

bulletin

of the international society of soil science

bulletin

de l'association internationale de la science du sol

mitteilungen

der internationalen bodenkundlichen gesellschaft

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

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Dr. Ch. E. Kellogg, 4100 Nicholson Str., Hyattsville, Maryland 20782, U.S.A.

Prof. Dr. M.M. Kononova, Inst. Pédologique, Acad. des Sci., Pyjevski 7, Moscow-17, U.S.S.R.

Prof. Dr. S. Mattson, Bastad, Sweden

Prof. A. Oudin, 42 Avenue de Saxe, Paris-7e, France

Prof. J.A. Prescott, 6/2 Netherby Avenue, Netherby, S.A. 5062, Australia

Dr. L.A. Richards, 4455 Fifth St., Riverside, California 92501, U.S.A.

Prof. Dr. A.A. Rode, Dokuchaev Institute of Soil Science, Pyjevski 7, Moscow-17, U.S.S.R.

Prof. Dr. h.c. F. Scheffer, Institut für Bodenkunde der Universität Göttingen, 34 Göttingen
Von-Siebold-Str. 4, Bundesrepublik Deutschland

Commissions/Commissions/Kommissionen - Chairmen/Présidents/Vorzitzende

I - Soil physics/Physique du sol/Bodenphysik

Prof. Dr. M.F. de Boodt, State Agricultural University, Coupure 533, 9000 Gent, Belgique

II - Soil chemistry/Chimie du sol/Bodenchemie

Prof. Dr. W. Flaig, Institut für Biochemie des Bodens, Forschungsanstalt für Landwirtschaft,
Bundesallee 50, 3301 Braunschweig, Bundesrepublik Deutschland

III - Soil biology/Biologie du sol/Bodenbiologie

Prof. Dr. sc. agr., Dr. h.c., G. Müller, Bodenkunde u. Mikrobiologie

Martin-Luther-Universität Halle, 402 Halle, Weidenplan 14, Deutsche Demokratische Republik

**IV - Soil fertility and plant nutrition/Fertilité du sol et nutrition des plantes/
Bodenfruchtbarkeit und Pflanzenernährung**

Dr. C. Hera, Institut Central de Recherches Agricoles, Bd. Marasti 61, Bucarest, Roumanie

**V - Soil genesis, classification and cartography/Genèse du sol, classification et cartographie/
Boden-genetik, Klassifikation und Kartographie**

Prof. Dr. Ing. M. Cirić, Leninova, Sumarski fakultet, 71000 Sarajevo, Yugoslavia

VI - Soil technology/Technologie du sol/Bodentechnologie

Dr. V.V. Egorov, Dokuchaev Institute of Soil Science, Pyjevski 7, Moscow-17, U.S.S.R.

VII - Soil mineralogy/Minéralogie du sol/Bodenmineralogie

Prof. Dr. L. Pavel, Dept. of Soils and Geology, Agricultural University
(V.S.Z.), Prague 6 - Suchbát, Czechoslovakia



Edmonton 1978

Season's Greetings
Meilleurs Voeux
Beste Glückwünsche

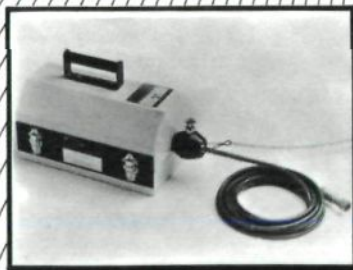
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Telex: 341119-BXTV-IL-5079

11th CONGRESS OF THE ISSS
11ème CONGRES DE L'AISS
11. KONGRESS DER IBG

Tours in U.S.A (See also Bul. No. 51)
Excursions aux EUA (voir aussi Bul. No. 51)
Exkursionen in den U.S.A (s. auch Mitteilungen No. 51)

Registration Form
Inscription
Anmeldung

Name
Last First Middle

Address:

Number of persons attending:

I plan to attend the following tours:

Arrival Date

1. Southeast U.S., 31 May - 3 June 1978
(assemble 31 May)

2. Midwest U.S., 9-13 July 1978
(assemble 9 July)

3. National Soil Survey Laboratory,
6-7 July 1978
(assemble 6 July, a.m.)

4. Southwest U.S., 29 May - 2 June 1978
(assemble 29 May)

5. Northwest U.S., 9-14 July 1978
(assemble 9 July)

Signature: _____

Date: _____

Note: All Registration Forms must be returned by 1 March 1978 to:

Dr. R.B. Daniels
Co-Chairman, ISSS Tour Committee
SCS-USDA
P.O. Box 2890
Washington, D.C. 20013, U.S.A.

COMPUTER SIMULATION of SOIL-WATER DYNAMICS:

A Compendium of Recent Work

by DANIEL HILLEL

Published by the
International Development Research Centre

This monograph describes the formulation of a number of models simulating soil physical processes and illustrates results obtainable from them. It is addressed mainly to problem oriented research workers concerned with agricultural and environmental aspects of the soil system. Physically based mathematical simulation techniques will allow researchers to presearch the possible effects of controllable variables on the soil-water-plant system before embarking on a full-scale research program.

• illustrated

• 216 pages

• case-bound

• \$10.00

Please send me copy(ies)

Computer Simulation of Soil-Water Dynamics

I enclose \$. (*advance payment required*)

Name _____

Address _____

Send to:

IDRC
Publications Division
Box 8500
Ottawa, Canada
K1G 3H9

(USA only: UNIPUB,
Box 433, Murray Hill Stn.
New York, N.Y. 10016)

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NEW MEMBERSHIP LIST

A new ISSS Membership List is being prepared for publication prior to the 11th Congress to be held in Edmonton in June 1978.

This list will include all members who were duly registered by 31 December 1977. **Members who are in arrears with their fees for 1977 are urged to settle their contributions by 15 March 1978**, date on which the Membership List will be going to the printers. It would be greatly appreciated if National Societies which collect ISSS contributions from their members could inform the Secretary General, at the earliest possible date, of any changes of membership composition or of addresses which should be reflected in the list.

NOUVELLE LISTE DE MEMBRES

Une nouvelle liste de membres de l'AISS est en voie de préparation en vue de sa publication avant le Congrès d'Edmonton en 1978.

Cette liste comprendra tous les membres dûment inscrits au 31 décembre 1977.

Les membres qui n'ont pas encore versé leur cotisation pour 1977 sont instamment priés de le faire avant le 15 mars 1978 date à laquelle la liste doit être remise aux imprimeurs. Les Associations Nationales qui perçoivent les contributions de leurs membres à l'AISS sont priées de bien vouloir informer le Secrétaire général au plus tôt de toute modification qu'il y aurait lieu d'apporter à la composition de la liste des membres ou de leurs adresses.

NEUES MITGLIEDSVERZEICHNIS

Ein neues IBG-Mitgliedsverzeichnis ist in Vorbereitung und soll vor dem 11. Kongress, der im Juni 1978 in Edmonton abgehalten wird, veröffentlicht werden.

Dieses Verzeichnis wird alle Mitglieder enthalten, die rechtzeitig vor dem 31. Dezember 1977 eingeschrieben wurden. **Mitglieder, die mit ihren Beiträgen für 1977 im Rückstand sind, werden ersucht diese bis spätestens 15. März 1978 zu begleichen**, da an diesem Datum das Mitgliedsverzeichnis zum Druck gesandt wird. Die Nationalen Gesellschaften, die die IBG-Mitgliedsbeiträge einsammeln, sind gebeten, so bald als möglich jegliche Änderung in der Zusammenstellung des Mitgliedsverzeichnisses oder der Adressen, die in dem neuen Verzeichnis aufscheinen sollen, mitzuteilen.

PROPOSED CHANGES IN THE RULES OF THE ISSS

In Bulletin No. 51 (June 1977), proposals were published for changes in the Rules of the ISSS. These proposals resulted from the suggestions made by the Council and by members of the Society. **Members were invited to express their opinion with regard to the proposed changes**, by returning the voting sheet included in Bulletin 51. The deadline for returning this voting sheet has now been extended till 30 March 1978. Members are urged to send it within this period to:

Dr. E.G. Hallsworth
C/o CSIRO
Land Resources Laboratories
Private Bag 2
Glen Osmond, S.A. 5064
Australia

CHANGEMENTS PROPOSES AU REGLEMENT DE L'AISS

Des propositions de changements au Règlement de l'AISS furent publiées dans le Bulletin No. 51 (juin 1977). Ces propositions résultaient de suggestions faites par le Conseil et par des membres de l'Association. **Les membres furent invités à exprimer leur opinion** concernant ces changements au moyen du bulletin de vote inclus dans le Bulletin No. 51. La date limite pour le renvoi de ce bulletin a été prolongée jusqu'au 30 mars 1978. Les membres sont instamment priés d'émettre leur vote avant cette date et de renvoyer leur bulletin à:

Dr. E.G. Hallsworth
C/o CSIRO
Land Resources Laboratories
Private Bag 2
Glen Osmond, S.A. 5064
Australia

VORGESCHLAGENE ÄNDERUNGEN DER IBG-SATZUNG

In den IBG-Mitteilungen Nr. 51 (Juni 1977) wurden die Änderungsvorschläge der IBG-Satzung veröffentlicht. Diese Änderungsvorschläge ergaben sich aus den Vorschlägen, die vom Beirat und anderen Mitgliedern der Gesellschaft gemacht wurden. **Die Mitglieder wurden ersucht, ihre Meinungen im Bezug auf diese Änderungsvorschläge auszudrücken**, und den in Mitteilungen Nr. 51 enthaltenen Stimmzettel zurückzusenden. Der Termin, zu dem die Stimmzettel zurückgesandt werden sollen, wurde nun bis 30. März 1978 verlängert. Mitglieder werden ersucht diese Stimmzettel in der genannten Periode an die folgende Adresse zu senden:

Dr. E.G. Hallsworth
C/o CSIRO
Land Resources Laboratories
Private Bag 2
Glen Osmond, S.A. 5064
Australia

TENTATIVE SCHEDULE FOR THE CONGRESS (June 1978)

Time	Saturday 17 & Sunday 18*	Monday 19	Tuesday 20	Wednesday 21	Thursday 22	Friday 23	Saturday 24	Sunday 25	Monday 26	Tuesday 27
8.00										
9.00		Registration								
10.00			Plenary A	Plenary B	Plenary C	Plenary D	Plenary E		Plenary F	
11.00		Plenary	Commissions Session 1	Commissions Session 3	Commissions Session 5	Commissions Session 7	Commissions Session 8		Commissions Session 9	Plenary
12.00		Noon Break							Noon Break	
13.00								Free Time Activities		
14.00	Registration									
15.00		Symposia I & II	Commissions Session 2	Commissions Session 4	Commissions Session 6	Symposia III & IV	Free Time Activities		Symposia V & VI	Clean-up (For misc. papers, etc)
16.00										
17.00										
18.00										
19.00										
20.00										
21.00										
22.00										

*The first meeting of the ISSS Council will be held on Sunday 18 June, at 14.30.



**NOTICES FOR THE 11th CONGRESS OF THE ISSS
Edmonton, Canada, 19-27 June 1978**

Please note:

There are items requiring specific and early actions to avoid disappointments in the sections headed:

- Special Interest Groups and Working Groups
- Visas
- Registration
- Tours
- Purchase of Tour Guidebooks
- Purchase of Transactions

Registrations and deposits for accomodation and tours should be submitted to Account N. 109003 Toronto, Dominion Bank, 11630 - 87 Avenue, Edmonton, Canada T6G OY2

Plans and preparations for the 11th Congress of the ISSS are proceeding smoothly. The following items will interest many non-participants as well as those who will be attending the Congress.

Program

The framework of the Congress Program on the opposite page shows in a general way, the allocation of time for the various parts of the program.

All speakers for the Plenary Sessions are invited ones; they are individuals with internationally recognized qualifications and experience related to their topics. Symposium speakers are also invited ones with special expertise in the subject matter on which they will be speaking.

The Commission Sessions are for presentation of volunteered papers exclusive of the Poster Sessions. The volunteered papers for the Commission Sessions will be arranged so as to be related to the Plenary Session topics in so far as that is possible.

Poster Sessions

There is good response to the invitation for some participants to make Poster Session presentations rather than the usual type of formal oral presentations to Commission meetings. The Organizing Committee is optimistic that this innovation will be welcomed by Congress participants.

Working Groups and Special Interest Groups

There have been several requests from Working Groups or other special interest groups wishing space and a time for meetings which will not be part of the foregoing formal sections of the congress program. The Organizing Committee is pleased that there are such interests and those meetings will be scheduled so that they do not conflict with the program already described.

It should be noted that Working Groups are created by and are responsible to the individual Commissions which established them. If Working Groups are to report to their individual Commissions, such reports should be scheduled by the Commissions concerned. If Working Groups or their Commissions wish to have special sessions out-

side of the times scheduled for Commission meetings in the regular Congress program, then requests for the space should be made to:

Dr. J.A. Toogood
Box 78, Sub. 11
University of Alberta
Edmonton, Canada T6G 2E0

The requests should indicate how long the meeting may last as well as the number expected at it.

Any other special interest groups wishing to have spaces and time for meetings should also write Dr. Toogood providing the same information. To date the following meetings are in prospect:

- Sub-Commission on Salt-Affected Soils
Associated with the Sub-Commission meeting will be an extensive program on the topic of dryland saline seepage, a relatively new problem in Alberta, Saskatchewan and adjacent American states .
- Working Group on Soil Micromorphology
- Forest Soil - Site Relationships
- Possibly a Humic and Fulvic Acid Group
- Possibly a Group to discuss Non-symbiotic Nitrogen Fixation
- Possibly Working Group on the Applications of Remote Sensing

Visas to Enter Canada

Many Congress participants will require visas to enter Canada.

Participants are advised to check their individual circumstances for entry to Canada with the nearest Canadian Embassy or High Commission well in advance of their departure date. Most visitors, other than citizens of the U.S.A., will require passports. In addition, citizens of some countries may require non-immigrant visas. Persons from outside the U.S.A. wishing to enter the U.S.A. from Canada should make arrangements before leaving their home country. Non-citizens of the U.S.A., resident or temporarily resident in the U.S.A., should check that they can re-enter the U.S.A. if they so wish.

Registration Now Urged

It is recognized that many intending to participate in the 11th ISSS Congress may not know for sometime whether they will receive the leave or travel assistance needed to enable them to participate in the Congress and for that reason are delaying their registration.

The Organizing Committee urges early registration. Priority for limited amounts of some accommodation and for places on tours will be based on the order of receipt of registrations and the required deposits. The generous refund policy will enable those who find they cannot participate in the Congress to recover almost all of their registration and their deposits.

Tours - Special Urgency to Enroll

Because of the very short tourist season in Canada, the Organizing Committee must make full payment for all tour arrangements by the end of February 1978. Obviously, such payments cannot be made unless Congress participants have submitted the full tour payments (or have at least made the **minimum tour deposit of \$ 100.00 per person**). (Note: **Full payment for all pre-Congress tours must be received not later than 31 May 1977**).

The Organizing Committee will make every effort to find tour places for those

desiring to join tours but who do not submit the necessary funds before the end of February. However, there is no assurance that tour arrangements cancelled at the end of February can be restored. If they can be restored to provide for late applicants to join tours, it may be necessary to accept lower quality accommodation.

In some cases it will be impossible to accommodate late registering participants on tours, or on the tours of their preference.

Tour Guidebooks for Sale

The tour guidebooks will contain a wealth of information including extensive physical, chemical and mineralogical data regarding the soils to be seen on the various tours. Much of that pedological information is not available in existing Canadian publications.

Each tour participant will receive a guidebook for the tour concerned at the commencement of the tour. The guidebooks will also be sold to others at cost - including mailing (\$ 3.00 to \$ 6.00) if ordered before *15 April 1978*.

For prices of individual tour guidebooks and a list of their contents please write to:

11th ISSS Congress
Box 78, Sub. 11
University of Alberta
Edmonton, Canada T6G 2E0

Please specify the tour number (or alternatively, the soils) of special interest to you.

Mail orders accompanied by money orders or bank drafts will be accepted at guidebook prices plus postage costs - if received before the above date, or while the supply lasts.

Congress Transactions and Books for Sale

The Congress Transactions will be published in two volumes each of 300 to 400 pages.

Volume 1 will consist of abstracts (in the three official languages) of all papers accepted for presentation at Commission Sessions and at Poster Sessions. Names and addresses of the authors will be included. Congress participants will receive Volume 1 when they arrive at the Congress.

Volume 2 will contain the full texts of the invited presentations made to the Plenary Sessions and at the six symposia. There will be about 50 papers, each in the language of presentation; however, each paper will have the abstract of it in the three official languages. Volume 2 will be distributed to participants at the conclusion of the Congress.

The two volumes of Congress Transactions will be for sale to non-participants (including libraries, companies and public agencies) at cost plus packing and mailing charges.

For sea mail each volume will cost Can. \$ 4.00

For air mail each volume will cost Can. \$ 4.50

All orders received before 1 April 1978 will be filled. Orders received after 1 April will be filled only while the supply lasts.

The following books will also be for sale at the University of Alberta Bookstore.

Soils of Canada, Can \$ 25

The Canadian System of Soil Classification, Can. \$ 9.

Simultaneous Interpretation and Language Assistance

All Plenary Sessions and the Symposia will have simultaneous interpretation in English, French and German. It is expected that there will be bilingual simultaneous interpretation at all Commission meetings.

It is planned to have personnel who will be fluent in such languages as Italian, Japanese, Russian and Spanish - in addition to English, French and German, available to assist participants on arrival and at the Congress Registration and Headquarters areas.

Displays

The Congress displays will be diverse and will feature soils and related topics as well as non-soils items.

Core of the soils displays will be about 100 soil monoliths representing principal soils of Canada and arranged to demonstrate the Canadian System of Soil Classification. Each monolith will be accompanied by extensive analytical data and the classification details will include the characteristics and criteria for the various categories in the system. Complementing the foregoing will be provincial land use displays providing information regarding agriculture, forestry and recreational use of land from the Maritime Provinces in the east to British Columbia on the west. Specialized equipment of interest to soil scientist, for both field and laboratory use, will also be shown.

Specialized displays will feature: soil testing in the Prairie Provinces; dryland saline seepage problems; color transparencies (available for literature available in Canada; the World Soil Map; and book displays by publishers.

The premiere of a specially commissioned film, *The Soils of Canada*, will be a feature of the Congress. That film, intended to have popular appeal, will deal with land resource use. There will be other soil related films including «The Soils of Australia».

General interest displays will feature four units of self-contained mobile travelling museums. Two of those units will be from the National Museum of Canada and two from the Devonian Group of Charitable Foundations which is Calgary-based. These displays will feature aspects of geography, culture and history primarily in Canada.

Canadian Vacations

Congress participants wishing to vacation in Alberta or Canada will be able to use the full services of the provincial tourist agency «Travel Alberta».

Extensive literature regarding many kinds of «do-it-yourself» tours for either Congress participants with their own cars or for those who wish to rent a car will be available. There will also be individual help as well as a wealth of publications for those interested in fishing trips, mountain hiking, guided trips or group travel.

Anyone wishing to receive travel publications should write to:

11th ISSS Congress, Box 78, Sub. 11

University of Alberta, Edmonton, Canada T6G 2E0

explaining their interests and literature will be sent to them. At the Congress visitors can obtain copies of such materials and also have expert assistance in planning a subsequent vacation.

Some visitors may want to return to Edmonton in August 1978 for the Commonwealth Games which will be held at that time.

Tours in the U.S.A.

In connection with the 11th Congress there will be an opportunity to take a tour in the U.S.A., organized by the Soil Science Society of America.

These tours will take place either before the pre-Congress tours in Canada or after the post-Congress tours. Itineraries, and prices were given in Bulletin 51.

Information and registration (see also Registration form in this Bulletin)

R.B. Daniels

Co-Chairman, ISSS Tour Committee,

SCS - USDA

P.O. Box 2890

Washington D.C. 20013, U.S.A.

ORDRE DU JOUR PROVISOIRE DU CONGRES (Juin 1978)

	Samedi 17 & dimanche 18*	Lundi 19	Mardi 20	Mercredi 21	Jeudi 22	Vendredi 23	Samedi 24	Dimanche 25	Lundi 26	Mardi 27	
8.00											
9.00		Inscription	Plénière A	Plénière B	Plénière C	Plénière D	Plénière E		Plénière F		
10.00											
11.00		Plénière	Commissions Session 1	Commissions Session 3	Commissions Session 5	Commissions Session 7	Commission Session 8		Commissions Session 9	Plénière	
12.00											
13.00											
14.00	Inscription						Activités de temps libre				
15.00		Symposia I & II	Commissions Session 2	Commissions Session 4	Commissions Session 6	Symposia III & IV	Activités de temps libre		Symposia V & VI	Divers	
16.00											
17.00											
18.00											
19.00											
20.00											
21.00											
22.00											

* La première réunion du Conseil AISS se tiendra le dimanche 18 juin à 14.30 hrs.

NOUVELLES DU 11^{ème} CONGRES DE L'AISS Edmonton, Canada, 19-27 Juin 1978

Nous recommandons aux personnes intéressées de prendre dans les plus brefs délais les dispositions nécessaires pour les groupes de travail et les groupes spéciaux, les visas, l'inscription, les excursions, l'achat de guides et de comptes rendus.

**Les droits d'inscription et d'acomptes pour le logement et les excursions sont à verser au
compte no. 109003, Toronto-Dominion Bank,
11630 Eighty-seventh Avenue, Edmonton, Canada TG6 0Y2.**

Programme

Le tableau qui figure à la page 10 donne un aperçu du programme du Congrès et du temps qui sera consacré aux diverses activités.

Les conférenciers invités aux séances plénières jouissent tous d'une renommée internationale dans leur domaine. Par ailleurs, les divers sujets présentés aux symposium seront traités par des experts en la matière.

Les séances des Commissions seront réservées à la présentation de communications libres, séances de démonstration («poster sessions») mises à part, et seront structurées de façon à correspondre le plus possible au sujet prévu à l'ordre du jour de la séance plénière.

Séances de démonstration («poster sessions»)

L'offre de participation à des séances de démonstration plutôt qu'aux présentations habituelles des réunions de Commissions a reçu un très bon accueil. Le comité organisateur estime que les participants au Congrès apprécieront cette innovation.

