, Farnham Royal, Slough SL2 3BN, U.K.

**Progress in Physical Geography.** Quarterly. Edward Arnold, London. ISSN 0309-1333.

This is not a new journal, but worth mentioning since it publishes quite a number of papers related to soil, probably more than in other journals with a physical geographical contents. With the subtitle: an international review of geographical work in the natural and environmental science, this journal aims to present important advances in the understanding of the natural environment. The journal has major articles, progress reports, book reviews and review essays and provides a forum for debate on topical scholarly issues. The review is intended for specialists as well as for students, teachers and researchers in physical geography and its related fields.

*Subscription:* (1983) £ 28.00 institutions; £ 18.50 personal. Members of several professional geographical societies are entitled to a reduced price.

*Orders to:* Edward Arnold, 41 Bedford Square, London WC1B 3DQ, England; or: Cambridge University Press, 32 East 57 Street, New York, NY 10022, U.S.A.

**NEWS FROM THE ISSS SECRETARIAT AND TREASURY**  
**NOUVELLES DU SECRETARIAT ET DE LA TRESORERIE DE L'AISS**  
**MITTEILUNGEN DES IBG-SEKRETARIATS U. D. KASSENVERWALTUNG**

The following soil scientists have now become life-member of ISSS:  
 Les pédologues suivants sont devenu membres pour la vie:  
 Die folgenden Bodenkundler sind Mitglieder auf Lebenszeit geworden:

Dr. E. Pushparajah, RRI – Malaysia  
 Dr. R. Dudal, FAO – Italy  
 Dr. A. Osman, ACSAD – Syria  
 Mr. J. H. V. van Baren, ISM – Netherlands  
 Dr. Go Ban Hong, FAO – Thailand  
 Dr. P. Smart, Glasgow Univ – UK

Mr. J. G. van Brandt, FAO – Senegal  
 Dr. R. W. Fitzpatric, CSIRO – Australia  
 Mr. C. A. van Diepen, ISM – Netherlands  
 Dr. A. K. Singh, IARI – India  
 Mr. J. H. S. Bruin, FAO – Upper Volta

**Prof. Dr. E. Kivinen** of Helsinki, Finland, recently completed his 50 years of ISSS membership. For those young members who look forward to a similar life-long dedication to soil science, and who want to be relieved of the burden of annual payment of membership fees, the recently created life membership facility should be an attractive proposition (for details see the application form on the last page of this Bulletin).

Prof. Dr. E. Kivinen de Helsinki, Finlande, a récemment accompli 50 ans d'adhérence à l'AISS. Pour les jeunes membres qui s'attendent à un dévouement pour la vie pareil à la science du sol et qui veulent être dégagés de la charge des paiements annuels de la cotisation, la possibilité récemment créée de s'affilier pour la vie devrait être une proposition attractive.

Neuerdings war Prof. Dr. E. Kivinen aus Helsinki, Finnland, 50 Jahre IBG Mitglied. Für junge Mitglieder, die eine ähnliche langjährige Widmung der Bodenkunde anstreben und die enthoben werden wollen der Belästigung der jährliche Bezahlung des Mitgliedsbeitrages könnten die neulich eingeführte Möglichkeit zum Mitgliedschaft auf Lebenszeit einen attraktiven Vorschlag sein. □

**RECEIPTS AND PAYMENTS ACCOUNT for the period January–December 1982**  
**(Treasurer and Secretary-General)**

Receipts	US dollar	Payments	US dollar
Balance on January 1982:		Secretarial assistance	1,328.43
– secretary general	7,334.09	Computer administration (2)	2,098.34
– treasurer	10,952.21	Travel and representation	3,797.47
– deposit with savings account	8,000.00	Equipment and supplies	2,016.67
Interests	989.56	Printing	13,222.46
Membership fees	28,845.45	Bank charges	407.37
Subscriptions	452.51	Postal and telephone charges	5,237.24
Sale of Books/Publications	316.10	Auditing 1979–1982	193.72
Grants (1)	5,555.56	Membership Internat. Organisations	32.35
		Dollar equivalents (3)	3,094.57
	62,445.48		31,428.62
		Balance carried forward:	
		– cash in bank (4)	21,016.86
		– deposit with savings account	10,000.00
			62,445.48

(1) Contribution by Dutch Soil Survey Institute 'Stiboka'

(2) Compiling the membership list on a computerized form by the printer of the Bulletin

(3) Fictitious loss of 'dollar equivalents' on the foreign currencies of the balance of January 1982 because of the increase in dollar exchange rate at the end of 1982