Groupes de travail et groupes spéciaux

Plusieurs groupes ont demandé des locaux et du temps pour tenir de réunions en dehors des séances officielles du Congrès. Le comité organisateur se réjouit de l'intérêt suscité par ces activités et établira un horaire de façon à éviter tout chevauchement avec le programme officiel.

Les groupes de travail relèvent des Commissions qui les ont créés. Ces dernières seront donc responsables de l'horaire de présentation des rapports. Les groupes de travail, les Commissions et les groupes spéciaux qui désirent tenir des réunions en dehors du cadre du programme officiel doivent présenter leur demande à:

M. J. A. Toogood
Case postale 78, sous-station 11
Université de l'Alberta
Edmonton, Canada
T6G 2E0

La durée de ces réunions de même que le nombre de participants devront être précisés dans la demande.

Jusqu'à présent, la liste des réunions prévues est la suivante:

- Sous-commission des sols affectés par le sel (à la réunion s'ajoutera l'étude du problème de l'infiltration saline en terre aride, problème relativement nouveau en Alberta, au Saskatchewan et dans les Etats américains limitrophes).

- Groupe de travail sur la micromorphologie du sol.
- Groupe de travail sur les relations sols-sites forestiers.
- Possibilité d'un groupe sur les acides humique et fulvique.
- Possibilité de discussions sur la fixation non symbiotique de l'azote.
- Possibilité d'une réunion du groupe de travail sur l'application de la télédétection.

Visas

De nombreux participants devront se procurer un visa pour entrer au Canada. Nous conseillons aux personnes intéressées de consulter, à ce sujet et dans les plus brefs délais, l'ambassade ou le Haut Commissariat du Canada le plus proche de leur domicile. A l'exception des citoyens des Etats-Unis, la plupart des visiteurs devront se procurer un passeport. Par ailleurs, il est possible que les citoyens de certains pays doivent se procurer des visas de non-immigrants. Les non-résidents des Etats-Unis qui désirent visiter ce pays après le Congrès devront prendre les dispositions nécessaires avant de quitter leur propre pays. Les non-citoyens américains, les résidents ou les résidents temporaires des Etats-Unis devraient s'assurer qu'ils peuvent retourner dans ce pays s'ils le désirent.

Urgence du règlement des droits d'inscription

Il apparaît que de nombreuses personnes, désireuses de participer au 11^e Congrès de l'A.I.S.S. retardent leur inscription en attendant de savoir s'ils pourront obtenir le congé ou l'aide nécessaire pour y assister.

Le comité d'organisation recommande à ces personnes d'envoyer leur inscription le plus tôt possible car il devra appliquer une politique de «premier arrivé, premier servi» pour le logement et les excursions. Par ailleurs, ceux qui ne pourront pas participer au Congrès seront remboursés de la quasi totalité des versements qu'ils auront effectués pour l'inscription et comme dépôt.

Excursion — Inscriptions requises d'urgence

La brièveté de la saison touristique au Canada obligera le comité organisateur à payer intégralement toutes les excursions d'ici la fin de février 1978. Il sera toutefois dans l'impossibilité de le faire tant que les congressistes n'auront pas acquitté le prix des excursions auxquelles ils désirent participer, ou tout au moins, versé le dépôt minimum de \$ 100 par personne. **(Remarque: le paiement complet des excursions qui précèdent le congrès devra nous parvenir au plus tard le 31 mai 1978.)**

Le Comité fera de son mieux pour trouver une place aux personnes qui désirent participer aux excursions, mais qui n'ont pu envoyer la somme nécessaire avant la fin de février. Toutefois, il ne peut garantir le rétablissement des demandes annulées avant la fin de février. Si la chose est possible néanmoins, les candidats de dernière minute devront peut-être se résoudre à loger dans des installations de qualité inférieure.

Il se peut que dans certains cas, les candidats de dernière minute ne puissent participer à aucune des excursions ou tout au moins non à celles de leur choix.

Livrets guides

Les livrets guides comprendront de nombreux renseignements et d'importantes données physiques, chimiques et minéralogiques sur les sols examinés dans les diverses

excursions. Beaucoup de ces renseignements ne sont même pas disponibles dans les publications canadiennes actuelles.

Chaque participant recevra un livret guide au début de l'excursion. Les non-participants pourront se procurer les livrets guides au prix coûtant, (\$ 3 à \$ 6, frais de port inclus) en les commandant avant le **15 avril 1978**.

Pour obtenir la liste des prix et la table des matières des livrets guides, il suffit d'en faire la demande à:

11^e Congrès de l'A.I.S.S.

Case postale 78, sous-station 11, Université de l'Alberta

Edmonton, Canada, T6G 2E0

Veillez préciser le numéro de l'excursion (ou les types de sol) qui vous intéresse plus particulièrement.

Les commandes postales accompagnées d'un mandat-poste ou d'un chèque bancaire couvrant le prix des livrets et les frais postaux seront acceptées avant la date susmentionnée ou jusqu'à épuisement des stocks.

Vente des Comptes rendus du Congrès et d'autres publications

Les comptes rendus du Congrès seront publiés en deux volumes de 300 à 400 pages.

Le volume 1 regroupera les résumés (dans les trois langues officielles) des documents présentés aux séances des commissions et de démonstration. Y figureront également le nom et l'adresse des auteurs. Les participants du Congrès recevront ce volume dès leur arrivée.

Le volume 2 renfermera le texte intégral des présentations des conférenciers invités aux séances plénières et aux six symposiums, soit environ 50 exposés dans leur langue de présentation. Toutefois, chacun d'eux sera précédé d'un résumé dans les trois langues officielles. Le volume 2 sera distribué aux participants à la fin du Congrès.

Les deux volumes seront vendus aux non-participants ainsi qu'au libraires, aux entreprises et aux organismes publics au prix coûtant plus les frais d'emballage et de poste.

Chaque volume envoyé par mer coûtera \$ 4 (Can) et \$ 4.50 (Can) par voie aérienne. Toutes les commandes reçues avant le 1^{er} avril 1978 seront acceptées. Après cette date, les ventes se poursuivront jusqu'à épuisement des stocks.

Les publications suivantes seront en vente durant la période du Congrès auprès de la Librairie de l'Université de l'Alberta:

Soils of Canada: \$25 (Can.)

The Canadian System of Soil Classification: \$9 (Can.)

Interprétation simultanée et assistance linguistique

Un service d'interprétation simultanée en anglais, en français et en allemand est prévu pour les séances plénières et les symposiums. Les réunions des commissions seront également pourvues d'un service bilingue.

Des personnes parlant couramment l'italien, le japonais, le russe et l'espagnol en plus de l'anglais, du français et de l'allemand accueilleront les participants à leur arrivée, au bureau d'inscription et au bureau principal.

Exposition

L'exposition du Congrès sera très diversifiée et se rapportera surtout aux sols et aux domaines connexes, mais elle comptera aussi d'autres présentations.

Environ 100 monolithes représentant les principaux sols du Canada seront exposées de façon à expliquer le système canadien de classification des sols. Chaque mono-

lithe sera accompagné de nombreuses données analytiques et d'autres détails de classification, y compris les caractères et les critères des diverses classes. Des explications sur la vocation et l'utilisation (agricole, forestière ou récréative) des terres dans chaque proce, viendront compléter l'exposition principale. Du matériel spécialisé de pédologie sur le terrain et en laboratoire sera également présenté.

Les sections spécialisées de l'exposition comprendront des échantillons de sols des provinces des Prairies, des diapositives couleur de profils des sols canadiens (duplicata en vente au prix coûtant), des documents se rapportant aux sols canadiens, une carte mondiale des sols et les livres de divers éditeurs.

De plus, les participants pourront se renseigner sur les problèmes d'infiltration saline en terre aride.

Un des points saillants du Congrès sera la première vision d'un film sur les sols du Canada. Ce film, qui s'adresse au grand public, traite de l'utilisation des terres. Les participants pourront aussi assister à la projection d'autres films se rapportant aux sols, dont celui intitulé «The Soils of Australia».

Les sections de l'exposition consacrées à des sujets d'intérêt général comprendront quatre sections de musées itinérants, soit deux des musées nationaux du Canada et deux autres du «Devonion Group of Charitable Foundations de Calgary». Ces sections seront consacrées à la géographie, la culture et l'histoire du Canada.

Vacances au Canada

Les congressistes qui désirent passer leurs vacances en Alberta ou ailleurs au Canada pourront bénéficier des services de l'Office provinciale du tourisme «Travel Alberta».

De plus, les participants qui possèdent leur propre voiture ou qui en ont loué une trouveront une documentation abondante sur divers types d'excursions individuelles. Ceux qui s'intéressent aux voyages de pêche, aux promenades en montagne, aux voyages guidés ou aux voyages de groupes pourront aussi s'y procurer bon nombre de publications.

Pour plus de renseignements touristiques, les participants peuvent écrire à l'adresse suivante (préciser les points d'intérêt afin de ne recevoir que la documentation pertinente):

11^e Congrès de l'A.I.S.S.
Case postale 78, sous-station 11
Université de l'Alberta
Edmonton, Canada
T6G 2E0

Les visiteurs pourront aussi se procurer ces publications et recevoir des conseils pour leurs vacances à l'endroit même.

Signalons au passage que les jeux du Commonwealth auront lieu à Edmonton en août 1978.

Le comité organisateur prévoit une forte participation au Congrès. Veuillez donc compléter et retourner votre formule d'inscription dans les plus brefs délais.

Excursions aux EUA

Les participants au 11^{ème} Congrès A.I..S.S. auront l'occasion, s'ils désirent, de prendre part à une excursion aux EUA organisé par la Soil Science Society of America. Ces tournées aux EUA auront lieu soit avant les excursions pré-congrès au Canada, soit après les excursions post Congrès. L'itinéraire et le coût de ces excursions sont décrits dans le Bulletin, No. 51.

Information et inscription (voir aussi le formulaire d'inscription dans ce bulletin).

R.B. Daniels
Co-Chairman, ISSS Tour Committee,
SCS — USDA
P.O. Box 2890
Washington, D.C. 20013, U.S.A.

MITTEILUNGEN ZUM 11. IBG-KONGRESS **Edmonton, Kanada, 19.-27. Juni 1978**

Kongressteilnehmer werden gebeten, die folgenden Punkte besonders zu beachten und soweit erforderlich notwendige Vorbereitungen zu treffen:

- Besondere Interessen- und Arbeitsgruppen
- Einreisevisa
- Anmeldung
- Exkursionen
- Kauf von Exkursionsbeschreibungen
- Kauf von Kongressprotokollen

Anmeldegebühren und Anzahlung für Unterkunft und Exkursionen bitten wir Sie auf folgendes Konto zu überweisen:

Account No. 109003, Toronto-Dominion Bank
11630 - 87th Avenue, Edmonton, Canada T6G OY2

Die Vorbereitungen für den 11. Kongress der IBG schreiten gut voran. Viele der unten beschriebenen Punkte werden nicht nur für Teilnehmer des Kongresses von Interesse sein.

Programm

Der auf Seite 16 aufgeführte Rahmen zeigt den vorgesehenen Zeitplan für die verschiedenen Teile des Programmes.

Alle Referenten der Plenarsitzungen kommen auf spezielle Einladung. Es handelt sich um auf ihrem Fachgebiet international anerkannte Wissenschaftler mit besonderer Erfahrung in Bezug auf ihr Vortragsthema. Das gleiche gilt für die Redner der Symposien, an die ebenfalls spezielle Einladungen ergangen sind.

Die Sitzungen der Kommissionen sind für freiwillige Referate vorgesehen, soweit diese nicht in den Poster-Sitzungen gebracht werden. Die eingereichten Beiträge für die Sitzungen der Kommissionen werden so arrangiert, dass sie soweit wie möglich auf die Themen der Plenarsitzungen bezogen sind.

Poster-Sitzungen

Die Aufforderung an einige Teilnehmer, ihre Beiträge in Poster-Sitzungen und nicht in der üblichen Form eines formellen Vortrages bei einer Kommissionssitzung zu bringen, hat guten Anklang gefunden. Das Organisationskomitee hofft, dass diese Neueinführung von den Kongress-Teilnehmern positiv aufgenommen werden wird.

Arbeits- und besondere Fach- (Interessen)-gruppen

Verschiedene Arbeits- und Interessengruppen haben den Wunsch geäußert, Räumlichkeiten und Zeit zur Abhaltung von Sondersitzungen ausserhalb des formellen Kongressprogrammes zu erhalten. Das Organisationskomitee begrüsst dieses Interesse und wird sich bemühen, solche Sitzungen nach Möglichkeit so einzuplanen, dass sie nicht mit dem allgemeinem Programm in Konflikt geraten.

Es wird darauf hingewiesen, dass die Arbeitsgruppen von den einzelnen Kommissionen aufgestellt werden, und dass sie diesen gegenüber verantwortlich sind. Wo Arbeitsgruppen an ihre zuständigen Kommissionen Berichte abzugeben haben, müssen diese im Zeitplan der Kommissionen berücksichtigt werden. Arbeitsgruppen oder ihre Kommissionen, die Sondersitzungen ausserhalb des Programmes planen, werden gebeten, sich unter Angabe der voraussichtlichen Dauer und der erwarteten Teilnehmerzahl mit

VORLÄUFIGER ZEITPLAN FÜR DEN KONGRESS DER IBG (Juni 1978)

Zeit	Samstag 17 & Sonntag 18*	Montag 19	Dienstag 20	Mittwoch 21	Donnerstag 22	Freitag 23	Samstag 24	Sonntag 25	Montag 26	Dienstag 27	
8.00											
9.00		Anmeldung	Plenar-Sitzung A	Plenar-Sitzung B	Plenar-Sitzung C	Plenar-Sitzung D	Plenar-Sitzung E		Plenar-Sitzung F		
10.00			-----								
11.00		Plenar-Sitzung	1. Sitzung der Kommissionen	3. Sitzung der Kommissionen	5. Sitzung der Kommissionen	7. Sitzung der Kommissionen	8. Sitzung der Kommissionen		9. Sitzung der Kommissionen	Plenar-Sitzung	
12.00			←----- Mittagspause -----→						Frei	←----- Mittagspause -----→	
14.00	Anmeldung										
15.00		Symposien I & II	2. Sitzung der Kommissionen	4. Sitzung der Kommissionen	6. Sitzung der Kommissionen	Symposien III & IV	Frei		Symposien V & VI	Zusammenfassung	
16.00			-----								
17.00			-----								
18.00											
19.00											
20.00											
21.00											
22.00											

* Die erste Sitzung des IBG Beirates ist für Sonntag, den 18.6 um 14.30 Uhr anberaumt.

Dr. J.A. Toogood
Box 78, Sub. 11
University of Alberta
Edmonton, Canada T6G 2EO

in Verbindung zu setzen. Ähnliche Wünsche sonstiger Interessengruppen können ebenfalls an Dr. Toogood gerichtet werden. Bis jetzt sind folgende Sitzungen vorgesehen:

- Subkommission Salzböden
(Im Zusammenhang mit der Sitzung der Unterkommission ist ein umfassendes Programm über das Thema Salzeinsickerung auf Trockenböden, ein verhältnismässig neuartiges Problem in Alberta, Saskatchewan und den angrenzenden amerikanischen Staaten, vorgesehen).
- Arbeitsgruppe Bodenmikromorphologie
- Waldböden - Lagebedingungen
- Arbeitsgruppe Humin - und Fulvosäuren
- Arbeitsgruppe über nichtsybiotische Stickstoffixierung
- Arbeitsgruppe über Anwendung von Fernerkundung

Einreise nach Kanada

Um die geltenden Bestimmungen für die Einreise nach Kanada in Erfahrung zu bringen wird empfohlen, sich rechtzeitig vor der Abreise mit der nächsten Kanadischen Botschaft oder High Commission in Verbindung zu setzen. Mit Ausnahme amerikanischer (U.S.A.) Staatsbürger werden die meisten Besucher einen Reisepass und ein Visum benötigen. Teilnehmer, die beabsichtigen, im Anschluss an den Kongress von Kanada aus in die U.S.A. zu reisen, sollten sich bereits vor ihrer Abreise zum Kongress bei der nächsten Amerikanischen Botschaft (bzw. Konsulat) die notwendigen Visa besorgen. Nicht-amerikanische Staatsbürger, die ihren zeitweiligen oder permanenten Wohnsitz in den U.S.A. haben, sollten sich vergewissern, dass ihnen die Wiedereinreise erlaubt ist.

Anmeldung zum Kongress

Verständlicherweise werden viele Kongressteilnehmer mit ihrer Anmeldung zögern, weil für sie noch nicht feststeht, ob ihnen Urlaub oder ein eventuell notwendiger Reisezuschuss gewährt werden kann.

Das Organisationskomitee empfiehlt jedoch möglichst frühzeitige Anmeldung. Da in gewissen Fällen die Unterkunftsmöglichkeiten und die Teilnehmerzahl der Exkursionen begrenzt sind, werden die Plätze vorrangig den Teilnehmern zugewiesen, die zuerst ihre Anmeldung mit der notwendigen Anzahlung eingereicht haben. Teilnehmer, die nachträglich zur Absage gezwungen sind, können aufgrund des grosszügigen Rückerstattungsplanes ihre Einzahlungen weitgehend zurückerstattet bekommen.

Exkursionen - frühzeitige Anmeldung erwünscht

Dar der Kongress in die Hauptfremdenverkehrszeit fällt, muss das Organisationskomitee schon bis Ende Februar 1978 für alle von ihm organisierten Exkursionen volle Vorauszahlung leisten. Dies ist selbstverständlich nur dann möglich, wenn die Kongressteilnehmer ihre Gebühren (oder zumindest die für die Teilnahme festgesetzte Mindestanzahlung von \$ 100,00 pro Person) geleistet haben. **NB: Für alle Exkursionen, die**

vor Kongressanfang stattfinden, muss der volle Betrag bis spätestens 31. Mai 1978 eingegangen sein.

Das Organisationskomitee wird sich trotzdem bemühen, auch für diejenigen einen Platz auf den Exkursionen zu schaffen, die nicht bis Ende Februar 1978 die festgesetzten Gebühren eingezahlt haben. Es kann jedoch nicht zugesichert werden, dass Exkursionen, die bis Ende Februar wegen mangelnder Anmeldungen gestrichen werden müssen, wieder ins Programm aufgenommen werden können. Bei kurzfristig wieder anberaumten Exkursionen müssen eventuell weniger gute Unterkunftsmöglichkeiten in Kauf genommen werden.

In einigen Fällen wird es leider nicht möglich sein, spät angemeldeten Teilnehmern einen Platz auf der von ihnen gewünschten Exkursion zu verschaffen.

Verkauf von Exkursionsführer

Die Exkursionsführer enthalten eine Fülle von Information einschliesslich ein umfangreiches physisches, chemisches und mineralogisches Datenmaterial in Bezug auf die Böden, die auf den Exkursionen zu sehen sind. Ein erheblicher Teil dieser pedologischen Daten ist bisher in Kanada nicht veröffentlicht worden.

Am Anfang jeder Exkursion wird den Teilnehmern die betreffende Exkursionsbeschreibung ausgehändigt. Diese Führer können auch von Nichtteilnehmern zum Kostenpreis zuzüglich Porto (ca. \$ 3,00 bis \$ 6,00) erworben werden bei Bestellungen, die bis *15. April 1978* eingegangen sind.

Preise und Inhaltsangaben der verschiedenen Beschreibungen sind erhältlich über:

11th ISSS Congress
Box 78, Sub. 11
University of Alberta
Edmonton, Canada T6G 2E0

Bitte die Exkursionsnummer bzw. die Bodentypen angeben, die für Sie von besonderem Interesse sind.

Postbestellungen begleitet von einer Bankanweisung in Höhe der Publikationskosten zuzüglich Porto werden bis zum obengenannten Datum entgegengenommen, oder solange der Vorrat reicht.

Verkauf von Kongressdokumentation

Die Protokolle des Kongresses werden in 2 Bänden von je 300 bis 400 Seiten veröffentlicht.

Band 1 wird Kurzfassungen (in den drei offiziellen Sprachen) aller Referate enthalten, die zum Vortrag bei Kommissions- oder Postersitzungen angenommen wurden. Name und Postanschrift der Autoren werden angegeben. Kongressteilnehmer erhalten Band 1 bei ihrer Ankunft.

Band 2 wird den Gesamttext der eingeladenen Referate der Plenarsitzungen und der sechs Symposien enthalten. Es handelt sich um ca. 50 Referate jeweils in der Vortragssprache; jedem Referat wird jedoch eine Kurzfassung in den drei offiziellen Sprachen beigefügt. Band 2 wird den Teilnehmern beim Abschluss des Kongresses ausgehändigt.

Beide Bände der Kongressprotokolle können an Nichtteilnehmer (Bibliotheken, Privatfirmen und Behörden) zum Kostenpreis zuzüglich Versandkosten abgegeben werden. Der Preis beträgt pro Band:

Kan. \$ 4,00 (Normalversand)
Kan. \$ 4,50 (Luftpost)

Alle Bestellungen, die bis 1. April 1978 eingegangen sind, werden ausgeführt, spätere Bestellungen solange der Vorrat reicht.

Simultanübersetzung und Dolmetscherdienste

Bei allen Plenarsitzungen und Symposien ist Simultanübersetzung in den Sprachen Englisch, Französisch und Deutsch vorgesehen. Voraussichtlich werden auch bei alle Sitzungen der Kommissionen Simultandolmetscher zur Verfügung stehen.

Zusätzlich zu den Dolmetschern für Englisch, Französisch und Deutsch werden auch Dolmetscher für Sprachen wie Italienisch, Japanisch, Russisch und Spanisch den Kongressteilnehmern behilflich sein bei ihrer Ankunft, bei der Anmeldung und im Hauptquartier des Kongresses.

Ausstellungsmaterial

Anlässlich des Kongresses werden verschiedene Ausstellungen veranstaltet sowohl über Böden und verwandte Sachgebiete als auch über andere Themen.

Den Kernpunkt der bodenkundlichen Ausstellungen bilden um die 100 Bodenmonolithen der wichtigsten Bodentypen in Kanada, die gleichzeitig das kanadische System der Bodenklassifizierung veranschaulichen. Jedem Monolith wird ein umfangreiches Datenmaterial beigelegt sein. Die Einzelheiten der Klassifizierung umfassen die Hauptmerkmale und die Kriterien der verschiedenen Kategorien des Systems. Stände mit Anschauungsmaterial über die Bodennutzung der einzelnen Provinzen vervollständigen die Ausstellung; sie liefern Information über Landwirtschaft, Forstwesen und Erholungslandnutzung und umspannen das gesamte Territorium von den Küstenprovinzen im Osten Kanadas bis Britisch Kolumbien im Westen. Spezialgeräte zum Gebrauch im Feld oder im Labor, die für Bodenkundler von besonderem Interesse sein dürften, werden ebenfalls ausgestellt.

Besondere Stände zeigen: Bodenuntersuchungen in den Prairieprovinzen; Salzeinsickerung auf Trockenböden; Farbdiapositive kanadischer Bodenprofile (erhältlich zum Kostenpreis); bodenkundliche Fachliteratur erhältlich in Kanada; die Weltbodenkarte; und Bücherstände.

Ein im Sonderauftrag produzierter Film, *The Soils of Canada*, wird während des Kongresses in Erstaufführung gezeigt. Dieser Film, der auch für das allgemeine Publikum gedacht ist, befasst sich mit dem Problem der Bodennutzung. Auch andere Filme über Bodenfragen sollen vorgeführt werden, hierunter einer mit dem Titel: «Die Böden Australiens».

Verschiedene Stände enthalten Material von allgemeinem Interesse, darunter vier in sich geschlossene Wandermuseen. Zwei stammen aus dem Kanadischen Nationalmuseum, zwei aus der Devonion Group of Charitable Foundations in Calgary. Sie zeigen verschiedene Aspekte der Erdkunde, Kultur und Geschichte, hauptsächlich im kanadischen Bereich.

Urlaub in Kanada

«Travel Alberta», das Fremdenverkehrsbureau der Provinz, wird Kongressteilnehmern, die einen Urlaub in Alberta oder sonstwo in Kanada verbringen möchten, behilflich sein.

Viele Reisebrochuren, die Auskunft geben über die Möglichkeiten für «do-it-yourself» Reisen mit dem eigenen Auto oder mit einem Mietauto, werden für Kongressteilnehmer bereitgehalten. Individuelle Beratung steht neben Reisebrochuren denjenigen zur Verfügung, die beispielsweise angeln, Bergsteigen, Reisen mit Führer oder mit einer Reisegruppe unternehmen möchten. Auf Anfrage bei

11th LSSS Congress, Box 78, Sub. 11.

University of Alberta, Edmonton, Canada T6G 2E0

wird unter Angabe spezieller Interessen Reiseinformation zugeschickt. Auch am Kongress wird solches Material bei einem Reiseberatungsdienst zur Verfügung stehen.

Einige der Kongressteilnehmer möchten vielleicht zum Abschluss ihres Kanadaaufenthaltes die Commonwealth-Spiele besuchen, die im August in Edmonton abgehalten werden.

Exkursionen in den U.S.A.

In Verbindung mit dem Kongress wird es die Möglichkeit geben, Exkursionen in den U.S.A. zu unternehmen, die von der Amerikanischen Bodenkundlichen Gesellschaft organisiert werden.

Diese Exkursionen werden entweder vor den Exkursionen in Kanada vor dem Kongress oder nach den Exkursionen nach dem Kongress stattfinden. Die Routen und Kostenaufstellung (in USA Dollars) für diese Exkursionen wurden in No. 51 der Mitteilungen beschrieben. Interessenten sollten sich an die folgende Adresse wenden (Siehe Anmeldeformular in diesen Mitteilungen):

R.B. Daniels
Co-Chairman ISSS Tour Committee
SCS - USDA
P.O. Box 2890
Washington D.C. 20013, U.S.A.

NEWS FROM NATIONAL SOCIETIES NOUVELLES DES ASSOCIATIONS NATIONALES BERICHTE DER NATIONALEN GESELLSCHAFTEN

DBG-Tagung 1977 in Bremen

Die Tagung der Deutschen Bodenkundlichen Gesellschaft fand nach 20 Jahren zum zweiten Male in Bremen statt und fiel mit dem 100-jährigen Jubiläum der ehemaligen Moorversuchsstation zusammen. Das Thema der Eröffnungssitzung «*Aufgaben der Bodenkunde im Funktionswandel der Kulturlandschaft*», das auch auf den Exkursionen behandelt wurde, stieß auf sehr großes Interesse (starker Besuch im großen Rathaussaal, Fernsehberichte — auch von einer Exkursion —, mehrere Rundfunk- und zahlreiche Zeitungsberichte). An der Vortragstagung (mit über 100 Vorträgen auf 15 Kommissions-Sitzungen) nahmen 253 Mitglieder, an den doppelt durchgeführten vier Exkursionen 348 Mitglieder teil.

Auf der Mitgliederversammlung wurden folgende Mitglieder des Vorstandes für die Wahlperiode 1978/81 neu- bzw. wiedergewählt:

Präsident: Schroeder
Vizepräsidenten: Roeschmann, Schwertmann
Geschäftsführer: Meyer

Kommissions-Vorsitzende (und Stellvertreter): I Renger (Strebel), II Brümmer (Söchtig), III Ottow (Trolldenier), IV Mengel (Feige), V Zakosek (Wittmann), VI Kuntze (W. Müller), VII Graf von Reichenbach (Gebhardt).



NEW ZEALAND SOCIETY OF SOIL SCIENCE

COUNCIL 1977

25th ANNIVERSARY YEAR

C.W. Childs Soil Bureau Council Member	L.C. Blakemore Soil Bureau Council Member	J.K. Syers Massey University Council Member	P.J. Tonkin Lincoln College Council Member	R.J. Furkert Soil Bureau Treasurer	C.G. Vucetich Victoria University Council Member	A.H. Nordmeyer N.Z. Forest Service Council Member
	R. Lee Soil Bureau Secretary	M.L. Leamy Soil Bureau President	T.E. Ludecke Lincoln College Past President	W.M.H. Saunders Ministry of Agriculture & Fisheries Vice President		

New Zealand Society of Soil Science - Silver Jubilee

The New Zealand Society of Soil Science celebrated its 25th Anniversary during 1977. The main event on the Silver Jubilee calendar was the Society's first independent, residential conference on 5-9 December 1977 at Flock House, a farm training school located near Bulls in the Manawatu district. In addition to submitted papers, two field trips were organized to highlight two current but quite different situations in which New Zealand soil scientists find themselves involved. The first was to the Ruahine Mountains which rise to about 1,700 m and which are the scene of spectacular and devastating accelerated soil erosion.

The second field trip was devoted to Palmerston North City, a growing city located on the fertile Manawatu Plains. The spread of the city is continually threatening productive land and soil scientists have been involved in preparing a scenario to show where this productive land is; where land suitable for urban development lies; and where there may be problems for urban development, such as flooding, wetness or instability.

The Minister of Science delivered the Jubilee Conference Address, and the Norman Taylor Memorial Lecture was delivered by Dr. Guy D. Smith.

The international soils community and the I.S.S.S. present warm wishes to the New Zealand Society of Soil Science for the further success of its activities.

Address: c/o Soil Bureau, Private Bag, Lower Hutt, New Zealand.

50 Years of the Society of the Science of Soil and Manure, Japan.

The Society of the Science of Soil and Manure, Japan, was established in Tokyo in 1927. Its 50th anniversary was celebrated by the organization of an International Seminar on Soil Environment and Fertility Management in Intensive Agriculture, held in Tokyo, 10-14 October 1977. Concurrently, the Ministry of Agriculture sponsored a special Symposium on «Soil: Fertility and Function in the Environment». Scientists from 34 countries participated in this venture, together with a great number of their Japanese colleagues. The topics dealt with were subdivided into the following major sections:

- Soils and fertility management in Japan
- Soil physical properties and water management for crop production;
- Fertility management for paddy soils;
- Nitrogen problems of paddy soils;
- Pollution problems in farm land;
- Fertility management for upland soils;
- Soil management in intensive agriculture;
- Plant nutrition;
- Disposal and utilization of agricultural wastes;
- Biological aspects of soil fertility;
- Behavior of plant nutrients in the soil.

The Proceedings of the Seminar were published prior to the meeting, which greatly facilitated the discussions and the exchanges of experience. The organization of the Seminar had been entrusted to Dr. K. Kawaguchi. The meeting was welcomed by Dr. N. Murayama, President of the Soil Science Society of Japan, and by Dr. T. Egawa, Director General of the National Institute of Agricultural Sciences. At a reception which was given by Dr. and Mrs. Kawaguchi, a tribute was paid to the contribution made by the Soil Science Society of Japan to basic research and to the applications of soil science to the development of agriculture. Prof. Dr. C.F. Bentley and Dr. R. Dudal, respectively President and Secretary General of the ISSS, conveyed best wishes on behalf of the international soils community, and presented a U.N. peace medal to Dr. Murayama, as a souvenir of this 50th anniversary celebration. The Proceedings of the Seminar can be obtained from the Secretary General of the Soil Science Society of Japan.

The Society of the Science of Soil and Manure, Japan, counts 2,000 members. It holds an annual meeting in April of each year and publishes two scientific journals, one in Japan named «Journal of the Science of Soil and Manure» and an English edition named «Soil Science and Plant Nutrition».

The Board of the Society of the Science of Soil and Manure, Japan, is composed as follows:

- | | |
|--------------------|--|
| President: | N. Murayama |
| Vice-President: | K. Kumazawa |
| Vice-President: | N. Saga |
| Past President: | T. Egawa |
| Secretary General: | M. Kushizaki, National Institute of Agricultural Sciences, Ni shigahara, Kitaku, Tokyo 114, Japan. |

Canadian Society of Soil Science

Based on the Theme «A Professional Partnership in Food» the joint meetings of the Canadian Society of Soil Science (CSSS) - Agricultural Institute of Canada (AIC) -Canadian Institute of Food Science and Technology (CIFST) was held at the University of Guelph, Guelph, Ontario, from August 14 to 19, 1977. Featured in the CSSS program were over 30 technical papers, a Joint CSSS-CIFST Symposium on Chemistry - Microbiology and a CSSS Symposium on the Impact of Agricultural Land Use on Great Lakes Water Quality.

At the CSSS Annual Banquet, four individuals were awarded the distinction of Fellow in the Canadian Society of Soil Science. The 1977 CSSS Fellows included: J.A. McKeague, L.B. MacLeod, B.P. Warkentin and A.J. MacLean.

In 1978, the CSSS will be hosting the 11th Congress of the ISSS, in Edmonton, Alberta, June 19-27. The membership of the CSSS extends a cordial invitation to all soil scientists to participate in the 11th ISSS Congress in Canada, 1978.

The new Executive of the Canadian Society of Soil Science, which will serve until the end of 1978 is composed as follows:

President:	Dr. G.C. Topp
President Elect:	Dr. R.J. Soper
Past President:	Dr. D.A. Rennie
Councillors:	Dr. H.H. Krause Dr. J.A. Dangerfield
Secretary:	Dr. G.J. Wall
Address:	Old Engineering Bldg., University of Guelph, Guelph, Ontario.



Dr. Charles E. Kellogg is 75

Dr. Charles E. Kellogg, who headed soil survey activities in the United States from 1934 to 1971, celebrated his 75th birthday 2 August at his home in Hyattsville, Maryland. Since his retirement, Dr. Kellogg has written a book, *Agricultural Development: Soil, Food, People, Work*, and several papers, including *Soil Genesis, Classification, and Cartography: 1924-1974* for the 50th Anniversary meeting of ISSS. Dr. Kellogg is a founding member and president of the associates of the National Agricultural Library. Dr. Kellogg has assembled a comprehensive collection of books, bulletins and maps related to his work. His soil science collection shares book space with works of James Joyce of which he became an avid collector since 1930. He is an active gardener. A friend says, «His azaleas are the most pampered of any in this area, and they look it».



Dr. Guy D. Smith's 70th Birthday

On 20 June 1977, Dr. Guy D. Smith celebrated his 70th birthday. It was at Rio de Janeiro, Brazil, during the international workshop to discuss and revise Soil Taxonomy relative to tropical soils (see also report in this Bulletin).

Dr. Smith, headed the Soil Survey Investigations Division of the U.S. Department of Agriculture from 1952 to 1972 at which time he retired. More than anybody else he is the father of *Soil Taxonomy* and his participation in the workshop was therefore especially appreciated. It reflected his on-going activity in soil survey work. He insisted, however, that 1977 would definitely be the year of his «second» retirement. He now resides in New Zealand, where he is on a two-year assignment with the New Zealand Soil Bureau. In addition to working in New Zealand, Dr. Smith has worked in Belgium, the West Indies, and South America. He continues to send in recommendations for improving *Taxonomy*. Special recognition is to be accorded to Guy Smith for his willingness to submit the concepts which he developed to scrutiny and his patience to consider different proposals. Tribute was paid to him by the workshop in Brazil also on behalf of the ISSS.

30 years Brazilian Society of Soil Science

The Executive Board of the Society for the period 1977-79, elected in July 1977 during the 16th Brazilian Soil Science Society Congress, is composed as follows:

Luiz Bezerra de Oliveira	President
José Evandro de Mesquita Graça	1st Vice-President
Francisco da Costa Verdade	2nd Vice-President
José M.A.S. Valadares	Secretary
Carlos Laerte Rotta	Treasurer

Counselors: Raimundo Costa de Lemos, Paulo Klinger, Tito Jacomine, Gilson Bezerra, Sebastiao Francisco Guimaraes Correa, Igo Fernando Lepsch, Clotário Olivier da Silveira.

The «Sociedade Brasileira de Ciência do Solo» announces the issue of its first Soil Science Journal. This new Journal, named «Revista Brasileira de Ciência do Solo», publishes papers in Portuguese with an English Summary. Three issues per year are planned. Distribution is free for S.B.C.S. associates. Annual subscriptions for non-associates cost Cr \$ 120,00 (about U.S. \$ 8.00). Requests may be made to: Sociedade Brasileira de Ciência do Solo, Secretaria Executiva, Caixa Postal 28 - 13100 - Campinas - SP - Brazil

In 1977 the Brazilian Society of Soil Science celebrated its 30th anniversary. Membership rose from 23 in 1947 to the present 717. Best wishes for many years to come, with a 1,000 membership target in 1978.

9. Wissenschaftliche Tagung und Mitgliederversammlung der Bodenkundlichen Gesellschaft der Deutschen Demokratischen Republik.

Die Bodenkundliche Gesellschaft der DDR führte, vom 14. - 16.9.1977 in Frankfurt/Oder, ihre diesjährige wissenschaftliche Tagung zum Thema «Ergebnisse und Probleme der bodenkundlichen Forschung zur großflächigen Beregnung und Grundwasserregulierung» durch. Beim Übergang zur industriemäßig betriebenen Landwirtschaft in der DDR wird die Bewässerung zu einem immer wichtigeren Intensivierungsfaktor in der Pflanzenproduktion. Bis 1980 wird deshalb der Anteil des beregneten Ackerlandes auf 14 % ansteigen. Ausgehend davon wurden in Plenarvorträgen komplexe Lösungen für die Intensivierung der Pflanzenproduktion durch großflächige Beregnung und Grundwasserregulierung sowie Stand und Probleme der Ausgrenzung von Bewässerungsflächen auf der Grundlage der mittelmaßstäbigen landwirtschaftlichen Standortkartierung erläutert. So wurden z.B. in den Jahren 1971-75 in Großversuchen unter Praxisbedingungen Beregnungsmehrerträge von rund 23 dt Getreideeinheiten je ha erzielt. In Trockenjahren sogar bis 27 dt/ha. Die Verfahrensgestaltung der Großflächenberegnung wird durch halbstationäre Anlagen, bestehend aus automatischen Pumpstationen, unterirdisch verlegten Zuleitungen und Beregnungsmaschinen mit zunehmend hoher Arbeitsproduktivität und Schlagkraft bestimmt. Die sowjetische Kreisberegnungsmaschine stellt auf Grund ihres geringen Arbeitskraftaufwandes die Verzugsvariante dar.

Während einer Mitgliederversammlung wurde Prof. Dr. sc. Peter Kundler zum Vorsitzenden der Gesellschaft wiedergewählt.

Ergänzend zu den Plenarvorträgen wurden in den Kommissionen zu den hydro-meliorationen und standortkundlichen Grundlagen sowie zu bodenphysikalischen, -chemischen und - biologischen Problemen der Bewässerung 29 Vorträge diskutiert.

Während einer Exkursion wurden im Oderbruch, dem größten Flußpolder DDR, Objekte der Ent- und Bewässerung besichtigt, die mit hohem Aufwand zu staatlichen Mitteln errichtet wurden und die Voraussetzung für die Entwicklung dieses Gebietes zu einem bedeutenden Gemüseproduktionszentrum bilden.

Création de l'Association Marocaine des Sciences du Sol

L'assemblée constitutive de l'Association Marocaine des Sciences du Sol (AMS-SOL) s'est tenue le 21/5/77 à Rabat.

Le Bureau élu est constitué comme suit:

Président:	Dr. M.A. Yacoubi
Vice-Présidente:	Mme H. Faraj
Secrétaire Général:	Mr. M. Benmiloud
Secrétaire Général-Adjoint:	Mr. A. Choukrallah
Trésorier:	Mr. A. Sqalli

L'assemblée générale a aussi approuvé la création de Cinq Sections:

S1: Enseignement des Sciences du Sol

S2: Physique et Chimie des Sols

S3: Conservation des Sols

S4: *Biologie du Sol, sa fertilité et nutrition des plantes*

S5: Minéralogie, génèse, classification et Cartographie des Sols

Adresse: Association Marocaine des Sciences du Sol, 3, Avenue Bin El Ouidane, Rabat-Agdal, Maroc.

L'AISS souhaite la bienvenue à la nouvelle Association Marocaine et lui présente ses meilleurs vœux pour le succès de ses activités.

Second National Conference on Soil Science in Bulgaria

The 2nd National Conference on Soil Science was held from 19 to 21 September in Sofia. Its subject was: «Improvement, conservation and utilization of the grey forest, cinnamonic and cinnamonic podzolized soils in Bulgaria». The Conference was followed by a three-day scientific excursion for acquaintance with the soils and the experimental stations situated on them. Soil scientists from seven foreign soil societies took part in the Conference. Four reports were delivered at a plenary session and 56 scientific communications made, spread over three scientific sections: (1) Genesis and classification; (2) Increase of productivity; and (3) Conservation and melioration of the soils mentioned above.

The new Board of the Bulgarian Soil Science Society is composed as follows:

Dr. L. Raikov - Chairman
Prof. V. Koinov - Deputy Chairman
Prof. V. Donovan - Deputy Chairman
Dr. I. Atanasov - Secretary

and members of the Society's management body are Prof. G. Gjurov, Prof. D. Dinchev, Prof. Zh. Voinova, Dr. D. Stojanov, and Agr. Dimitar Dimitrov.

Société Belge de Pédologie

Le 28 octobre 1977, la Société Belge de Pédologie - Belgische Bodemkundige Vereniging - a organisé une journée à thème consacrée à «L'érosion en milieu agricole». Cette session a eu lieu à l'Institut Agronomique de Gembloux. Les sujets traités étaient «L'érosion en Europe Centrale» et «L'érosion des sols en régions limoneuses belges».

Le secrétariat de la Société Belge de Pédologie annonce un changement d'adresse à la suite du déménagement de l'Institut Géologique de Gand dans ses nouveaux bâtiments:

Société Belge de Pédologie, Institut Géologique, Krijgslaan 271, 9000 Gand, Belgique.

Society of Soil Science of the Netherlands

On 9 November 1977, the Netherlands Society of Soil Science held its 81st Scientific Meeting at the Staringgebouw at Wageningen. The topic of the session was clay and ceramics. It was organized by Ir. H.J. Timmers. The topics dealt with were the properties of clay required for coarse ceramic products such as bricks and tiles. Reports were also presented on research dealing with mechanisms of coloration of baked clay materials. The next Scientific Meeting will be held on 24 and 25 May 1978 and will deal with the development of peat areas in the Netherlands.

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

President: Prof. Dr. A. van Diest
Vice President: Prof. Dr. P.D. Jungerius
Secretary-Treasurer: Ir. J.C. Pape

Address: Nederlandse Bodemkundige Vereniging, Marijkeweg 11, Wageningen, The Netherlands.

Czechoslovak Societies of Soil Science

The Czechoslovak Societies of Soil Science held their 4th Federal Conference at Brno 26-29 September 1977.

On this occasion, the following Federal Committee for the next four years period was elected:

President: Dr. Juraj Hrasko
Vice-Presidents: Dr. Miroslav Kutílek
Dr. Rudolf Sály
Dr. Jan Nemecek
Secretary: Dr. Milos Valla
Address of the President: Institute for Soil Science and Agrochemistry,
818 31 Bratislava, Roznavská 23
Address of the Secretary: Agricultural University, 160 21 Praha, Suchdol.

Association Française pour l'étude du sol (AFES)

Monsieur P. Duchaufour se voit confier la présidence de l'Association à partir de cette année en remplacement de Monsieur G. Drouineau, arrivé au terme de son mandat.

La composition du conseil d'administration reste inchangée.

L'Association s'efforce d'organiser depuis quelques années des séances portant sur des thèmes bien définis:

«Absorption des éléments fertilisants et fertilisation localisée», 20/1/76.

«Biologie du sol: écologie des organismes et action sur le sol», 18/5/76.

«Utilisations en agriculture des boues résiduaires des stations d'épuration», 11/2/77.

«Dynamique des éléments fertilisants en condition de grande sécheresse», 17/5/77.

Pour 1978, aura lieu les 7 et 8 février, au C.N.R.A. (Versailles), un séminaire sur les divers aspects de l'altération des roches silicatées (hormis les roches vitreuses) en milieu superficiel.

Sont prévus: 1) Aspect général des phénomènes d'altération (Hydrologie des silicates cristallines);
2) Systèmes d'agression particuliers;
3) Nature spécifique de l'altération dans les microsystemes;
4) Etablissement des bilans d'altération dans les sols.

Renseignements: A.F.E.S., Centre National de Recherches Agronomiques,
Route de Saint-Cyr
78000-Versailles, France.