(4) US dollars, Belgian francs, Dutch guilders and other currencies



**RELEVÉ DE RECETTES ET DEPENSES** pour la période de janvier au décembre  
1982  
(Trésorier et Secrétaire général)

Recettes	dollars E.U.	Dépenses	dollars E.U.
Bilan au Janvier 1982:		Aide au secrétariat	1,328.43
– secrétaire-général	7,334.09	Administration informatisée (2)	2,098.34
– trésorier	10,952.21	Réprésentation et déplacements	3,797.47
– dépôt au compte d'épargne	8,000.00	Equipement et fournitures	2,016.67
Intérêts	989.56	Impression	13,222.46
Cotisations des membres	28,845.45	Frais bancaires	407.37
Souscriptions	452.51	Frais postaux et téléphoniques	5,237.24
Vente de livres/publications	316.10	Comptabilité 1979–1982	193.72
Allocations (1)	5,555.56	Affiliation Organism. Internat.	32.35
		Equivalents de dollar (3)	3,094.57
	62,445.48		31,428.62
		Solde:	
		– avoir en banque (4)	21,016.86
		– <i>dépôt au compte d'épargne</i>	10,000.00
			62,445.48

(1) Contribution de l'Institut Néerlandais de Cartographie des sols 'Stiboka

(2) Etablissement de la liste des membres sous forme informatisée par l'imprimeur du bulletin

(3) Perte fictive d'équivalents de dollar à la fin de 1982 par rapport au bilan du janvier 1982

(4) dollars, francs, florins, etc...

**EINNAHMEN – AUSGABEN RECHNUNG** für den Zeitraum Januar–Dezember  
1982  
(Schatzmeister und Generalsekretär)

Einnahmen	US dol- lars	Ausgaben	US dol- lars
Saldo am Januar 1982:		Aushilfe Sekretariat	1,328.43
– Generalsekretär	7,334.09	Computer Verwaltung (2)	2,098.34
– Schatzmeister	10,952.21	Reisen und Representation	3,797.47
– Anlage by Spareinlage	8,000.00	Ausrüstung und Versorgungsgüter	2,016.67
Zinsen	989.56	Druckkosten	13,222.46
Mitgliedsbeiträge	28,845.45	Bankgebühren	407.37
Subskription	452.51	Post und Telephonegebühren	5,237.24
Verkauf von Büchern/Publikationen	316.10	Buchführung 1979–1982	193.72
Spenden (1)	5,555.56	Mitgliedsbeiträge Internat. Gesells- chaften	32.35
		Dollar Äquivalenten	3,094.57
	62,445.48		31,428.62
		Saldo:	
		– Bankguthaben (4)	21,016.86
		– Anlage bei Spareinlage	10,000.00
			62,445.48

(1) Beiträge niederländische Institut für Bodenkartographie 'Stiboka'

(2) Zusammenstellung Mitgliederliste in computergerechter Form

(3) Scheinbar Verlust von US dollars Äquivalenten ende 1982 in Vergleich mit dem Saldo am Januar 1982

(4) Dollars, Franken, Gulden, Marken etc...



ISSS-AISS-IBG

**International Society of Soil Science (ISSS)**  
**Association Internationale de la Science du Sol (AISS)**  
**Internationale Bodenkundliche Gesellschaft (IBG)**

- REGISTRATION FOR MEMBERSHIP/DEMANDE D'AFFILIATION/AUFNAHMEANTRAG
- CHANGE OR CORRECTION OF ADDRESS/CHANGEMENT OU CORRECTION D'ADRESSE/ANSCHRIFTENÄNDERUNG
- STATEMENT ON SPECIAL INTERESTS/DECLARATION D'INTERÊTS SPECIAUX/ANZEIGUNG VON SPEZIALINTERESSEN
- APPLICATION FOR LIFE MEMBERSHIP/DEMANDE D'AFFILIATION POUR LA VIE/ANTRAG AUF MITGLIEDSCHAFT AUF LEBENSZEIT

- Please return this form, completed at both sides, to the Secretariat ISSS: P.O. Box 353, 6700 AJ Wageningen, the Netherlands.
- *Veillez bien renvoyer ce formulaire, complété de deux côtés, au Secrétariat AISS: B.P. 353, 6700 AJ Wageningen, Pays-Bas.*
- Bitte senden Sie diesen Formular, ausgefüllt an beiden Seiten, zum Sekretariat IBG: P.B. 353, 6700 AJ Wageningen, Niederlande.

**Membership number** (if applicable) ..... **Previous country of residence**  
**Numéro d'affiliation** (si applicable) ..... **Ancien pays de domicile** .....  
**Mitgliedernummer** (wenn anwendbar) ..... **Voriger Landesort** .....

\* **Surname** (Apellido/Sobrenome) .....  
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\* **Familienname** .....

**First name (s)** (Nombre/Nome) or initials, **and title(s)**  
**Prénom(s)** ou initiales, **et titre(s)** .....  
**Vorname(n)** oder Initialen, **und Titel(s)** .....

**Address** (Institution & Dept., Street and no. P.O. Box, Town & Zipcode, Country)  
**Adresse** (Institution et Département, Rue et no., Boîte Postale, Ville et Code Postale, Pays)  
**Anschrift** (Institut & Abteilung Strasse & No., Postfach, Stadt & Postleitzahl, Land)

**Date** ..... **Signature** .....  
**Datum** ..... **Unterschrift** .....

- \* For composite names, please indicate first the part of the name to be used for listing it in alphabetical order.
- \* *Pour les noms composés, prière de marquer en premier lieu l'élément du nom à utiliser dans une liste alphabétique.*
- \* Bei zusammengesetzte Namen wird gebeten, zuerst den Teil des Namens anzugeben, der in einer alphabetische Folge erscheinen soll.

please turn over!/*voir au verso!*/bitte wenden!