40 years Polish Society of Soil Science

In 1977 the Polish Society of Soil Science celebrated its 40th anniversary. It belongs to the largest and most active scientific societies in Poland. It has 1,011 members, including 173 professors and lecturers and 334 doctors. The Society has 14 branch divisions distributed throughout the country. Its activity is guided by the General Board in Warsaw, composed of 14 persons. The Presidium of the Central Board consists of:

Chairman: Prof. Dr. Lucjan Królikowski
Vice Chairmen: Prof. Dr. Bohdan Dobrzański
Prof. Dr. Stanislaw Kowaliński
Secretary: Assoc. Prof. Dr. Alojzy Kowalkowski
Treasurer: Dr. Stanislaw Bialousz

The activity of the Polish Society of Soil Science aims at popularizing work and at rendering economic services.

Within the framework of its scientific programmes the Society comprises 7 Commissions corresponding to the specialities represented in the International Society of Soil Science. Within the above Commissions, 28 working groups are acting; they deal with selected topics, usually within the scope of the investigation methodology, classification principles, solution of problems. The Commissions' work is guided by the Coordination Group consisting of 3 persons elected from among the members of the Central Board of the Society.

Besides the above scientific commissions, the following units are acting:

- a) Editorial Commission, publishing
 - Soil Science Annuals - 4 issues per year,
 - Review of the Scientific Literature on Agriculture and Forestry - 4 issues per year,
 - Works of Scientific Commissions - in the form of separate issues.
- b) Section of Cooperation with Foreign Countries, being in touch with soil science organizations abroad.
- c) Central Library of the Society, accumulating the specialized soil science literature.

The economic services of the Society consist in carrying out special soil expertises for the economic institutions concerned, including soil analyses, as well as preparing apparatus sets and equipment, including educational ones, for testing soils.

These activities are carried out by executive groups, called into existence according to need and consisting of the Society members, as well as by a group of several regular workers of the Society, employed at the laboratory and the workshop of the Society. These tasks are managed by the administration and financial sector consisting of 4 persons, aided by specialists called in case of need.

The economic services ensure financial means necessary for the scientific and extension work of the Society. No governmental subsidies are granted to the Society.

One of the most urgent tasks of the Society is, for the time being, to become involved to a greater extent than hitherto in the activities of the International Society of Soil Science.

Address: *Polskie Towarzystwo Gleboznawcze, 02-520 Warszawa, ul. Wiśniowa 61.*

Foundation of the Norwegian Society of Soil Science

The Norwegian Society of Soil Science was established on 28 September 1977, at the Agricultural University of Norway, 1432 Aas-NLH, Norway. There were 20 soil scientists present at the foundation meeting, all of them interested in joining the International Society of Soil Science. The membership is expected to increase considerably during the remaining part of the year.

The governing board of the Society consists of:

Arnor Njós, Chairman
Arne Stuanes, Vice Chairman
Øivind Hvatum, Secretary
Rolf Sørensen, Treasurer
J. Lag, Board Member

Address: Agricultural University of Norway, Department of Soil Fertility and Management, Box 28, N-1432 Aas-NLH, Norway.

The ISSS wishes the Norwegian Society of Soil Science a warm welcome within its ranks.

Bulletin de la Société Suisse de Pédologie

La Société suisse de pédologie a été fondée le 14 mars 1975 avec comme buts d'encourager les contacts entre les spécialistes du sol (pédologues) et de faciliter les relations interdisciplinaires entre les personnes concernées par la science du sol.

Pour cela elle organise, entre autres, au moins une fois par an une séance scientifique au cours de laquelle sont présentés des exposés reflétant les domaines d'activité de ses membres. Ce sont précisément les conférences tenues à la dernière séance (mars 1977) qui font la matière du premier numéro du nouveau Bulletin de la Société Suisse de Pédologie.

Adresse: Monsieur L.F. Bonnard, Secrétaire, Eidg. Forschungsanstalt für landwirtschaftlichen Pflanzenbau, Zürich-Reckholz, 8046 Zürich.

Soil Science Society of Nigeria

At the 1977 Annual Conference of the Soil Science Society of Nigeria, held at the University of Nigeria, Nsukka Campus, from 28 August to 2 September 1977, the following officers were elected to serve the Society for the next year:

President	: Dr. S.A. Adetunji
Vice President	: Dr. I. Unamba-Oparah
Treasurer	: Dr. A.A. Agboola
Secretary	: Dr. W.O. Enwezor
Assist. Secretary	: Dr. (Miss) C.C. Mba
Editor-in-Chief	: Dr. R.A. Sobulo
Council Members	: Mr. B.S.K. Onweluzo
	: Mr. S.C. Nwinyi

Address: Dr. W.O. Enwezor, Secretary, Department of Soil Science, University of Nigeria, Nsukka.

Italian Society of Soil Science

The new Council of the Italian Society of Soil Science, which will serve until the end of 1979, is composed as follows:

President	: Prof. Gino Florenzano
Vice President	: Prof. Giulio Ronchetti
Representative in the ISSS	: Prof. Fiorenzo Mancini
Secretary	: Prof. Riccardo Materassi
Council Members	: Prof. E. Arduino, Prof. A. Aru, Prof. L. Carloni, Prof. L. Cavazza, Prof. T. Eschena, Prof. L. Federico-Golberg, Prof. G. Fierotti, Prof. E. Manfredi, Prof. G. Picci, Prof. P. Sequi.

Address: Prof. Riccardo Materassi, Istituto di Microbiologia Agraria e Tecnica, Piazzale delle Cascine, 27 50144 Firenze, Italy.

IN MEMORIAM

Emeritus Professor F. Hardy - Honorary Member I.S.S.S. (1889-1977)

On 9th April, 1977, Emeritus professor F. Hardy M.A., Dip. Agric. (Cantab.), AICTA (Hon.), CBE passed away at his home near the UWI Campus at St. Augustine, Trinidad at the age of 88 years.

Professor Hardy came to the West Indies from the United Kingdom in 1911 having graduated from Cambridge University where he specialised in Geology, Botany and Chemistry. His first position was as science master at Harrison College. During the few years he served there he was recognised as a gifted teacher and he wrote a volume on the Flora of Barbados which is still the authoritative work on the subject. He returned to Britain in 1917 and after giving service in the First World War, he re-entered Cambridge University to do the Dip. Agric. course.

His agricultural training at Cambridge was put to use when he joined in 1920, the Imperial Department of Agriculture, then located in Barbados, as Chemist. When this organisation moved to St. Augustine, Trinidad, and the West Indian Agricultural College was opened in October 1922, Professor Hardy was one of the original members of staff. He was appointed as Professor of Soil Science and Chemistry and Head of The Department of Soil Science and Chemistry of the College in 1922 and he directed, the teaching and research functions in these fields until he retired in 1956.

During his career at the college, he has published over 300 research papers, bulletins, books, etc. in the field of soil science and agricultural chemistry, and sugar technology. Even so, a great deal of his work remains unpublished. At the peak, of his career he was recognised as a leading soil scientist in the world and perhaps the leading soil scientist working on tropical soils. He was the author of many new ideas and concepts in the subject all of which were developed with extremely limited financial and human resources. As a practical scientist, he long appreciated the need for systematic soil surveys in the region and kept emphasising this until he was able to convince the British Government in 1947 to provide the necessary funds to undertake this work. The achievements of the survey in a tropical context is now unique and has resulted not only in mapping of the soils of the West Indian region but also in fundamental understanding of their chemical, physical and pedological features.

Professor Hardy's original approach to teaching and research was to consider the whole environment — the soil, the plant and the atmosphere as components of a single system. Those who were fortunate to have been his students, and these number in the hundreds, have all been impressed and influenced by this approach but few, if any, have had the capacity to integrate the components of the system so completely. In pursuit of his interests, he had established a meteorological station at the College early in his career which for a long time provided the most comprehensive data on weather available in the island. His approach to the problems of plant growth enabled him to see the soil as the plant-root sees it and his concept of «root-room» is a simple, self explanatory and meaningful term like the many other terms he introduced into the literature of soil science. The ICTA owes much of its enviable reputation to his brilliant, prolific and pioneering research.

The study of pedology was professor Hardy's hobby. The techniques which he developed in this study are still used and his approach to pedological problems is still followed. One of his great contributions to pedology was the assembling and editing of the notes of professor Sir John Harrison and the publication of them in 1934 in a book entitled «The katamorphism of basic igneous rocks in a humid tropical environment». As a result of this, professor Harrison's data and thoughts on rock weathering and soil development which are still unchallenged today were made available to soil scientists everywhere.

In recognition of his contribution to teaching and research, Professor Hardy had several honours and awards conferred upon him. In 1950, he was honoured with the

award of a CBE and in 1951, at the Silver Jubilee celebrations of the signing of the Royal Charter of ICTA, an honorary AICTA was conferred upon him. He shared this honour with only one other person. In 1955, he was accorded the title of Emeritus Professor of Soil Science, and he was the only member of staff among many distinguished scientists who served at the College for the many years of its existence to have been so honoured. In recognition of his gift as a teacher, he was made an honorary life member of the Agricultural Education Association of Great Britain during his career. In 1968, he was elected as Honorary life member of the International Society of Soil Science.

When professor Hardy «retired» from his post in Trinidad in 1955, he served as a consultant for FAO and other International bodies and then joined the Inter-American Institute for Agricultural Science in Turrialba, Costa Rica in 1956. There he continued his role as a teacher and he was able to devote much more time to the field in which he is very likely the most learned scientist today i.e. cacao soils and the nutrition and environment of the cacao tree. For the ten years or so he served in Turrialba, he travelled extensively in Latin America and the Caribbean, advising governments and other organisations on the development of the cacao crop. His book «Cacao Manual» published during this period is the authoritative work on problems related to the cultivation of this crop. Two other works of book-length entitled «Tropical Soils» and «Crop Ecology» respectively which he wrote while in Turrialba have been translated into Spanish and published.

Since his second «retirement» in 1966, Professor Hardy returned to live in Trinidad and was active in his old department up to the time of his death. His last major work, the Land Capability and land use aspects of the soils of Trinidad and Tobago, published in 1974 is outstanding.

Professor Hardy is survived by his wife and daughter and to them we offer our sincere condolences.

N. Ahmad

Mr. G.V. Jacks - Honorary Member I.S.S.S. (1901-1977)

Graham Vernon Jacks, Director of the Commonwealth bureau of Soils until he retired in 1977, died on 10 August 1977 at the age of 76, leaving his wife, son and married daughter. From 1926 to 1929 he had worked on humic acids as a research scholar at Rothamsted Experimental Station, moving then to become lecturer in Soil Science at the Imperial Forestry Institute, Oxford. In 1931 he returned to Rothamsted as Deputy Director of the Imperial bureau of Soil Science, one of several agricultural bureaux set up in the UK at that time as part of the organization later known as Commonwealth Agricultural Bureaux. The Bureau, although administratively, separate from Rothamsted was, as a new kind of body, directed initially for a long period (until 1946) by the Director of Rothamsted, at that time E.J. (later Sir John) Russell. No one could have been better qualified than Sir John to introduce Graham Jacks to the wide scientific world, which the bureau was to keep currently and retrospectively informed of the results of research being done, world wide, on soils and soil/plant relationships. Jacks with his small able staff built up a comprehensive and unique store of information in the form of the Bureau's card index, from which almost all the Bureau's products flowed, including the triennial volumes of the Bibliography of Soil Science, Fertilizers and General Agronomy; the abstract journal *Soils and Fertilizers* (from 1938); an immense series of Annotated Bibliographies, with full abstracts, from 1955 that have greatly assisted not only soil and plant workers, but also geographers, geologists, advisory services, civil engineers, etc. He also commissioned and put through the press nearly fifty scientific monographs, the Bureau's series of *Technical Communications*, several of which he was the author. He travelled widely to gain the views of those

whom the Bureau served overseas, visiting almost every continent, and gained a useful mastery of French, German, Swedish and Russian.

These normal Bureau activities represented a busy life in themselves, but he also wrote a number of books and many reviews and articles which have stimulated — and often amused — innumerable readers. He was particularly interested in the influence of human activities on soil fertility and productivity, and his best known, and very influential book (written with R.O. Whyte) was «The Rape of the Earth. A World Survey of Soil Erosion» published by Faber, London in 1939. (Many will remember his amused belief in the value of a striking title, or a striking opening paragraph.).

He also served a number of organisations, national and international. The British Society of Soil Science, whose *Journal of Soils Science* he edited for many years, made him an honorary Member. The International Society of Soil Science, of which he had been an active member since the early 1930's, and of whose 3rd Congress he had been Organizing Secretary (Oxford, 1935), elected him an Honorary Member at its 10th Congress (Moscow, 1974). He also edited the proceedings of the Aberdeen meeting (1966) of Commissions II and IV of the ISSS. His international activities included also the preparation, with R. Tavernier and D.H. Boalch, of FAO'S «Multilingual Vocabulary of Soil Science», Rome 1960. He served as a Member of the (British) Nature Conservancy for six years. The British Association for the Advancement of Science, on whose behalf he had spent much of his spare time over many years, honoured him with the Presidency for one year of its Agriculture Section. He was a member of a top-level committee advising the (British) Forestry Commission on research matters.

The magnitude of his achievements becomes quite remarkable when it is realised that, as an undergraduate (of Christ Church Oxford) he was stricken by diabetes, from which he wasted for several years until he became — just in time — one of the first beneficiaries of insulin. While he never thereafter enjoyed good health, his return from the brink in early manhood left him full of enjoyment of the life he had retained, of his intellectual and social activities, his travels and his homecomings; it left him, also, an intriguing blend of opposites, vigorous and light-hearted, though never of good health; enthusiastic, but deeply sceptical; prepared for controversy, but gentle and understanding; basically shy, and yet ready to be at the centre. When he retired, he found pleasure mainly in his home and in helping his wife to maintain their attractive garden. He was greatly respected and liked by many throughout the world, who will hear of his passing with sadness.

W.D. Brind

Floribert Jurion (1904-1977) - Membre fondateur et ancien Président de la Société Belge de Pédologie et Président du 5ème Congrès de l'AISS



Né et élevé dans un milieu familial où l'attachement à la terre allait de pair avec une grande distinction du coeur et des idées, Floribert Jurion y acquit une étonnante et indélébile intuition de tout ce qui fait la valeur de l'agriculture. Dès cette époque, où il vivait à la ferme paternelle, la diversité de nature et de propriété des sols l'avait frappé. Le pays de Binche, où un manteau de limon d'épaisseur très variable recouvre la craie sous-jacente, est d'ailleurs bien démonstratif à cet égard puisque ces traits en façonnent les terroirs. A Vellereille-les-Brayeux, son village natal, n'oppose-t-on point Vellereille-le-Sec?

C'est donc un jeune Agronome remarquablement complet, dont la formation théorique bien acquise à l'Institut agronomique de l'Université de Louvain s'était harmonieusement alliée à la connaissance des réalités de l'agriculture, qui entreprend, en 1928, une carrière au Congo qu'il devait poursuivre, pratiquement jusqu'à sa mort, en se consacrant au service des pays d'Outre-Mer.

On peut affirmer que Jurion, malgré son accession très rapide aux plus hauts sommets de compétence et de responsabilité, a gravi tous les échelons et connu tous les postes. Concevoir et exécuter lui étaient également possibles; il n'imaginait rien qui ne pouvait se faire. C'est la clé de l'oeuvre considérable qu'il a réalisée...

Dès que l'INÉAC (Institut National pour l'Étude Agronomique du Congo belge) fut fondé en 1933 et que Jurion fut associé successivement à ses directions locales et régionales, avant d'en tenir le gouvernail en Afrique et en Belgique, son intérêt pour la science du sol, l'agrobiologie comme on disait au début, s'affirma. En 1946, il fit un long voyage d'étude aux États-Unis, qu'organisa, en fait, le haut fonctionnaire fédéral qu'était l'éminent pédologue Ch. E. Kellogg. Des contacts prolongés avec ce dernier furent le début d'un commerce intellectuel actif et d'une vive amitié qui se renforça lorsque, à son tour, notre savant Collègue visita l'Afrique. Ces rencontres furent le point de départ de nombreuses initiatives et d'une coopération fructueuse dans les domaines de la connaissance fondamentale et de la conservation de sols.

Il n'est que de lire les écrits du regretté Directeur Général de l'INÉAC pour se rendre compte qu'il avait parfaitement évalué et intégré la pédologie dans les sciences et techniques agronomiques. La terre est le premier facteur qu'il faut étudier sous toutes ses faces pour l'approprier, l'améliorer, la conserver et en faire le bien essentiel à transmettre et à mettre à fruits avec modération. L'agronomie tropicale se résout finalement en l'art de choisir et de bien exploiter les terres.

Les initiatives qu'il manifesta, la coopération active qu'il apporta dans la promotion de la science du sol sont particulièrement riches. Il prit une part prépondérante à la préparation comme à la tenue de la première Conférence interafricaine des sols à Goma en 1948. C'est alors que furent fondés le Bureau interafricain des sols et le Service pédologique africain basé à Yangambi. L'une et l'autre de ces organisations ne cessèrent de bénéficier de son diligent appui. Au Congo même, il conçut et favorisa le levé et l'édition des cartes des sols. Mais ce n'est pas seulement à la pédologie tropicale qu'il voua son intérêt puisqu'il suivit assidûment les travaux des Congrès internationaux d'Amsterdam en 1950 et de Paris en 1956 et, surtout, qu'il fut le remarquable promoteur et président du 5ème Congrès qui se tint pour la première fois en pays chaud, à Léopoldville, en 1954. Il y prononça un discours inaugural de très haute tenue scientifique et à portée sociale évidente: «La science du sol et l'évolution de l'agriculture sous les tropiques». Il fut parmi les membres fondateurs, en 1951, de la Société belge de Pédologie dont il assumait la présidence avec beaucoup de zèle en 1954-1955. Les nombreuses manifestations scientifiques qu'il suivit à travers le Monde le mirent en contact avec une foule de pédologues. Les plus prestigieux d'entre eux le connaissaient bien, l'appréciaient, le tenaient pour un des leurs et ne cessèrent de solliciter ses avis et son concours. Alors que sa santé allait déjà en déclinant, n'était-il point pressenti encore pour occuper une chaire de pédologie tropicale au titre de «Visiting Professor» à la Cornell University.

Son activité, dans tous les domaines de l'Agronomie d'ailleurs, ne se ralentit guère lorsque l'indépendance du Congo mit fin à son mandat de Président du Comité de Direction de l'INÉAC. C'est au titre de Consultant que les Nations Unies ou ses organisations spécialisées le chargèrent de nombreuses tâches et souvent d'arbitrages délicats. Entre 1964 et 1970, il accepta, à des titres divers, quelque 18 missions qui le conduisirent en Europe de l'Est, en Afrique du Nord, en Afrique tropicale, à Madagascar, en Malaisie, Thaïlande, Laos, Cambodge, Vietnam, au Népal, à St. Domingue... Il prit heureusement le temps d'écrire, avec la collaboration de J. Henry, son ami et son disciple, une véritable somme de ses connaissances et de son expérience parue successivement sous les deux titres suivants: «L'organisation de l'agriculture dans les pays en voie de développement» (1965) et «De l'agriculture itinérante à l'agriculture intensifiée» (1967). Ce dernier et fort ouvrage de 498 pages, d'ailleurs traduit en anglais en 1969, fait toujours autorité en la matière...

Un homme d'une telle envergure, une activité d'une telle dimension, une oeuvre d'une telle valeur devaient recevoir de nombreux témoignages de considération et de

reconnaissance. Jurion était membre de diverses sociétés savantes et plusieurs d'entre elles l'avaient élevé à l'honorariat. Il faisait partie de l'Académie Royale des Sciences d'Outre-mer depuis 1958 et fut Directeur de sa Classe des sciences naturelles et médicales en 1974. De nombreuses distinctions belges et étrangères l'avaient honoré à juste titre.

Le cadre trop étroit de cette notice, ne permet pas d'analyser comme il convient les multiples facettes d'une personnalité aussi riche que celle de Floribert Jurion. Mais elle serait tout à fait incomplète si l'accent n'était mis sur les plus éminentes de ses vertus. Il fut un Chef au vrai sens du terme, exigeant mais généreux; l'équité était pour lui un dogme auquel il n'a point failli. Il fut loyal et fidèle; il n'a cessé, jusqu'à ses derniers jours, de se préoccuper effectivement des intérêts matériels et moraux de ses anciens collaborateurs; à aucun moment il n'a délaissé ses nombreux amis. Les uns et les autres ne sont prêts de l'oublier!

J. Lebrun

Mrs. Ana Conea (1922-1977)

On March 4, 1977, during the terrible earthquake in Bucharest, unexpectedly and untimely passed away a honoured scientist, a woman of great knowledge, with exceptional qualities as a research worker, an outstanding representative of soil science in Romania, Dr. Ana Conea.

Born July 20, 1922, she graduated in geography from the Bucharest State University in 1945. In 1966 she received her doctors degree in geographical sciences on the base of the thesis entitled «Pedogenetical formations and Quaternary Deposits in Central and Northern Dobrudja, a Paleogeographical and Paleopedological Study».

Ana Conea worked over 26 years as a research worker, at the State Committee of Geology, the Geological Institute and the Research Institute for Soil Science and Agrochemistry.

The rich scientific activity of Ana Conea, included in more than 90 papers, embraces varied fields of soil science. She brought important scientific and practical contributions in the geography of Romanian soils, complex soil survey, paleopedology and paleogeography. She paid special attention to problems connected with soil classification and systematics, being the main author of the new Romanian soil classification system. She also was the author of numerous highly appreciated maps of Romanian soils, at small and medium scales.

Ana Conea took an active part organizing various scientific meeting, national and international, and participated at different international symposia, conferences and congresses of soil science and geography.

Her contributions to some of FAO and INQUA works were highly appreciated.

She was a member of Romanian Society of Soil Science since it was founded, of the ISSS, member of the paleopedology Commission of ISSS, of the INQUA Commission for the study of loess and of the ECA/FAO Group for the Soil Map of Europe at a scale 1:1.000.000.

The memory of Ana Conea, the bright image of this exceptionally active and able investigator who devoted her life to the development of Romanian soil science, will remain forever in the hearts of all who worked with her and who knew her.



Romanian Society of Soil Science

Prof. Dr. Dr. h.c. Artur Primavesi

Prof. Primavesi, Agronomist/Commendador, died in Sao Paulo, Brazil, on 22 August 1977. Born at Jägerndorf, in the Austro-Hungarian Empire, now Krnov, Czechoslovakia, he studied agronomy at the Universities of Prague and Breslau, and received his doctor's degree at the University of Vienna.

At the invitation of the Government of the State of Sao Paulo, he came to Brazil in 1948 to study soil improvement for wheat production. He was fascinated by the problems of the tropical agriculture, dedicating his life and work to the conservation and improvement of tropical soils. He demonstrated the importance not only of good fertility, how to promote and maintain it, but also the value of a good tilth and soil permeability and the need to deal with the hard-pans, frequently found under tropical conditions. In 1968, under the sponsorship of Unesco, he organized the second Latin-American Congress of Soil biology, at which he gave great emphasis to the importance of the soil/plant relationship.

In 1971 he organized and launched a post-graduate program, for master degree, in «Soil Biodynamics and Soil Productivity» which had a revolutionary effect on the management and treatment of tropical soils.

His work achieved worldwide recognition from the practical knowledge and recommendations for the improving of tropical soils with correct use, developing new techniques of soil management to produce high and stable yields and healthy crops. The practice of the predatory use of the tropical soils, with rapidly declining fertility/productivity, is a phenomenon all too common in the tropical world.

Appreciation of Prof. Primavesi's pioneering work has been demonstrated by numerous awards, medals and distinctions he received not only in Brazil but in other countries. As with all pioneers his work will live after him, and be appreciated by the coming generations.

Primavesi leaves a widow, Dra. Ana Primavesi, not only his constant companion in his work, but herself a distinguished scientist specializing in tropical soils.

Professor V. Kosil (1898-1977)

Professor V. Kosil died unexpectedly on 16th August 1977 at the age of 79 years. Until the last day of his fruitful life, he took an active part in Czechoslovak soil science.

Working since 1922, after his graduation from the Agricultural University of Prague, under the component guidance of the prominent soil physicist and founder of Czechoslovak soil science, professor V. Kopecky, he became head of the chair of soil science in Prague in 1935. He held this position until his retirement in 1972.

Professor Kosil published over eighty scientific papers, books and text-books. His work in soil science covered a considerably broad field, including genesis, classification and mapping of Czechoslovak agricultural soils, scientific research of interrelations between soil chemical properties, such as ion exchange, reaction, a.o., and the properties of parent rocks. Not less important is his work dealing with soil water regimes and soil-plant relationships.



Ten years of his life were devoted to the development of agricultural higher education at the Agricultural University. He held academic posts of the dean and rector in Prague during that period. Having educated the younger generation of Czechoslovak soil scientists, he laid the foundation of the contemporary modern soil science development in this country.

He was awarded a number of medals and orders from many institutions he had cooperated with, such as the Czechoslovak Academy of Science, Czechoslovak Agricultural Academy, Ministry of Education, Ministry of Agriculture.

Having left the family of Czechoslovak soil scientists with the feelings of sadness and gratitude, Professor Vladimír Kosil will never be forgotten by his former students and colleagues.

Dr. Ir. J. van Schuylenborgh (1917-1977)

Dr. «Jödes» van Schuylenborgh, Dean of the Sub-faculty of Physical Geography and Soil Science of the *University of Amsterdam*, died suddenly, 60 years old, on Sunday 17 April 1977, in the hospital at Wageningen.

During the various stages of his scientific activities, van Schuylenborgh has always been a very interested and active member of the ISSS and of the Netherlands Soil Science Society. His activities for the International Symposium on Acid Sulphate Soils (Wageningen, 1972), sponsored by ISSS, are well remembered.

After studying at Wageningen Agricultural University, during which period he had assistantships in botany and in soil chemistry respectively, he became an assistant in soil chemistry with the late professor Hudig and subsequently with the late professor Schuffelen. He obtained his Ph. D. degree in 1947 under the guidance of the latter with a thesis on «A Study on Soil Structure».

His most truly formative years were in the period from 1957 to 1958 when he was professor of soil science at the University of Indonesia, Bogor. Here he started to develop his systematic investigations on soil formation which led to a series of publications, together with K.H. Tan and others, in the *Netherlands Journal of Agricultural Science*: «The genesis and classification of mountain soils developed on tuffs in Indonesia» (*N.J. Agr. Sc.* Vol. 3 (1955), p. 192-215) to «On the organic matter in tropical soils» (*N.J. Agr. Sc.* Vol. 9 - 1961 - p. 174-180). Concurrently he also published, in the same journal, together with Go Ban Hong and R.M. Sarfadi respectively, some articles on the mineral nutrition of lowland rice and sugarcane. His students from this time belong now to the prominent soil scientists of Indonesia.

Upon his return to the Netherlands his old co-operation with the late Professor Edelman was very much intensified when he became chief of the soil chemistry section of the Laboratory for Regional Soil Science of Wageningen University. His publications from this period formed a new series of articles, together with several co-authors, in the *Netherlands Journal of Agricultural Science*: «On soil genesis in temperate humid climate» I (Vol. 10 [1962], p. 127-144) through VIII (Vol. 18 [1970], p. 207-214). During this period he also contributed, together with T. de Meester, to the Conference on Mediterranean Soils (Madrid, 1966).

In 1970, Dr. van Schuylenborgh was appointed Lecturer in Soil Chemistry and Soil Physics at the Laboratory for Physical Geography and Soil Science of the University of Amsterdam. This coincided with the finalisation of the proofs of the «third, revised and enlarged edition» of the book «Tropical Soils» by E.C.J. Mohr, F.A. van



Baren and J. van Schuylenborgh (published in 1972). The contribution of the latter to this completely new edition of the well-known book, firmly established his fundamental views on the chemistry of soil formation, which he had developed together with L. van der Plas («Petrochemical calculations applied to soils - with special reference to soil formation», *Geoderma* 4 [1970], p. 357-385).

Further research during his period at Amsterdam led him to an even more systematic and fundamental geochemical approach to the processes of soil formation as is testified by various publications in *Geoderma* (e.g.: «The weathering of zeolitic and non-zeolitic calcareous materials in a lacustrine plain in South-Central Italy», in *Geoderma* 14 ([1975], p. 227-295 and other journals, e.g. his last publication: «Weathering of serpentinite in Mantanzas Province, Cuba: Mass transfer calculations and irreversible reaction Pathways (in: *Soil Science Soc. Amer. Journal* 40 [1976], p. 901-907)). It was also clearly demonstrated by his election to the chairmanship of the Interest Group Solution - Mineral Interaction of the Working Group Geochemistry of Natural Water (International Association of Geochemistry and Cosmochemistry), subsequent to the «Symposium on Water-Rock Interaction» (Prague, 1974).

A.P.A. Vink

Dr. W.S. Ferguson (1926-1977)

Dr. Wilfred Samuel Ferguson of the Program and Evaluation Directorate of the Research branch of Agriculture Canada, died suddenly at his home in Ottawa on June 4, 1977.

Dr. Ferguson was born in 1926 in Moosomin, Saskatchewan. Following a year of army service in 1944-45, he commenced his formal training in Agriculture at the University of Saskatchewan, where he received a B.Sc. in 1950 and a M.Sc. in 1952. In 1962, he obtained his Ph. D. from the University of Manitoba.

Over the years, in his quiet way, Fergie established himself as a competent researcher and as an able advisor and administrator. His research capabilities were demonstrated at Brandon and Swift Current, beginning in 1952, where his work in soil fertility and plant nutrition formed the basis for many of the farm priorities and fertilizer recommendations now used in the Prairie provinces. At Swift Current, where he moved in 1966, he was instrumental in developing a coordinated soil research program which included soil microbiology, hydrology and irrigation components. The administrative skills that he demonstrated in Swift Current led him to Ottawa in 1970, where he soon established himself as a senior coordinator. At the time of his death, he was leader of a group of coordinators responsible for planning and evaluation of programs related to agricultural resource development and environmental protection. In addition, he was involved in program and policy developments relating to agriculture and climate, land evaluation and use, and water use in agriculture. He was co-chairman of a departmental task force studying future opportunities for agriculture, and chairman of the Canada Committee for Agrometeorology.

He was an active member of several societies including the Canadian Society of Soil Science, International Society of Soil Science, and the Agriculture Institute of Canada. He was honorary Secretary of the latter organization and was actively involved in the «Restructuring Process» currently underway.

Wilf is survived by his wife, Audrey, and their four children, who presently reside on their family farm near Ottawa - at Richmond, Ontario.

**ACTIVITIES OF THE ISSS COMMISSIONS
ACTIVITES DES COMMISSIONS AISS
TÄTIGKEIT DER IBG KOMMISSIONEN**

Conference on classification and management of tropical soils.
Kuala Lumpur, Malaysia. 15-20 August, 1977 (Commissions IV and V).

The joint inter-congress meeting of commissions IV and V of the ISSS was hosted by the Malaysian Society of Soil Science and the Ministry of Agriculture of Malaysia. About 300 delegates from about twenty five countries attended the meeting.

The conference was preceded by a pre-conference tour of the southern part of Peninsular Malaysia. About 100 delegates participated in this tour. Over thirty soil profiles comprising soils belonging to the Orders Oxisols, Ultisols, Inceptisols and Spodosols, were shown. Many of these soils are under rubber or oil-palm and the delegates were briefed on the management of these soils for the respective crops. The extensive land development projects in the country provided an opportunity for the delegates to be briefed on this aspect of agricultural development.

The conference was opened by the Minister of Agriculture, who in his speech, stressed the need for international cooperation in the field of agricultural research and indicated that the need for agro-technological exchange was more so today than ever before.

About seventy papers were presented at the meeting. In the section on soil classification and genesis, papers ranged from theoretical models on soil genesis to actual case studies of soil sequences or specific features in soils such as plinthite and petroplinthite. The section on management was devoted largely to perennial crops. The last section on land use and land management was dominated almost completely by staff of the FAO who are directly involved with such questions.

The post-conference tour to Sabah and Sarawak, had fifty participants. The emphasis was on soils under cocoa, coconuts and pepper. As large parts of the country are under forest, the delegates were also briefed on tropical forest management.



Tour leader, Dr. Paramanathan (in the center), discusses problems of the micromorphology of tropical soils with Dr. Roy Brewer from Australia.



Participants are briefed on the properties and genesis of an Acrorthox developed on serpentinite.

Both the conference and the tours were very well organized and the Organizing Committee must be congratulated for their excellent effort. The conference proceedings is scheduled to be published in early 1978 and well before the ISSS Congress in Canada. Those interested in obtaining copies, may write to:

The Secretary,
Malaysian Society of Soil Science,
c/o P.O. Box 150,
Kuala Lumpur, Malaysia

H. Eswaran

Working Group on Soil Information Systems

Second Meeting on Soil Information Systems, Varna/Sofia-Bulgaria 30 May-4 June 1977

The meeting was organized by the Bulgarian Ministry of Agriculture and Food Industry, the Nikola Poushkarov Institute of Soil Science and the Bulgarian Society of Soil Science. 63 participants from 15 countries worldwide and the FAO reviewed progress made since the last meeting (Wageningen, the Netherlands 1975).

The role played by soil information systems varies between countries. The meeting revealed two distinct developments: the construction of advanced computer hardware/software systems to accept, store and retrieve original soil data, and the implementation of algorithms to process the information in the computer for applications, in agriculture and for urban development (operation research).

A number of countries (Australia, Canada, France, The Netherlands, Yugoslavia) reported on the technical aspects of their now operational state or national systems, stressing the difficulties associated with data input, advanced data base management, personnel training and economic viability during the initial stages.

Others were developing increasingly sophisticated processing programs for crop choice, fertilizer application and irrigation scheduling, frequently using more general soil information (Bulgaria, Czechoslovakia, Roumania, Soviet Union).

The relevance of such operations research, not the least in centrally planned economies, brings the soil scientists in direct contact with the user of information, both for rural and urban planning.

In the course of a conference tour the Bulgarian hosts gave demonstrations of the use of their systems for fertilizer recommendations on remote computer terminals placed on largescale cooperative farms.

Participants undertook to review the just released FAO guidelines for the coding of soil data, and to let the Working Group contribute to a CODATA project on time and space dependent data.

The Working Group will contribute papers to the seminar on resource information systems in Edmonton in June 1978.

The proceedings of the Canberra meeting of the Australian subgroup (1976) have been published, and the Bulgarian meeting will be shortly issued.

**J. Schelling
Stein Bie**

Le 1er Colloque: «Pédologie et Télédétection»

Rome, 31 août - 9 septembre, 1977.

Depuis plusieurs dizaines, d'années, le pédologue utilise la photographie aérienne pour son travail de cartographie. Depuis quelques années une nouvelle technique a fait son apparition: la Télédétection. Plusieurs pédologues ont déjà travaillé avec cette nouvelle technique. Il était temps de savoir ce qu'elle pouvait apporter.

Pour cette raison, au dernier congrès de Moscou (1974) dans le cadre de la Commission V, s'était créé un groupe de travail «Pédologie et Télédétection».

Président: Tolchelnikov (URSS) - Secrétaire: Bialousz (Pologne) - Comité exécutif: Baumgardner (U.S.A.), Girard (France), Goosen (Pays-Bas).

Le Comité exécutif a décidé de réunir les pédologues s'intéressant à la télédétection lors d'un Colloque et a chargé M. Girard d'en assurer la direction.

L'objectif était de savoir ce que signifiait la Télédétection pour le pédologue afin de répondre à la question suivante: pour le Pédologue, à quoi sert la Télédétection? Et comment l'utiliser?

Ce colloque s'est tenu à Rome, au siège de la F.A.O., du 31 Août au 9 Septembre 1977. Le colloque, présidé par Mr. Bialousz, a été ouvert par Mr. Dudal, Secrétaire Général de l'A.I.S.S.

Mr. Howard, Chef de l'Unité de Télédétection à la F.A.O., a participé à l'ensemble des journées du colloque et a présenté aux participants son unité de traitement des images. Mr. Girard assurait la direction du colloque. Il était divisé en 7 sessions:

1. Eléments du sol directement décelables (Président: Mr. Janse, Pays-Bas)
2. Relations Sol-Eau, Sol-Sel (Président: Mr. Musy, Suisse)
3. Erosion, Etat de la Surface du Sol (Président: Mr. Pacheco, F.A.O.)
4. Paysage et Sol (Président: Mr. Howard, F.A.O.)
5. Utilisation de la Télédétection et de la Photo-interprétation pour la Cartographie pédologique (Président: Mr. Bialousz, Pologne)
6. Méthologie (Président: Mr. Naert, France)
7. Discussion Générale et Conclusion (Président: Mr. Brouwers, France)

Plusieurs points ressortent de cette dernière session:

— Il y a une urgente nécessité de créer ou d'accroître l'enseignement de la télédétection pour les pédologues, afin qu'ils puissent utiliser cette technique directement eux-mêmes et se rendre compte des possibilités de son utilisation.

— De nombreux aspects de la télédétection n'ont été que très peu abordés: en

particulier, les domaines du thermique et des micro-ondes, ainsi que les traitements numériques, diachroniques et multispectraux.

— Actuellement, la méthode la plus utilisée consiste à faire une photointerprétation sur des compositions colorées à partir de trois canaux de la même image.

— Il est utile que le groupe de travail continue ses travaux et que des colloques se tiennent encore sur ce même sujet.

— Une première bibliographie sur le thème «pédologie et télédétection» sera publiée avec les actes du colloque.

— Un inventaire des cours existants actuellement, et des matériels de traitements des images sera entrepris.

Une sortie sur le terrain, après une première étude des images satellites, a pu être faite dans la cuvette du Fucino, sous la direction de Mr. Romano. Cette sortie était couplée avec la visite de la Station de réception des images: Telespazio, où M. Marcolin recevait les participants.

L'originalité de ce colloque était de n'avoir pas constitué une longue série de communications. En effet, tous les après-midis étaient consacrés à l'étude, par petits groupes des documents apportés par les participants. Les exposés du matin pouvaient donc être précisés l'après-midi. Les questions posées ne s'adressaient pas uniquement aux auteurs des communications, mais aussi à tous les participants qui purent ainsi, dans un climat amical et studieux, accroître tous ensemble leurs connaissances grâce à l'examen de plus d'un millier de cartes, photographies, images satellites, radar, listages d'ordinateur...

On peut espérer qu'en incitant les pédologues à continuer leurs travaux et à les intensifier, on saura assez rapidement comment la télédétection peut être utile en pédologie. Il ressort de ce colloque plusieurs points:

— Les images satellites, correctement traitées, peuvent permettre d'établir des cartes d'unités de paysage. Ces dernières, interprétées par le pédologue, peuvent lui servir à établir des cartes des facteurs de différenciation du sol. Actuellement, il est difficile de détecter directement sur ces documents des éléments du sol ou des propriétés. Les processus ne peuvent pas être découverts.

— Les images satellites permettent d'établir un document de synthèse, à partir de cartes pédologiques pré-existantes, que celles-ci couvrent ou non toute la zone désirée, et soient ou non toutes à la même échelle.

— Les photographies à haute altitude permettent d'aller beaucoup plus loin que les images satellites dans la définition des unités de pédopaysage.

— Il va de soi qu'actuellement, on ne peut plus ignorer la télédétection pour l'inventaire des sols. Son utilisation semble très encourageante dans les régions où il faut aller vite et où il n'y a pas encore de documents relatifs aux sols. Il est évident que le travail de terrain est indispensable. Mais il peut alors être planifié.

— L'apport des images satellites est plus important dans les régions qui ne sont pas couvertes de forêts et où l'action de l'homme n'est pas trop ancienne, que dans les autres.

— L'utilisation de cette technique permet au pédologue de réviser certaines de ses idées, d'émettre de nouvelles hypothèses, voire d'établir de nouvelles classifications, et même de découvrir de nouveaux champs de recherche. On peut citer par exemple: le manque de connaissances précise sur la dynamique thermique des pédons, le difficulté qu'a le pédologue sur la terrain à définir la rugosité des sols, ou le peu d'intérêt pris par les classificateurs de la radiation thermique des sols alors que la radiation dans le domaine du visible (= la couleur) est assez utilisée.

Ce Colloque a surtout été utile parce qu'il a ouvert la porte à toutes les questions et qu'il a montré que presque tout reste à faire en matière de télédétection pour les sols.

Les actes du Colloque paraîtront en début 1978. Publiés par M.C. Girard, ils seront édités par l'A.I.S.S.

M.C. Girard

Aim, development and some research results of the international Working committee on soil fertility (Commission IV)

1. Aim, organization and experimental schemes

The intention of this international co-operation was to promote the integration of results of soil fertility research frequently incidentally put forward by means of the lay-out of field trials accompanied with standardized observations, analytical methods and various specialized researches. This general intention was consolidated in a proposal accepted by the international soil scientific congress at Paris (1956). The research of the working committee was performed under the auspices of the IVth Commission of the I.S.S.S.

The paper now given provides a survey of results achieved over a period of twenty years. The project can be defined as: «A study of the influence of physical, biological and climatological factors on the nitrogen condition of the soil and the nitrogen supply of the crops in the temperate climate of Europe».

Three experimental schemes marked with INV (*Internationale Nitrogen Versuche*), IDV (*Internationale Dauer-Versuche*) and ISDV (*Internationale Stickstoff Dauer-versuche*), have been set up in the course of years.

INV concerned the lay-out of eight one year series of trials (1958) using oats as a test crop and increasing applications of nitrogen (six levels): Rostock, Oldenburg, Ottersum (Netherlands Limburg), Louvain, Rauschholzhausen (near Giessen), Munich, Linz (Austria) and Ljubljana, thus situated from the north-west to the south-east of Europe. The trials belonging to one series (about 30) were well chosen so that a reasonable variation of soil conditions with respect to humus content, soil structure, texture a.s.o. was achieved.

The IDV scheme concerned the lay-out of twenty more comprehensive experiments continued during twelve years on different «Standorte» (= «habitats») with a fixed rotation of three test-crops, situated each year side by side (oats, potatoes, winter-wheat) and with four fertilization intensities ($N_0P_2K_2$, $N_1P_1K_1$, $N_2P_2K_2$, $N_3P_3K_3$), without organic manuring. Also these experiments were situated from the north-west to the south-east of the temperate climate of Europe. Besides a detailed standardization of all parts of the experimental scheme it appeared necessary from a preliminary investigation to effect a centralized supply of seeds and seed potatoes.

After four rotations of three years each (1957-1968) the after-effect of the four fertilization intensities and also the influence of stable manure were tested with potatoes as a test-crop. These effects were on the whole small (1969-1971).

The ISDV-series is now running on (1972 -).

The project was defined as follows: «Study of the soil productivity as to yield and quality in relation to soil conditions, to the climate of the habitat, to the nitrogen supply and to the crops». The project is essentially equal to the IDV-project, though some changes and amplifications were introduced.

Only one crop (summer barley, Union) of the three crops taken up in the rotation

was chosen as a test-crop. The second crop is winter-wheat whose variety is adapted to the conditions of the habitat and the third one is a crop with maximum dry matter production (f.e. sugar beets, mangolds, maize, middle-early potatoes). The straw of the barley object (60 q/ha dry matter given on time in the rotation to the crop of maximum productivity) is used as organic manure. There are 6 levels of nitrogen (N_0 - N_5) with straw-manuring and 3 levels (N_0 , N_2 , N_3) without organic manuring, with sufficient fertilizing of the other basic-nutrients. The choice of the habitats is no more limited to the soil type «grey brown podsolics» but is depending on the heaviness of the soil (clay, loam, sandy). Habitats situated outside the temperate climate are also taken up in the series. The total number is 24, spread over 23 research centres and 13 countries.

2. Documentation and available data

Besides an accurate reporting of 25 general meetings held so far regularly and of 8 more specialized meetings, annual reports were composed since 1961 on all obtained data supplied with some nitrogen-yield-curves. The documentation of all IDV-data achieved from the twelve-year research is of highest importance; 80,000 data are available and catalogued in this way that modern mathematical apparatus and methods can be applied for the evaluation of these results (soil and climate conditions, phenological observations to the three crops, yields, chemical compositions of plant and soil). This documentation has been placed at the disposition of all members of the working group by the computer centre of the Justus Liebig University Giessen and are also available for outsiders by the permission of the working group.

The data of the INV-series have been catalogued too. The soil types of the INV-series were tuned in to each other with the assistance of the «Landwirtschaftlich-chemische Bundersversuchsanstalt Linz».