**Specially interested in the activities of/particulièrement intéressé au activités de/besonders am folgenden Bereichen interessiert:**

**(C) Commission(s)/Commission(s)/Kommission(en)**

- I Soil Physics/Physique du sol/Bodenphysik
- II Soil Chemistry/Chimie du sol/Bodenchemie
- III Soil Biology/Biologie du sol/Bodenbiologie
- IV Soil Fertility and Plant Nutrition/Fertilité du sol et nutrition des plantes/Bodenfruchtbarkeit und Pflanzenernährung
- 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)

**(T) Preferred language/Langue préférée/gewünschte Sprache**

- English
- Français
- Deutsch

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**Subcommissions/Sous-Commissions/Subkommissionen – Chairmen/Présidents/Vorsitzende**

**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, Versuchstation Rauisch-Holzhausen, Justus-Liebig-Universität Gießen, 3557 Ebsdorfergrund 4, BRD

**DP Soil Information Systems/Informatique en pédologie/Informationssysteme i.d. Bodenkunde (Comm. V)**

Dr. A. W. Moore, CSIRO Div. of Plants and Industries, P.O. Box 109, Canberra City, Act 2601, Australia

**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

**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)**

Prof. Dr. D. H. Yaalon, Department of Geology, Hebrew University, Jerusalem 91000, Israel

**MV Moisture Variability of Field Soils/Variabilité en humidité des sols sur le terrain/Veränderlichkeit von Bodenfeuchtgehalt im Gelände (Comm. I)**

Dr. D. R. Nielsen, Dept. of Water Science and Engin., Univ. of California, Davis, CA 95616, USA

**Committee on Rules/Comité du règlement/Satzungskomitee**

Prof. Dr. E. G. Hallsworth (Chairman: University of Sussex, Falmer, Brighton, Sussex BN1 9RF, England); Prof. Dr. P. Buringh; Dr. R. Dudal; Prof. Dr. I. P. Garbouchev; Prof. Dr. E. Schlichting; Prof. Dr. R. Tavernier (Members); Dr. W. G. Sombroek (Secretary: P.O. Box 353, 6700 AJ Wageningen, Netherlands).



## ISSS MEMBERSHIP

Membership of the International Society of Soil Science is open to all persons and institutions engaged in the study and the application of soil science. Membership applications can be addressed to the National Societies or directly to the Secretariat General. For individual memberships, the yearly subscription, due each January, is 8 US dollars, or equivalent in any other convertible currency. Voluntary contributions by sponsors of the Society will be highly appreciated and acknowledged in the Bulletin. Individual payments can be made by cheque or by international money order. Unesco coupons are also accepted. In order to reduce bank charges it is recommended that subscriptions be remitted, whenever possible, through medium of the National Societies (for their addresses see Bulletin no 60). Non-membership subscriptions to the Bulletin, by Library Services, Institutes, etc., are US \$ 15.- yearly.

**Account: D. Gabriels, International Society of Soil Science, University Gent 390.0440957.50, Bank Brussel Lambert, Martelaarslaan, B-9000 Gent, Belgium.**

## ADHESION A L'AISS

Toutes personnes et institutions engagées dans l'étude et l'application de la science du sol peuvent adhérer à l'Association internationale de la science du sol. Les demandes d'inscription peuvent être faites par l'intermédiaire des associations nationales ou adressées directement au Secrétariat général. La souscription individuelle, due au mois de janvier, est de 8 dollars E.U. par an ou son équivalent dans une autre monnaie convertible. Des contributions volontaires, qui permettraient de promouvoir l'Association, seront les bienvenues et mention en sera faite dans le Bulletin. Les versements individuels peuvent être faits au moyen d'un chèque ou d'un mandat international. Des coupons Unesco peuvent également être utilisés. En vue de réduire les frais de banque il est recommandé, dans la mesure du possible, de faire parvenir les souscriptions par l'intermédiaire des associations nationales (pour leurs adresses voir Bulletin no 60). Abonnements au Bulletin sans adhésion, du part de institutions de services de bibliothèques etc., sont de 15 dollars E.U. par an.

**Compte: D. Gabriels, International Society of Soil Science, University Gent, 390.0440957.50, Bank Brussel Lambert, Martelaarslaan, B-9000 Gent, Belgique.**

## IBG-MITGLIEDSCHAFT

Die Internationale Bodenkundliche Gesellschaft heisst Personen und Institute, die auf dem Gebiet der Forschung und Anwendung der Bodenkunde arbeiten, als Mitglieder willkommen. Aufnahmeanträge können direkt an das Generalsekretariat der Gesellschaft geschickt oder über die nationalen bodenkundlichen Gesellschaften an dieses geleitet werden. Der Einzelmitgliedsbeitrag, der jeweils im Januar zu entrichten ist, beträgt jährlich 8 US-Dollar oder den Gegenwert in einer konvertierbaren Währung.

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