The soil types of the IDV-series were characterized by the soil scientists G. Schmid (Munich), E. Brauer (Giessen) and H. Schiller (Linz), sometimes supported by the soil mapping institutes of the different countries. The results were published by G. Schmid. The soil profiles of the ISDV-series were characterized by the soil scientist V. Janik (Linz, † 9-12-1976).

3. A comparison of the productivity of different habitats on the one side and an integrated interpretation of the results on the other hand

A different development of soil fertility research influenced by soil conditions, climate and the area of the country also, not only manifests itself in the three experimental schemes, but also in the methodology chosen to solve the problems.

In the first scheme the possibility for an interpretation of yield differences caused by soil factors was stressed, while with the two other schemes an ecological study was aimed at the comparison between different habitats. The Netherlands development can be considered as an example of the school first mentioned with its phrase: «from a system of soil testing by means of single values towards a system of soil fertility analysis». From the Netherlands side the importance of combining the results of productivity research obtained on the different habitats was always stressed. The German development of soil fertility research was influenced by much more complex differences as to climate and soil conditions between the various areas. In consequence the German representatives stressed the importance of a comparison of the different habitats.

These different approaches of soil fertility research undoubtedly will further the progression in this field of knowledge. However, a separation of these standpoints is out of the question. It only concerns a distinction used as a «hat-rack» for arranging the results obtained by the members of the working group.

4. Comparison of the productivity of different habitats

a. Communications concerning the different habitats separately

It will be clear that these communications are the bases for comparing the results of the different habitats. In the first place however, the results are important for the agricultural practice of the area for which the relevant habitat is representative. Five examples may show that the responsible authors dealt with different aspects of the same problem, each following his own specific method of evaluating the results and his own interest.

G. Schmid (Munich) published «On considerations of fertility from the International Oecological long-term experiment 'Puch'» Complete tables are included for: soil conditions of four profile layers - rainfall, temperature and sunshine - yields of potatoes, wheat, oats (grain and straw) - amounts of the nutrients N, P₂O₅, K₂O, CaO and MgO taken up by the crops - nutrient balances.

Schmid restricted himself especially to a comparison of the yields between periods of three years each, taking the first period of three years as a preamble (the period shortly after a regular manuring with stable manure) and considering the other three periods as an after-effect. At first a considerable decrease in yield, increasingly with the second and third period occurred, but in the fourth period the yield increased again so that 88% of the yield in the first period had reached. It is a pity that Schmid does not involve the influence of the weather conditions on the yields in the course of years in his analytical considerations.

R.A. Bonjour and V. Lehmann (Liebefeld - Bern) pointed out that the yield decrease observed by them in the course of years, could be only interpreted by eliminating the influence of the large yearly weather variations. The authors restricted themselves to a calculation of the relevant standard deviations. It appeared that the influence of fertilizing (four levels) and of years (weather conditions) as well as the interaction fertilizing years on the yield of all crops were highly significant and that the scattering of yields decreased with increasing rates of fertilizers.

The report from P.W. Kürten concerning the habitat Dülmen/Westfalen has again a different character. The habitat can be characterized as a soil with in agricultural respect limited possibilities, a sandy soil poor in humus and nutrients, however with a relatively high water level, while the climate belongs to an Atlantic coastal climate. Though the IDV-habitat Dülmen was only running from 1962-1968 and an irregularity occurred in consequence of a necessary drainage improvement in the autumn of 1966, the report from Kürten communicates many useful data for comparing the results of different habitats: yields and botanical yield analyses, the useful effect of the N-fertilizer (in- and output) for the three crops, the uptake of nitrogen on the plot N₀ P₂ K₂ to be compared with the N- and C-relations of the soil and calculations as to the nutrient balances.

G. Rittmeyer communicated in the same systematic way the results of the IDV-experiment Linz - Hart (Österreichische Stickstoffwerke A.G.). Besides many important data some quality aspects are also mentioned: protein and starch contents, baking quality of wheat.

Finally the report of T. Stupica has to be mentioned concerning the results of the three ten years IDV-experiments in Slovenia situated in Bilje, Domzale and Rakican respectively. Though these habitats belong to the «grey brown podsolics», they developed into different soil scientific conditions in consequence of different ecological circumstances (climate especially). The climate diagrams according to Walter are striking. Stupica applied the analysis of variance and the factorial analysis for considering the influence of climate, soil and fertilization on the crops. The fertilization (four levels) was the most important factor. The second important factor was for oats the yearly different weather conditions, while for potatoes and wheat the habitat came on the second place.

All five papers communicated the balances of the nutrients N, P₂O₅ and K₂O (fertilizations minus uptake of the crops). These balances can give important indications about the relation between soil and plant.

Though a more conformable working method agreed before might have been more preferable for comparing and even generalizing the results, still it is not only worthwhile but also necessary to note the experience and the conceptions from each other.

b. Comparison of the influence of fertilization, climate and soil on the yield of the different habitats

Prof. Dr. E. von Boguslawski took much care for comparing the investigations on the productivity of the different habitats. In two papers the following lines of sight were given for starting such a comparison in a systematic way between the IDV-habitats Lubbeek (near Louvain), Völkrode (near Braunschweig), Rauschholzhausen (near Giessen) and Bern, thus different as to their geographic situation, over a period of 8 and 9 years respectively:

Characterization by means of the so-called «Index»-values (a method of analysis of variance). The sequence of decreasing influence was found for potatoes: fertilization (four levels), years, habitats and for both cereals: fertilization, habitats = years. The influence of the habitat was much smaller for potatoes than for the cereals.

Block diagrams representing the average yields of the three crops in the course of years for the four habitats. The decrease in yield on the plots without nitrogen came clearly to the front.

Application of the so-called «class-correlation-method» for obtaining a first impression about the influence of the yearly fluctuations of temperature and rainfall during the vegetation period on the yield (class III is the average value as to temperature and rainfall respectively all over the years 1957-1966 for the decades of March to August. The classes I and II give the lower and IV and V the higher values). In this way it appeared for the habitat Rauschholzhausen that high yields for winter wheat (1959, 1960, 1962) were especially furthered by moderate moist up to dry weather conditions independent of the temperature. Pronounced moist years (1958, 1965, 1966) resulted in low wheat yields. Oats responded much more to an interaction bet-

ween temperature and rainfall while for potatoes an alternation of warm and cool and of moist and dry respectively appeared to be profitable.

Adjustment of the broken lines representing the yields in the course of years for the fertilization levels respectively by means of the formula:

$$Y_k = Y \left(1 + \frac{K}{100}\right) \quad K = 10 n (1 - 10^{-0.111 \cdot n})$$

(n is a mark for the character of the trend in the course of years).

The trend of the level III (N, K, P_2) may be chosen horizontal, II and IV gave as a rule more or less negative and positive trends respectively. I. was negative. In this way a measure of the influence of the mineral fertilization on the soil fertility of the habitats could be obtained. It might be instructive to compare the trends for yield and nitrogen uptake of the different crops with each other.

For the adjustment of the yield curves as a function of the fertilization (especially nitrogen) the formula from von Boguslawski - Schneider was chosen (chapter 5.a.). Some examples were represented for the four habitats on the same graph supplied with a diagram for the parameters: M, m, i, n, z.

The balance of nutrients (fertilization minus uptake by the crop). The habitat Rauschholzhausen was taken as an example for the balance of the nutrients N, P and K in the course of the years 1957-1966. These balances are not only important to obtain some information on the character of the soil constituents but also on the influence of outside factors on them. Thus *Dr. Bretschneider - Herrmann* found by means of a regression analysis that especially the moisture conditions of the soil influenced the balances.

Chemical plant analysis of the crops. Von Boguslawski gave in his paper all relevant average data for the four habitats mentioned. The different demands of the crops are striking.

According to the general lines mentioned above two dissertations were issued from the «Institut für Pflanzenbau und Pflanzenzüchtung der Justus Liebig Universität Giessen» in which some aspects were considered more in detail and were evaluated deeper, namely from Béla Sebestyén and from Mohammad Reza Mikhitchi.

Béla Sebestyén: «Beziehung zwischen Witterung und Ertrag - Eine Auswertung der Internationalen Dauerversuche (IDV)» (Relations between weather conditions and yield). The working methods and the results are very briefly summarized as follows.

The problem and the working methods were explained with oats yields and weather data from the IDV-habitat Rauschholzhausen over a period of eight years, followed by the communication of the results with oats, potatoes and wheat. After that the same procedure was pursued for the habitat Linz and finally the relevant weather influences on the yearly yields were tested with eight habitats of the IDV-series together.

A first orientation as to adequate temperatures and rainfall in relation to the yield over the years 1958-1965 was obtained by means of the class - correlation-method. After that a trend correction was practised using the formula composed by the author:

$$Y_t = Y_t \left(1 + \frac{K}{100}\right) \quad K = 10 n (1 - 1^{0.253 \cdot t}) \text{ or}$$

$K = 10 n (1 - 10^{-0.111 \cdot t})$, accompanied with correlation and regression calculations. Finally the following weather factors were sized up: the respective temperatures of April, May, 1 + 2 decades of June, 3rd decade of June + July and the rainfall of May and June + July respectively. The meteorological analysis with the oats resulted in the following indications: for the period sowing till emergence relatively high temperatures were demanded — from emergence till tillering temperatures below the average were best — from tillering till shooting up the influence of the temperature on the yield was positive, while the period between shooting up and ear emergence demanded lower temperatures — for the period ear emergence till yellow ripeness relatively cool weather and little rainfall were demanded. It was a remarkable result that a meteorological analysis using a calendar classification afforded a higher significance than with the use of phenological data. The same remark was made with other investigation by *Dr. Bretschneider - Herrmann*.

Considering the three crops oats, potatoes and winter wheat together, the author concluded that oats and potato yields showed much correspondence in the course of years, while wheat yields however manifested a different behaviour.

Comparing the habitats Rauschholzhausen and Linz the former represents a cold and the last a warm climate. A striking result was that in conformity with the influences of temperature and rainfall on the yield obtained for the different months, the yields of the habitats Linz and Rauschholzhausen drew near to each other in case of extreme years, which meant relatively low May and June/July temperatures for Linz (1961 and 1962) and high temperatures in the same month for Rauschholzhausen (1958, 1959 and 1965). In general the oats yields (variety Firlbeck II, Regent) were too low on the habitat Linz, high however in Rauschholzhausen.

Finally Sebestyén gave a chapter concerning the climate conditions of eight habitats (Rauschholzhausen, Linz, Rostock, Puch, Ottersum, Braunschweig-Völkenrode, Stuttgart - Hohenheim and Lubbeek near Louvain) referring to *K. Bürger* («Zur Klimatologie der Groszwetterlagen - Berichte des deutschen Wetterdienstes, nr. 45, Band 6, Offenbach 1958») and about the interpretation of their yield differences according to his working method. The conclusion was that high oats yields were to be found there where April was gentle, May cool, June warm and the temperature for July an average represented. The rainfall in May had a negative influence and in the summer lightly positive.

Mohammad Reza Mikhitchi: «Erträge und Nährstoffbilanzen, auf vier Standorten der Internationalen Ökologischen Dauerversuchsreihe» (IDV) (Yields and nutrient balances of four IDV-habitats). The habitats Rauschholzhausen, Linz - Hart, Völkenrode and Grosz-Gerau, chosen in dependence on the heaviness of the soil, were subjected to a comparison concerning yield and nutrient balance.

Grosz-Gerau, a light sandy soil, gave the lowest yields for the three crops. Völkenrode, a loamy sandy soil, gave especially high yields of potatoes. Rauschholzhausen, a loamy clay soil, took the cake for wheat and oats yields, while Linz - Hart, a clayey loam soil, nearly reached these top yields for wheat only. A special study was made about the standard deviation of the yearly yields (S%) as a characterization of the habitat. The balance of the fertilization level $N_9P_3K_2$ (fertilization minus uptake for three nutrients) was also mentioned a characteristic mark of the habitat. Many important data were brought together usable for further studies. Finally the author considered the trends of the yield curves in the course of years for the four fertilization levels and especially for the plots $N_9K_2P_2$ using the simple regression formula:

$Y = a + bx$. In this way a rough approximation was obtained for a distinction between the change of soil fertility and the influence of the weather conditions calculated from the scattering around the regression line.

c. Comparison of habitat characteristics by means of quality factors of plant and soil

Samples taken from plant and soil respectively by the conductors of the IDV-experiments and sent to the researchers involved, were often used for investigations about the influence of soil and meteorological factors on certain properties of the soil itself (micro-biological) and of the crops respectively (quality of wheat, oats and potatoes, chemical composition and quality of straw). From outside our working group appeals were also made to obtain samples for scientific purposes. Thus wheat grain samples from the habitats Ottersum, Grosz-Gerau, Rauschholzhausen, Versailles, Domžale (Jugoslavia) and Linz were sent to G.J. Doekes at his request for the use of a thesis «Wheat grain proteins - Analysis of varieties by starchgel electrophoresis». One of his conclusions was: «It is shown in *Triticum aestivum* that the endosperm protein composition, as far as it is reflected in the electrophoretic pattern, is not affected by variations in agricultural or climatological conditions during growth».

Prof. Dr. W. Sauerlandt published six papers concerning «Untersuchungen über Getreidestroh» (investigations about cereal straw). The first paper concerned the mineral components of oats straw from 14 habitats over three years (C, N, C/N, P, K, Ca, Mg Fe, Mn, Cu, Co, Mo). It appeared that the scattering of the contents of the mineral component of oats straw caused by different weather conditions equaled or even exceeded the fluctuations to be expected in consequence of a different fertilization. Two papers concerned the prolin contents of cereal straw (wheat and oats) and the contents of nitrogen and of aminoacids from oats straw in samples taken from the habitat Völkenrode. The extreme years 1959 and 1962 as to the weather conditions were especially considered. The fourth paper concerned the exchange capacity of wheat straw and oatsstraw in relation to the carbon content. It appeared a.o. from the analytical data of samples from 14 habitats (average over fertilization levels and years) that the quotient «exchange capacity: carbon content» variation for oats straw was much larger than for wheat straw. The fifth paper gave a critical study, also from an analytical point of view, on the acidity of oats straw (variety Firlbeck II) and of the wheat straw (variety Carsten VI). Finally a paper was published on the copper content of oats and wheat straw from the IDV-habitats.

E. Primost and G. Rittmeijer published two papers about the baking quality of wheat samples (Carsten VI) from the IDV-habitats. It appeared that the baking quality (baking test, protein content, «Quellzahl») were largely influenced by three factors: fertilization stage, weather conditions and habitat and their interactions. The influence of the fertilization level on the protein content came clearly to the front in a graph showing the curves averaged over three or four years for ten habitats. This influence was absent for Liebfeld - Bern, while the habitat Linz had a top-position.

P.W. Kürten and W. Ganssmann wrote an extensive paper on the influence of the habitat and the fertilization on the yield and the quality of oats for 14 habitats over three years. The following quality factors were considered: amount of husk, crude fibre content 1,000 grain weight, crude protein and crude fat content, nutrient content of the grains, colouration and smell, signs of sprouting, milling quality and feeding value.

Chr. Pätzold c.s. studied the quality of potatoes from the IDV-habitats for the year 1964.

Though qualitative properties of crops might be taken as characteristic marks for combining different habitat behaviours, these were mostly used by the authors concerned in a comparative way. In this respect it has to be appreciated that on the initiative of Prof. Dr. P. Limburg the «yield analysis» and the (micro) phae-nological observations connected with it, were introduced for the ISDV-series with the crops barley (test-crop) and partly also for the wheat crop.

Besides quality investigations on crop samples from the habitats also the research on the (micro)-biological quality of the soil performed by Prof. Dr. H. Glathe and afterwards by Prof. Dr. E. Küster has to be mentioned. Various methods of investigation gave an impression about the biological activity of the soil under different growth circumstances (DHA, CO_2 -expiration, mineralisation rate and perhaps the humus content itself).

5. Combination of the results obtained on the various habitats and the interpretation of their differences

Analytical data of soil and plant samples, characteristics of the soil profiles, weather conditions of different periods, a characterization of the climate on the whole a.s.o. can be used as specific marks for combining the results of the separate habitats. Different mathematical methods were employed and different lines were followed to obtain more generalized results.

a. Mathematical formulation of the nitrogen yield curves

A special, so-called mathematical, committee is on set times deliberating about working methods to be followed on the basis of the results successively achieved. The first task of this committee was to reach an un-

derstanding for determining the parameters of the nitrogen-yield-curves obtained in the INV- and IDV-series. Particularly *Dr. A. Klings* (Osterreichische Stickstoffwerke A.G., Linz) and *Prof. Dr. B. Schneider* (University, Giessen and afterwards Medizinische Hochschule, Hannover) applied different formulations on the available data.

Finally the formula from von Boguslawski - Schneider has been chosen for the curves of the INV-series and the IDV-series as well

$$Y = M \cdot 10^{-z \left(\log \frac{x+i}{m+i} \right)^n}$$

With this formula parameters were provided that might successfully be used for the relation with soil factors and with meteorological data.

b. Integration of the results of the INV-series.

Six of the eight series were subjected to an aspect analysis by *Dr. Th. J. Ferrari* (Institute for Soil Fertility Haren (Gr.), The Netherlands). For this purpose fourteen soil factors were introduced as independent factors and thirteen as dependent factors being characteristic for plant growth and yield. After this analysis the following soil factors mentioned in sequence of decreasing universality were important in relation to the yield differences in the experimental year 1958; soil structure, total N- and C-content (organic matter), mineralisation rate of nitrogen, clay content and p_{H_2} . This qualitative indication of the dominant factors was followed by performing a «multiple regression analysis» for the six INV-series separately. It appeared that on an average only 30% (20 - 50%) of the total variance could be interpreted by the influence of the chosen independent factors. According to the experience obtained with other investigations by using the same experimental scheme, this percentage varies from 25 to 85%. It has to be stressed that too little time was spent for discussing the results of the INV-series as to their methodical importance and their perspectives.

The INV-Linz separately was compiled by *Schiller and Lengauer* by means of a numerical graphic method. This was especially successful to the yields of the No-plots, the variance of which could be interpreted for 60 - 74% with the factors: clay content, p_{H_2} , b-value of the nitrogen-yield-curve according to Mitscherlich, and the soil type.

On the whole the participating leaders of the experiments made use of the results for many local problems. Thus *G. Schmid* (series-«München») published six papers, five of which were relating to in-and output of nitrogen fertilization on oats and its influence on quantity and quality of proteins.

Though the evaluation of soil testing methods for practical purposes was not aimed at by this co-operative research, all the same the opportunity was used for comparing analytically different methods applied on the laboratories at Groningen, Louvain, Linz, Oldenburg and Rostock. For this purpose 250 soil samples taken from the INV-trials mentioned above, were analysed on these five laboratories according to their own methods (p_{H_2} , P_2O_5 , K_2O , MgO with chemical methods; at Rostock for the determinations of P_2O_5 and K_2O not only chemical methods were applied but also the biological method according to Neubauer). Ferrari operated the obtained data by composing a correlation matrix followed by an aspect analysis. Methods well standardized in the same way (f.e. p_{H_2} -KCl) or essentially comparable (f.e. exchangeable cations determined in some way or another) gave in general results highly correlated for the different laboratories. The «Neubauer» method manifested an aspect on itself, to a less extent likewise with respect to a watery extraction method applied at Groningen for the P_2O_5 -determination.

Though a comparison like this is important in the first instance, field trials have the last word for making a choice between the different methods of soil testing. Our international co-operation on soil fertility does not meddle with this specific branch of soil fertility research. Nevertheless intensive discussions were sometimes held on the different more or less fundamental approaches to this field of knowledge, especially in case the basic fertilization of the IDV- and ISDV-series had to be fixed. The following approaches had to be distinguished; soil chemical — soil biological (pot experiments supplied with a consideration as to the uptake of nutrients during a rotation) and the lay-out of adequate field trials guided by chemical, physical and biological determinations of soil and plant.

The INV-series concerns in a way the last mentioned approach. With respect to the biological approach *Prof. Dr. von Boguslawski* carried out many vegetation experiments in Mitscherlich pots. The influence of increasing nitrogen fertilization on the yield of oats was studied with soil samples taken from the various habitats (sometimes underground samples too). Also investigations concerning want of certain elements were made. The results of these experiments in comparison with the conventional chemical soil testing methods were useful to the appointment of the basic fertilization of the IDV- and ISDV-habitats.

Vegetation experiments were made in some research centres. However, the sequence of the nitrogen-yield-curves was found different. A co-operative investigation on account of this problem was done by the research centres Groningen, Oldenburg and Rauischholzhausen. This successful co-operation resulted in a paper by *A. Vömel and F. van der Pauw*. The proportion of the soil-sand mixtures usually applied with pot-experiments according to the method of Mitscherlich on the one side and the frequency of watering on the other hand had an important influence on the results. For comparing the results of pot-experiments carried out at different research centres the methods used have to be described accurately.

c. *Dr. B. Bretschneider - Herrmann* especially exerted himself to find out mathematical methods for combining the results of all habitats distinguishing the influences of soil, weather conditions and climate on the yield. A first overall survey was composed by him in *Z. Acker und Pflanzenbau*, 133, p. 13-35 and also in a «Report on the international long term soil productivity measurements» delivered to UNESCO. In this survey a.o. graphs were given in which many characteristic soil marks were comprised for all habitats separately (soil texture, p_{H_2} , T-value, N- and C-content with their ratio, p_F 2.0 and 4.2 with the useful field capacity) supplied with climate graphs according to-Walter. Besides average yields for the three crops (with four fertilization in-

tensities) were given in diagrams for 18 habitats together in the sequence of increasing yield. Attention was paid not only to soil factors but also to meteorological factors, especially between the yields yearly obtained. Some qualitative results more or less supported by regression equations together with calculations about the significance were summarized for potatoes with calculations about the significance were summarized for potatoes (yield influenced by the summer day length), wheat (especially a positive relation to the clay and loam content of the soil) and oats (relatively good adaptation to the different habitats, but to a larger extent influenced by the yearly weather conditions). Afterwards Dr. Bretschneider made many efforts to go more into details, all important, also in case the aims were not reached. In a lecture delivered on «the yields and nutrient uptakes of the potato variety «Voran» in the IDV» to a symposium of «the European Association for Potato Research» Bretschneider - Herrmann introduced the method of «stepwise regression».

d. The retired Director F. Nieschlag (Oldenburg) aimed from the beginning of the experiments at obtaining specific factors of soil fertility. The INV-series situated in the Oldenburg area provided data for getting specific values for the «geest»-soils. The factors clay content, C- and N-content, C/N-quotient (quality of the humus) especially determined the yields. A strong relation was found between the quotient (100 N)² and the values used by the German soil valuation committee («Ackerschätzungszahlen»). Afterwards Nieschlag delivered a lecture titled «Die Struktur des Bodens als Wertmesser der Bodenfruchtbarkeit - eine Studie über die IDV-Serie 1957-1968».

The C/N-quotient appeared to be a standard of value for the soil structure (sufficient provision of the soil with oxygen and a rapid removal of carbondioxyde). A good correlation was found between the relative C/N-quotient of the soil and the relative average cereal yields of the IDV-habitats. This correlation was only found in case the carbon and nitrogen contents were determined in soil samples from the C-layer of the light soils and from the upper layers of heavier soils. The theory on which this different soil sampling was based, concerned the influence of the climate on the soil in course of centuries. Nieschlag considers this result highly important and requests critical remarks.

Mr. Boon member of the committee for the Soil Service of Belgium in Louvain, took the results of his INV-series and of the IDV-habitat in Lubbeek as a starting point for considering the nitrogen condition of the different Belgian soil types. For this purpose the content of soluble nitrogen compounds in the soil was determined too in relation to the humus contents and dependent on weather conditions for the different crops. This working method means a soil scientific enlargement of the INV-, IDV- and ISDV-investigations over a large area.

The combination and the interpretation of the different habitat results need not to be restricted to the yields of the crops. Thus Schiller and Lengauer ascertained that the degree of potassium supply of potatoes (a measure for the quality) could be interpreted for all IDV-habitats together by exchangeable potassium content of the soil and the degree of the (wet) potassium fixation.

Coming back to the chapter 4.b it has to be ascertained that Prof. Dr. E. von Boguslawski with respect to the comparison of the habitat results was also on the way to a combination of the IDV-results applying a variance analysis, mentioned the «method of the Index-values» and distinguishing in this way the relative influences of the factorial complexes «fertilization», «years (weather conditions)» and «habitats» and their interactions on the yields of some IDV-results together. The application of the so-called «class-correlation-method» was found also useful for obtaining a first impression of the influence of the yearly fluctuations of temperature and rainfall on the yields. Béla Sebestyén continued building an integration of results between a range of habitats.

6. Some general remarks which might be essentially important considering the field experiments of the international committee

a. C.T. de Wit (Wageningen) gave many considerations and calculations to predict the highest possible yield depending on the photochemical radiation («Photosynthesis of leaf canopies» - Centre for Agricultural Publications and Documentation, Wageningen, Agricultural Report nr. 663, 1965). The average maximum yields which were achieved on the IDV-habitats situated from 46° to 54° NL amounted to 33, 48 and 42% of the highest possible yield mentioned for potatoes, wheat and oats. From this it appears that the photochemical radiation was not a limiting factor under our meteorological and soil conditions. On a whole and in the first instance we have to pay attention to the following complexes of factors: soil conditions, heat, moisture conditions and their interactions.

b. It seems very important to know something about the correlation of the yield determining meteorological factors of the various habitats in one experimental year. The so-called «intra class correlation coefficient», (R.A. Fisher «Statistical methods for research workers» — Oliver and Boyd, Edinburgh 1946, 211-247) might be used for this purpose. We applied a more conventional method on the basis of different variances that could be determined taking into consideration the data from twelve habitats over a twelve year experimental period. For temperature and rainfall during the growing period we calculated respectively 62% and 53% (range from 0 - 100%). The same calculation was applied for the yields of the crops themselves: potatoes, oats and wheat respectively. For No (without nitrogen fertilization) the values 34, 32 and 32% were obtained and for N_{opt} respectively 18, 20 and 30%. It appeared that these so-called K- values for the yield were extremely low, while these values were rather low for temperature and rainfall. There did not seem any indication that the yield differences in one year had something to do with the direct differences in temperature and rainfall.

c. Considering the «productivity of the soil» a distinction was frequently made between the yield determining factor complexes: soil, years (weather conditions) and climate. Herewith the total meteorological influence on the yield variance can more or less arbitrary be split up into an influence of the weather conditions (in our case over a period of twelve years) and an influence of the climate.

Furthermore, looking at the ranges of the different important soil factors which play a role in the INV-series as well as in the IDV-series, we dare to introduce the standard deviation derived from the INV-series (soil factors only) into the IDV-series, so that the complex soil/climate deviation with the IDV can be split up into the standard deviations for soil and climate separately.

The following results for oats yields were obtained (with optimum fertilizing). The total standard deviation for the grain yield of the IDV-series (S%) was 35.5. The relative variances for the factorial complexes «soil», «weather» and «climate» separately appeared to be 13.0, 64.5 and 22.5% respectively. For the dry matter yield (total standard deviation 29.4) the same relative variances were 19.9, 72.9 and 7.2% respectively. The specific influence of the climate on the variance of the grain yield was remarkable. The most important result was the very large influence of the yearly weather condition on the yield fluctuations.

d. The consequence of the results mentioned sub *b* and *c* is that the yield fluctuations obtained on the separate habitats in a range of years were already achieved in a couple of years on all habitats of the temperate climate together. Advantage might be taken of this fact with respect to an interpretation of the yield differences in good time.

e. It was frequently observed that the nitrogen fertilization resulted in a decrease of the standard deviation (S%) of the yield fluctuations. The large variance decrease within the INV-series in consequence of nitrogen fertilization was especially striking. The S% of the grain yields of oat decreased from 26% to about 13%. This meant a variance decrease of 76%. The IDV-series considered as one series of which the yields over the experimental period of twelve years had been averaged (elimination of the influence from yearly variations) showed quite another picture. The decrease of variance for the grain yield of oats in consequence of fertilization with nitrogen amounted only to 26%. These amounts were quite different as to the dry matter yields of oats in consequence of fertilization with nitrogen amounted only to 26%. These amounts were quite different as to the dry matter yields of oats, namely a variance decrease obtained for the INV-series of 69% and for the IDV-series of 53%.

In all cases the interaction between nitrogen and other yield determining factors affects the decrease of the variance. Likewise the change of the variance decrease for different crops, different parts of the plants under different conditions may give indications, at least hypotheses as to the relevant yield determining factors. Thus the large variance decrease of the INV-yields in consequence of nitrogen fertilization indicates that the amounts of soluble nitrogen compounds originally present in the unfertilized soil were very different on the plots belonging to the series. These considerations may be supported by having a look not only at the S%, but also at the S (absolute values).

f. The importance of the investigation of the international working committee on soil fertility might be increased by the formation of small working groups studying different sub-problems. Relevant proposals were made for a special meeting of the working committee.

International Working Committee on Soil Fertility

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Oosterweg 92, Haren (Gr.), The Netherlands

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A list of Publications and a list of unpublished reports related to the work of the Committee can be obtained from the Secretary.

P. Bruin

**INTERNATIONAL RELATIONS
RELATIONS INTERNATIONALES
INTERNATIONALE VERBINDUNGEN**

International Workshop held in Brazil to discuss and revise Soil Taxonomy relative to Tropical Soils

Soil Taxonomy has been developed by the Soil Conservation Service of the U.S. Department of Agriculture and its collaborators primarily to provide satisfactory placements for the soils of the United States, Puerto Rico and the U.S. Virgin Islands. The system, however, has the inherent quality and potential to be applied at a world-wide scale. Soil Taxonomy is open-ended; new knowledge about soils can be accommodated and new taxa be incorporated. (To this end, the Soil Conservation Service has created the necessary mechanism to review and disseminate proposed alterations and additions).

It is becoming more and more evident that certain taxa provided in Soil Taxonomy for soils of the intertropical region should be amended. For example, Soil Taxonomy has insufficient scope regarding tropical soils with «low activity clays». These are soils in which the clay fraction is dominated by 1:1 lattice clays, mainly kaolinite, and by iron and other oxides. In the Alfisols and Ultisols, as well as in some other orders, soils characterized by low activity clays are recognized as separate taxa only at the sub-group level. In view of the importance and wide extent of such soils in tropical and subtropical regions, this is considered inadequate.

In 1976 an international committee was, therefore, constituted to «upgrade» the Alfisols and Ultisols with low activity clays. This committee consists of approximately thirty soil scientists actively engaged in the study of tropical soils on the four continents and Oceania. Since its inception, Dr. Frank R. Moormann of the International Institute of Tropical Agriculture (IITA) in Ibadan, Nigeria has served as the chairman of the committee. As an initial working hypothesis, the committee is trying to identify the Alfisols and Ultisols dominated by low activity clays at the great group level, introducing «Kandi» (from Kandites) great groups in the appropriate suborders and using the diagnostic criteria of the present «Oxic» subgroups of Soil Taxonomy. Alternatives to this hypothesis, e.g., to elevate low activity clay soils to the yet higher levels of the suborder or order are under consideration and the repercussions on the structure of Soil Taxonomy are being evaluated. Particular attention is given to the separation of the diagnostic criteria of the present «Oxic» subgroups of Soil Taxonomy. Alternatives chemical properties and management characteristics.

Until recently the committee work was conducted mainly by correspondence. In 1977, however, groups of committee members got together on the occasion of several meetings. Most important among these was the International Soil Classification Workshop held in Brazil in June 1977 which provided an opportunity for key members of the committee to hold most productive work sessions and to inspect critical pedons in the field.

The Workshop was initiated and co-sponsored by the University of Puerto Rico (UPR), organized and hosted by the Servicio Nacional de Levantamiento e Conservación de Solos (SNLCS) of EMBRAPA, Brazil, and made possible by a grant from the U.S. Agency for International Development (AID) awarded to UPR.

Twenty-four soil scientists from outside Brazil representing eleven countries from all five continents and some forty Brazilian pedologists attended the Workshop and field tours. Among the more prominent participants were Dr. R.W. Arnold, Prof. J. Bennis, Dr. S.W. Buol, Dr. M. Camargo, Dr. R. Dudal, Dr. M.L. Leamy, Dr. J.E. Mc. Clelland, Dr. F.R. Moormann, Dr. P. Segalen, Dr. R.W. Simonson, Dr. Guy D. Smith, Prof. R. Tavernier, and Dr. G. Uehara.

Significant progress was made concerning the redefinition of taxa of Alfisols and

Ultisols with low activity clays. Discussions of more general scope regarding changes in Soil Taxonomy geared to tropical soils resulted in the identification of ten major problem areas. This relates to a so-called «state-of-the-art» study on the application of Soil Taxonomy in the tropics currently carried out by UPR under a grant from AID. In the context of this study, UPR is conducting a questionnaire survey with the objective to examine the adequacy and to identify deficiencies of Soil Taxonomy as regards tropical soils.

The field tour, superbly planned and executed by SNLCS, was one of the highlights of the Workshop. A total of 1,850 km were travelled in the states of Rio de Janeiro, Parana, Sergipe, Alagoas, and Pernambuco. Thirty-one pedons of Alfisols, Oxisols and Ultisols were inspected. The study of these soils allowed to evaluate the proposed new taxonomic concepts in view of the real world of soils and contributed much to the clarification of some controversial issues and to reaching a consensus. The discussions in the field were enhanced by well-prepared pits and by excellent analytical data provided by SNLCS, the Soil Conservation Service, Cornell University and the University of Hawaii. The Workshop and the field tours may well serve as a model for similar future activities in soil classification of a cooperative and international nature.

Finally, it should be noted that the committee on Alfisols and Ultisols with low activity clay is, like Soil Taxonomy, open-ended. Contributions and relevant data from any source are welcome and will be considered in an effort to arrive at a universally acceptable redefinition of the respective classes of Soil Taxonomy. For further information, please write to Dr. F.R. Moormann, IITA, PMB 5320, Ibadan, Nigeria. Those interested in receiving the aforementioned questionnaire prepared by UPR are invited to contact Dr. R. Guerrero, Dept. of Agronomy and Soils, University of Puerto Rico-RUM, Mayaguez, P.R. 00708, USA.

F.H. Beinroth
University of Puerto Rico

F.R. Moormann
IITA

New ASTM Subcommittee on Soil and Rock Pollution

The *American Society for Testing and Materials'* (ASTM) Committee on Soil and Rock for Engineering Purposes has organized a new Subcommittee on Soil and Rock Pollution. The new subcommittee held its first meeting on 16 February 1977 in Bethesda, Md.

The new Subcommittee will develop standards for definitions, recommended practices, and test methods related to the processes by which the soil and rock interact with a wide variety of liquid wastes or leachates from solid wastes. Also to be considered will be pollution of land areas and surface-water bodies as a result of erosion of soils or of solid wastes and the sampling and testing of solid wastes, many of which have soil-like characteristics. Because the liquid wastes or leachates from solid wastes may percolate from some surface disposal source down through the unsaturated soil or rock, and may be retained in that zone or may reach the water table and pollute the ground water as well, the activities of ASTM Committee on Water and of the new Subcommittee on Soil and Rock Pollution will be closely coordinated.

Because of the increased regulation of waste disposal into surface-water bodies and a variety of other reasons, many wastes—including sewage sludge, waste water, toxic and radioactive fluids, oil field and geothermal brines, cattle feed-lot wastes, mine tailings, dredged materials, and chemical and other industrial process fluids — are being disposed of at the land surface, in surface ponds or pits, or in injection wells.

Another potential source for contamination of ground water, as well as of soil and rock, is the rapid increase in the use of septic tanks, now estimated at over 13 million private installations serving over 50 million people in the U.S.

Refuse dumps and extensive landfill operations in most urban areas are potential

sources of pollution through leaching of the solid wastes. In rural areas, the present practice of extremely heavy application of fertilizers, herbicides, and pesticides provides potentially serious pollution problems.

With most of the previously mentioned pollution sources, the soil or rock acts as a filter as percolation takes place and some of the contaminants are removed. In the unsaturated zone above the watertable several processes may take place-aerobic biological degradation and the process of chemical absorption, wherein some substances can be absorbed by or ion-exchanged with the soil or rock materials, for example. Much yet needs to be learned about these processes and the new Subcommittee expects to add much knowledge to the subject through sponsorship of pertinent symposia and research and development leading to standard methodology.

Engineers and scientists interested in joining the activities of the new ASTM Committee D-18.14 on Soil and Rock Pollution should contact its chairman, Professor Thomas F. Zimmie, Rensselaer Polytechnic Institute, Civil Engineering Department, Troy, N.Y. 12181, U.S.A. .

TRAINING COURSES COURS DE FORMATION FORTBILDUNGSKURSE

Water, Soil and Forest Utilization and Conservation

8 March to 17 May 1978, Sydney and Wagga (New South Wales), Australia.

This course is designed to obtain theoretical and practical knowledge of small storage works for domestic and livestock watering purposes.

Information: from the nearest Australian diplomatic mission or from the Australian Development Assistance Bureau, Canberra.

Remote Sensing Applications in Agriculture and Hydrology

November/December 1978, Ispra, Italy.

Information: Secretariat Ispra-Courses, Centro Euratom, 21020 Ispra (Va), Italy.

Course on Land Drainage

August 14 - December 1, 1978, International Agricultural Centre and International Institute for Land Reclamation and Improvement, Wageningen, The Netherlands.

Information: International Agricultural Centre, P.O. Box 88, Wageningen, The Netherlands.

Applications of Remote Sensing Techniques in Soil Survey

Duration: 12 to 16 months. International Institute for Aerial Survey and Earth Sciences (ITC), Enschede, The Netherlands.

Information: ITC, P.O. Box 6, Enschede, The Netherlands.

Irrigation Agronomy

June 10 - August 15, 1978. Colorado State University, Fort Collins, Colorado, USA.

The course is designed to acquire knowledge and practical experience on water management and crop production. Topics include: plant, soil and water relationships, types of irrigation systems, water quality, suitability of soils for irrigation, drainage requirements, land reclamation and fertilizer use with irrigation.

Information: Mr. R. Affleck, International Development Staff, U.S. Department of Agriculture, Room 3552, South Building, Washington, D.C. 20250, U.S.A. .

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

1978

Séminaire sur l'altération des roches silicatées, organisé par l'Ass. Française pour l'étude du Sol, au CNRA, Versailles, 7-8 février, 1978.

Renseignements: AFES, CNRA, Route de Saint-Cyr. 7800 - Versailles, France

Workshop on Assessment of Erosion in USA and Europe, Ghent, 27 Feb. - 3 March 1978.

Information: Prof. Dr. M. De Boodt, Faculty of Agric. Sciences, Coupure Links 533, B-9000 Ghent, Belgium.

Soil and Plant Aspects of Land Reclamation, joint meeting of the British Society of Soil Science and the British Ecological Society, 11-12 April, 1978. Possible venue, York University.

Information: Dr. D.V. Crawford, Univ. of Nottingham, Sutton, Bennington, Loughborough, LE12 5RD, England.

12th International Symposium on Remote Sensing of Environment, Manila, 20-26 April, 1978.

Information: Dr. J. Cook, ERIM, P.O. Box 8618, Ann Arbor, Michigan 48107, USA.

82nd. Scientific meeting of the Soil Science Society of the Netherlands, Theme: Development of Peat Areas, 24-25 May, 1978.

Information: N.B.V., Marijkeweg 11, Wageningen, The Netherlands.

10ème Congrès des Irrigations et du Drainage, Athènes, Grèce, 26 mai - 3 juin, 1978.

Information: Secrétaire général, I.C.I.D., 48, Nyaya Marg, Chanakyapuri, New Delhi 110021, Inde.

10th International Congress on Irrigation and Drainage, Athens, Greece, 26 May - 3 June, 1978.

Information: Secretary General, I.C.I.D. 48, Nyaya Marg, Chanakyapuri, New Delhi 110021, India.

11th Congress of the International Society of Soil Science

11ème Congrès de l'Association Internationale de la Science du Sol

11. Kongress der Internationalen Bodenkundlichen Gesellschaft

Edmonton, Canada, 19-27 June 1978.

Theme: Optimum soil utilization systems under differing climatic restraints.

Thème: Systèmes d'utilisation optimum du sol sous différentes contraintes climatiques.

Thema: Optimale Bodennutzungssysteme bei unterschiedlichen klimatischen Grenzbedingungen.

Information: 11th ISSS Congress, Box 78, Sub 11, University of Alberta, Edmonton, Canada T6G 2E0.

Remote Sensing for Exploration of the Earth, its Natural Resources and Endangered Biosphere. Symposium organized by Comm. VII of the International Society for Photogrammetry, Freiburg, Fed. Rep. Germany, 3-8 July, 1978.

Information: Dr. H.J. Boehnel, Erbprinzenstr. 17a., D-7800 Freiburg, Fed. Rep. Germany.

Tenth International Congress on Sedimentology, Jerusalem, Israel, 9-14 July, 1978, under the auspices of: International Association of Sedimentologists (IAS); Israel Academy of Sciences and Humanities; Geological Survey of Israel.

Among the themes of the Congress are two topics of special interest to soil scientists, namely:

— Sedimentary aspects of geomorphology, paleoclimatology and hydrogeology including duricrusts and paleosols;

— Calcrete, past and present (criteria for recognizing calcrete in ancient sediments; environmental interpretation; age determinations).

Pre- and post-congress excursions in Israel, Cyprus and Turkey.

Information: Secretariat, 10th Int. Congress on Sedimentology, P.O. Box 16271, Tel Aviv, Israel.

Third International Conference on Permafrost, Edmonton, Alberta, Canada, 10-13 July 1978.

General topics: Permafrost Science and Permafrost Engineering.

Information: Dr. M.K. Ward, Executive Secretary, c/o National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6.

6th International Clay Conference, Oxford, England, 10-14 July, 1978.

Information: International Clay Conference, c/o Institute of Geological Science, 64/78 Gray's Inn Road, London WCX 8NG, England.

African Regional Conference of the International Geographic Union, Lagos, Nigeria, August.

Information: Prof. J. Kostrowicki, IGU, Kratowskie Przedmiescie 30, 00-337, Warsaw, Poland.

8th International Colloquium on Plant Analysis and Fertilizer Problems, University of Auckland, Auckland, New Zealand, 28 August - 1 September, 1978.

Major topics: problems of nutrient stress, problems of efficient fertilizer use, problems of plant analysis, problems of intensive horticulture.

Information: Dr. R.L. Bielecki, Plant Diseases Division, DSIR, Private Bag, Auckland, New Zealand.

United Nations Conference on Technical Cooperation among Developing Countries, Buenos Aires, Argentina, August-September, 1978.

Information: United Nations, New York, N.Y. 10017, U.S.A.

11th Congress of the International Potash Institute (IPI), on the occasion of the 25th Anniversary of its Scientific Board, Bern, Switzerland, 4-8 September, 1978.

Information: IPI, P.O. Box CH-3048 Worblaufen - Bern, Switzerland.

British Society of Soil Science, Annual field meeting, Exeter, 18-21 September, 1978.

Information: Dr. D.V. Crawford, Univ. of Nottingham, Sutton, Bennington, Loughborough, LE 12 5RD, England.

Symposium on Clay Minerals and Soil Fertility, Prague, Czechoslovakia, 18-22 September, 1978.

Information: Dr. J. Vanek, Research Inst. for Soil Reclamation, 25580 Prague 5, Zbraslow, Czechoslovakia.

8th World Forestry Congress, Djakarta, Indonesia, 16-28 October, 1978.

Information: Secretary General, World Forestry Congress, c/o FAO, Viale Terme di Caracalla, Rome, Italy.

International Symposium on the Use of Isotopes and Radiation in Research on Soil-Plant Relationships, Colombo, Sri Lanka, 11-15 December, 1978.

Organized by FAO and IAEA.

Information: International Atomic Energy Agency, P.O. Box 590 Kärntner Ring 11, A-1011 Vienna, Austria.

1979

The Mineral Nutrition and Storage Disorders of Temperate Tree Fruits, symposium organized by the International Society of Horticulture Science, East Malling, U.K., April, 1979.

Information: Dr. D. Atkinson, East Malling Research Station, Maidstone, Kent ME19 6BJ, United Kingdom.

11th International Congress of the International Union of Biochemistry (IUB), Toronto, Canada, 8-14 July, 1979.

Information: Secretary General IUB, Biochemistry - UMED, P.O. Box 520875, Miami, Florida 33152, U.S.A.

United Nations Conference on Agrarian Reform and Rural Development, Rome, July, 1979.

Information: FAO, Via delle Terme di Caracalla, 00153 Rome, Italy.

United Nations Conference on Science and Technology for Development, Aug.-Sept. 1979.

Information: United Nations, New York, N.Y. 10017, U.S.A.

8th Conference of the International Soil Tillage Research Organization (ISTRO), Stuttgart-Hohenheim, Fed. Rep. of Germany, 10-14 September, 1979.

Information: Dr. G. Kahnt, Inst. für Pflanzenbau, Universität Hohenheim, D-7000 Stuttgart 70, Fed. Rep. Germany.

14th Congress of the Pacific Science Association, Khabarowsk, U.S.S.R.

Information: Pacific Science Association, P.O. Box 6037, Honolulu, Hawaii 96819, U.S.A.

1980

26th International Geological Congress, Paris, 7-17 July, at the Centre International de Paris, Palais des Congrès.

Information: Secretariat, 26th International Geological Congress, Maison de la Géologie, 77-79 rue Claude Bernard, 75775-Paris, France.

NEW PUBLICATIONS NOUVELLES PUBLICATIONS NEUE VERÖFFENTLICHUNGEN

Uses of Soil Information Systems, Proceedings of the Australian Meeting of ISSS Working Group on Soil Information Systems, Canberra, Australia, March 2-4, 1976, by A.W. Moore and S.W. Bie (Editors), 12 papers, 1977, 103 p. with a microfiche with output of R.S. Cormack and J.D. Colwell.

This new book follows the proceedings of the first ISSS meeting in 1975 which covered general principles in the construction of computer-based systems for soil science. It goes a step further and illustrates in a series of case studies the role of soil information systems in everyday soil investigations. It also includes for the first time a thorough explanation of relational data structure in the context of soils and a discussion on display techniques for land resource data.

Price: Dfl. 17.50

Orders to: Centre for Agricultural Publishing and Documentation (PUDOC), P.O. Box 4, 6700AA, Wageningen, Netherlands.

(for Australia: Dr. A.W. Moore, CSIRO, Div. of Soils,
Cunningham Laboratory, Mill Rd., St. Lucia,
Qld. 4076, Australia).

Proceedings of Workshop on Plant Adaptation to Mineral Stress in Problem Soils, Beltsville, Maryland, November 22-23, 1976, by M.J. Wright and S.A. Ferrari (Editors), 33 papers, 420 p.

This Workshop on Plant Adaptation to Mineral Stress in Problem Soils was organized by the Plant Stress Laboratory of the Beltsville Agricultural Research Center and The Department of Agronomy of Cornell University to review the results of research and its applicability to the solution of world food problems. Its organization reflects the concern of scientists over the fact that world population has more than doubled in our lifetime, and the realization that increased research is urgently needed to reduce or eliminate factors that limit crop area, yield, and total production.

The 29 papers published in this book cover the five workshop sessions which consider chances of success in employing genetics to overcome unfavourable soil conditions. Major sections of the Proceedings concern: Soil Mineral Stress-Worldwide; Genetic Potentials for Solving Problems of Soil Mineral Stress; Soil Chemical Constraints in Tailoring Plans to Fit Problem Soils; Plant Efficiencies in the Use of Essential Elements; and Screening Methods. With an appendix.

Price: US\$ 3.00 (Checks should be made payable to Cornell University)

Orders to: Publications Mailing Room, Research Park, Building 7, Cornell University, Ithaca, NY 14853, U.S.A.

Applications of the Theory of Plasticity in Soil Mechanics, by J. Salençon, Ecole Polytechnique & Ecole Nationale des Ponts et Chaussées, Paris, Wiley Series in Geotechnical Engineering, 1977, 158 p.

Translated from the French edition (1974) by R.W. Lewis and H. Virlogeux.

This book brings together and presents all the aspects of the theory of plasticity which can be used in soil mechanics. Its object is to help the worker in soil mechanics to understand better how plasticity theory can affect his subject and to enable him to appreciate the meaning and usefulness of the computational methods available.

The first chapter is devoted to the presentation of the classical model of plastic behaviour, and to the possibilities of the application of this model in the case of soils. In the second chapter, the problems of elasto-plasticity are dealt with briefly. However, the author considers it essential to realize that the elasto-plastic problem is the basic problem as soon as plasticity (without viscosity) is introduced into the material behaviour; and that, as a consequence, it is essential to see for which conditions, under which hypotheses, and for which types of problems, we can return to the rigid-plastic scheme. This question constitutes the object of the third chapter.

The fourth chapter is devoted to a detailed study of the theory of plane limit equilibrium, the uses of which are very numerous in theoretical soil mechanics. Finally, the theory of limit analysis is dealt with in Chapter V.

Chapters III, IV and V are followed by one or several appendices in which are given developments which would have made the text too heavy.

Price: £10/\$19

Orders to: John Wiley & Sons Ltd., Baffins Lane, Chichester, Sussex PO19 1UD England.

Introduction to Soil Microbiology by Martin Alexander, Cornell University, New York, John Wiley and Sons, 2nd edition, 1977, 467 p., indexed, 26 figures, 26 tables.

This text approaches the subject of soil microbiology as an amalgam of microbiology, soil science and biochemistry. Dealing with the microorganisms present in soil and their activities bearing on soil fertility, plant growth, and the destruction of environmental pollutants, the book characterizes the soil microflora from the descriptive and functional viewpoints and examines the biochemical bases for soil processes. The author emphasizes agronomic, microbiological, ecological and biochemical approaches.

This second edition is not a definitive monograph but an introduction to soil microbiology. Three important changes have been made. There is a closer and more extensive scrutiny of environmental problems and how microorganisms destroy pesticides, organic wastes, and pollutants. Significant information on possible

toxics formed in soil by microorganisms is given and there is a chapter on microbial metabolism of pesticides and their effects on microorganisms.

Separate treatment is given to the various populations making up the soil community, carbon and nitrogen transformations, and the microbial metabolism of numerous other elements. The processes involved in the destruction of environmental pollutants and the maintenance of environmental quality are paid special attention. In each instance there is a detailed account of the responsible organisms, the biochemical basis for the reaction, and the practical consequences.

Orders to: John Wiley and Sons, 605 Third Avenue, New York, NY 10016, U.S.A.

Tropical Soils and Soil Survey, Cambridge Geographical Studies 9, by Anthony Young, Prof. of Environmental Sciences, University of East Anglia.

This is a book about tropical soils written from the point of view of the field soil scientist. The first section describes the environment conditions and processes of formation of tropical soils. In the second section, each of the main soil types found in the tropics is discussed in turn, including their morphology, genesis and agricultural problems of soil classification and evolution, containing an account of how tropical soils are treated in each of the major classification systems, including that recently adopted for the FAO/Unesco Soil Map of the World. The final section covers soil fertility, soil survey and land evaluation. It includes a discussion of methods of soil survey in less developed countries, and its role in land development planning.

Price: £ 15.00 net

Orders to: Cambridge University Press, Cambridge, U.K.

Clays and Clay Minerals in Natural and Synthetic Systems, by Bruce Velde, *Developments in Sedimentology*, 21, 1977, viii + 220 p.

This book uses the well-tested phase equilibria-facies method of analysis which has been so effective in metamorphic studies. It is now time to unify the information gathered from studies in soil science, sedimentary petrography and clay mineral synthesis in order to treat the physical chemistry of clay minerals as a whole. In this book the existing chemical analyses of pure clay minerals are used to establish which chemical systems can be used to describe the phase relations of clay minerals in natural systems. This allows one to define the compatible and incompatible assemblages of clay minerals which, in turn, allows the clay scientist to describe the chemical processes active in forming clay minerals in a given geological occurrence.

Price: US\$ 25.50/Dfl. 62.50

Orders to: Elsevier, Associated Scientific Publishers, P.O. Box 211, Amsterdam, The Netherlands, or Elsevier North-Holland, Inc., 52 Vanderbilt Ave., New York, N.Y. 10017.

Soil Chemistry, Part A: Basic Elements, edited by G.H. Bolt and M.G.M. Bruggenwert, Department of Soil Science and Plant Nutrition, Agricultural University of Wageningen, The Netherlands, 1976, xiv + 271 p.

This text, intended primarily for university instruction, provides a cohesive study of soil chemistry, an examination of the modern views in the discipline with a clear indication of the underlying basic chemistry involved. It provides quantitative applications illustrated with detailed examples, and outlines the scope of soil pollution phenomena as seen from the soil chemist's viewpoint.

In addition to its value as a textbook at an advanced undergraduate level, this work will serve equally well as an introduction to soil chemistry for professional scientists outside the field. More advanced topics will be treated in a forthcoming companion volume.

Price: US\$ 16.50/Dfl. 42.50

Orders to: Elsevier Associated Scientific Publishers, P.O. Box 211, Amsterdam, The Netherlands, or American Elsevier Publishing Company, Inc., 52 Vanderbilt Ave., New York, N.Y. 10017, U.S.A.

Application de la Télédétection à l'étude de la biosphère, par C.M. et M.C. Girard, 1975.

L'utilisation d'avions supersoniques, et surtout de satellites a permis l'essor de techniques d'enregistrement à distance: La Télédétection. La première partie de cet ouvrage donne l'information de base concernant la collecte et le traitement des données en fonction des différents domaines spectraux. Le reste est consacré aux méthodes d'interprétation des documents. Divers exemples sont analysés dans trois spécialités: l'agronomie, la pédologie et l'étude de la végétation et des structure agraires. Une part importante est consacrée à la pédologie et à l'agronomie. C'est un livre utile pour des étudiants en écologie, agronomie, pédologie, géographie et, aussi, à tous ceux qui ont à connaître le milieu naturel et ses méthodes d'étude.

Prix: Fr. 96

Commandes: Masson et Cie., 120 Bd. St. Germain, Paris VI, France.

La Genèse et l'Evolution des Sols sur Alluvions Marines, par A. Kawalec, Université de Varsovie, Institut d'Etudes Africaines. Varsovie, Pologne. 1977, 151 pages, 28 tableaux.

Parmi les sols développés sur alluvions marines récentes en Guinée, on distingue deux grands groupes de sols qui diffèrent entre eux, par leur genèse et leurs propriétés. Ce sont les sols de mangroves de la zone estuarienne et ceux de la zone littorale. Les sols de la zone littorale ne sont pratiquement pas connus et cette étude a pour but de combler en partie cette lacune.

En premier lieu, une étude bibliographique du sujet traité est faite, puis le milieu naturel du Koba où l'on a réalisé des études détaillées sur le terrain est décrit. La méthodologie montre en détail les travaux faits sur le terrain et au laboratoire. Sur la base des résultats obtenus l'auteur a discuté la genèse et l'évolution des sols sur alluvions marines littorales en Guinée. La classification proposée pour ces sols prend en considération la géomorphologie du terrain, les processus de maturation des alluvions et l'évolution des sols.

Commandes: Université de Varsovie, Institut d'Etudes Africaines, Rue Zwirki i Wigury 93, Varsovie, Pologne.

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Cours de Physique du Sol - Volume I, par S. Hénin, Professeur de Physique du Sol à l'ORSTOM, Paris, France. 1976, 159 pages, 58 tableaux, ISBN: 2-7099-416-0.

Cet ouvrage rassemble l'essentiel des textes constituant les cours de Physique du Sol du Prof. S. Hénin, et s'adresse à de futurs pédologues et à des élèves du 3ème cycle de géodynamique externe de l'Université. Les sujets les plus actuels de la physique du sol sont évoqués, en soulignant les difficultés auxquelles se heurtent les interprétations. Des schémas explicatifs élémentaires et intuitifs sont aussi utilisés. Le Prof. S. Hénin utilise comme références des expériences parfois anciennes, car elles illustrent souvent mieux les concepts de base même si on peut leur reprocher certaines imperfections. C'est d'ailleurs en mettant en évidence leurs imperfections qu'il est possible d'évoquer les problèmes actuels. Vouloir donner à cet enseignement un caractère unitaire, l'auteur a choisi comme modèle général d'explication la théorie capillaire. Grâce à elle, il est facile de passer des notions de porosité à la circulation des fluides. Mais cette attitude commode ne signifie pas que tous les phénomènes puissent être expliqués sur cette base, et il s'est efforcé de montrer, le cas échéant, les insuffisances de ce modèle.

Commandes: Service Central de Documentation de l'ORSTOM, 70-74, route d'Aulnay, 93140 Bondy, France.

Les Classifications des Sols, par P. Segalen, Services Scientifiques Centraux de l'ORSTOM, 70-74, Route d'Aulnay - 93140 Bondy, France. 1977, 175 pages, 51 tableaux.

Cet ouvrage constitue un examen critique des classifications des sols. Il fait connaître les nombreux systèmes qui sont proposés ou utilisés dans différents pays ou parties du monde, cela pour faciliter la mise sur pied d'un système à venir. Les solutions proposées sont à première vue très diverses. Mais, en fait, les options fondamentales se ramènent à deux: la classification doit-elle être génétique ou non? L'on verra, dans ce volume, que quel que soit le pays, la zone géographique, la nature des sols, c'est la seule véritable question à laquelle il faut apporter une réponse. On peut considérer qu'il existe deux types de classifications. Dans la première, on associe étroitement à la classification, les facteurs et/ou les processus de formation du sol. Dans la seconde, on se réfère uniquement aux caractéristiques des sols. Les classifications dites utilitaires n'ont été qu'à peine abordées, les systèmes numériques, pas du tout. L'auteur n'a pas voulu faire de distinction fondamentale entre une classification et une liste d'unités de sols. Dans la première, les unités sont reliées entre elles par un mode de coordination plus ou moins apparent, voulu ou non. C'est peut être le bioclimat, le développement du profil, différents processus, les constituants des sols. Mais plusieurs systèmes sont dépourvus de mode de coordination, et se présentent sous forme de liste. Mais, même une liste prend une tournure taxonomique ne serait-ce que par l'ordre de présentation adopté.

Commandes: ORSTOM, 70-74, Route d'Aulnay - 93140 Bondy, France.

Pédologie - 1. Pédogenèse et Classification, sous la direction de Philippe Duchaufour, Directeur honoraire du Centre de pédologie du C.N.R.S., et Bernard Souchier, Directeur du Centre de pédologie du C.N.R.S. 477 pages, 92 figs, 15 planches, 1977.

Cet ouvrage est le premier d'un ensemble de deux volumes destinés à remplacer l'ancien «Précis de Pédologie» maintenant épuisé. Une large place a été faite à la discussion scientifique des diverses théories présentées avant que l'auteur aboutisse à la formulation de conclusions valables. La science du sol présente deux aspects fondamentalement distincts, ce qui a permis à l'auteur de circonscrire aisément le contenu de chacun des deux volumes, de leur donner une originalité propre, chacun d'eux formant un tout, et enfin de prévoir une présentation générale différente pour chaque tome. L'aspect proprement «pédologique» de la science du sol, c'est-à-dire la dynamique des sols en fonction du milieu, ne pouvait être divisé — c'est une synthèse écologique qui devait être nécessairement confiée à un seul auteur, susceptible de présenter une classification écologique générale des sols, faute de quoi l'ouvrage aurait perdu son unité indispensable — ce premier volume a précisément pour objet l'étude de la pédogenèse et de la classification des sols. L'autre aspect de la science du sol concerne l'ensemble de ses propriétés, physiques, chimiques, biologiques, et fera l'objet du second volume concernant les Constituants et les propriétés du sol. Ainsi, les deux volumes de cette série «pédologie» font partie d'un même ensemble, mais chacun d'eux est en fait original, donc indépendant de l'autre; le volume Pédogenèse et classification est présenté en priorité, en raison de l'urgence qui s'impose de faire une mise au point de la classification écologique des sols.

Commandes: Masson S.A., 120 Bd. Saint-Germain, 75280 Paris, Cedex 06, France.

Laterite and Landscape, by M.J. McFarlane, formerly of Department of Geography, University of Nairobi, Kenya, 1976, 151 p., 33 figures, 17 plates.

Laterite was first given a place in scientific literature nearly 170 years ago. There is now a very extensive literature to which reviews can hardly hope to do justice. There are remarkably few areas of agreement on how laterite developed and in particular on the precise nature of the environment conducive to its formation.

This publication provides a systematic discussion of laterite essentially for geomorphologists. Those in allied subjects, as geology, may also find the approach useful. The main purpose has been to extract from a wide range of literature only that which appears to be relevant to the geomorphologist who wishes to use laterite as an index for landscape analysis, *i.e.*, relevant to the relationship between laterite genesis and landscape development. The text summarizes the main concepts which have developed, and attempts to crystallize the main problems facing an understanding of laterite development.

The review includes new data from Uganda, the home of what was reputedly the world's finest example of a laterite-capped planation surface, the Buganda Surface. This is an area that presents in striking form many of the problems encountered elsewhere in the tropics and laterite specialists in other tropical areas may find in this recent work something of relevance to their own areas.

Contents include — A Historical Review of Theories of Laterite Genesis; What is Laterite? The Environment of Laterite — Laterite and Geology / Laterite and Topography / Laterite and Climate / Laterite and Vegetation / Laterite and the Profile; Laterite Structures; The Chemical Constituents of Laterites: Their Mobility and Relevance to the Study of Laterite Genesis; Laterite Genesis; and Laterite and the Denudation Chronology of Uganda.

Orders to: Academic Press, Inc., 111 Fifth Avenue, New York, NY 10003, U.S.A.

Desertification: Its Causes and Consequences, compiled and edited by the Secretariat of the United Nations Conference on Desertification, Nairobi, 1977, 454 p., 4 papers.

Four scholarly reviews were commissioned for the United Nations Conference on Desertification and aim to summarize the accumulated knowledge in the field, including the latest findings on desertification processes, their impact on man and nature, and how such processes can be combated and reversed. The papers are background for the conference and are synthesized in an overview serving as a principal document for the conference. This book will serve those working in the fields of climate, ecology, land technology or population studies.

The reviews include Climate and Desertification by F.K. Hare; Ecological Change and Desertification by A. Warren and J.K. Maizels; Population, Society and Desertification by R.W. Kates, D.L. Johnson and K.J. Haring; and lastly, Technology and Desertification by M. Anaya Garduno.

Price: US \$ 58.00 / £ 28.00

Orders to: Pergamon Press, Headington Hill Hall, Oxford, OX3 0BW, England, or, Maxwell House, Fairview Park, Elmsford, New York 10523, U.S.A.

Introductory Soil Science Manual, by R.G. Palmer, Western Illinois University, Macomb, and F.R. Troeh, Iowa State University, 2nd edition, 1977.

Of special interest to students in soil science courses, as well as to farmers and farm managers for their use in developing land use techniques, this new manual includes new and greatly expanded material on many aspects of soil chemistry and fertility. The information provided is applicable to any geographic location in the United States and to nearly any area in the world.

The authors have stressed the development of a basic understanding of the concepts of each topic, information on laboratory techniques and their application. This new edition includes soil profiles, water, chemistry, fertility, physical properties, horizons, texture, cation exchange, and microbial activity. Early sections of the manual cover soil survey reports and land descriptions, soil parent materials, texture, structure and moisture action. This is followed by an examination of soils and landscapes, soil profile characteristics, soil biology and soil organic matter. Final sections deal with soil chemistry, testing and fertility, and soil conservation.

Material provided for exercises, suggested reading list, worksheets.

Price: \$ 5.50

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

Soil Resource Inventories, *Proceedings of a Workshop held at Cornell University, April 4-7, 1977*, 358 p., softcover, 27 papers.

The papers presented for the workshop cover eight sessions, which dealt with orders of soil surveys; the evaluation of soil surveys and maps; soil survey methodology-case studies and techniques; a review of methodology of map characteristic evaluation; the soil properties important for given land use; soil data presentation; and the role of soil surveys in the decision-making process for development planning.

Price: \$ 1.00

Orders to: Department of Agronomy, 1005 Bradfield Hall, Cornell University, Ithaca, NY 14853, U.S.A.

Soils of Part of the Port Hills and Adjacent Plains, Canterbury, by E. Griffiths, Soil Bureau, Department of Scientific and Industrial Research, New Zealand Soil Bureau Bulletin 35, 1974, 36 p., with soil map and extended legend, 13 figures, 9 photographs, hardbound.

The area surveyed is on the eastern margin of the Canterbury Plain and on the western end of Banks Peninsula, to the south of Christchurch. Most of the area is in Halswell County. It covers approximately 13,100 hectares and is bounded by Lake Ellesmere in the south, Papanua County and Ellesmere County in the west, Heathcote County in the north, and the Summit Road in the east. It includes two distinct physiographic units - the south-west to western part of the Port Hills, and the adjacent plain from Taitapu to Motukarara.

The survey was made to complete soil information on a part of the Port Hills and plains which was con-

sidered a likely area for the growth of Christchurch. Basic soil information on both the hills and plains was required for planning purposes.

Price: \$ 4.50

Orders to: New Zealand Department of Scientific and Industrial Research, Soil Bureau, Private Bag, Lower Hutt, New Zealand.

Pattern of the Soil Cover, V.M. Fridland, IPST, Jerusalem, 1976. 291 p. ISBN 07065-1537-4.

Distributed by John Wiley & Sons, Chichester, U.K.

This book, originally published in Russian in 1972 is a contribution in the field of soil geography. It deals in detail with soil patterns and introduces a new concept in soil-geographical taxonomy - the Elementary Soil Areal.

To achieve a breakthrough in the theoretical and practical application of accumulated empirical material, the book points the way to methods of statistical analysis and cybernetics.

A Framework for Land Evaluation, Publication 22, ILRI, Wageningen, 1977, 88 p.

This publication, announced as FAO's Soils Bulletin no. 32 in ISSS Bulletin 51 has now also appeared as Publication 22 of the International Institute for Land Reclamation and Improvement (ILRI).

Price: Dfl. 8.

Orders to: ILRI, P.O. Box 45, Wageningen, the Netherlands.

Soil Testing: Correlating and Interpreting the Analytical Results, by T.R. Peck, J.T. Cope, Jr., and D.A. Whitney (Editors), American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, 1977, paperback, 117 p., 7 papers, 16 figures, 23 tables.

The papers presented in this publication were presented at a symposium held in 1975 at the annual meeting of the American Society of Agronomy in Knoxville, Tennessee. They are designed for those involved with soil testing and related crop production problems as a reference for soil liming and fertilization practices based on soil tests that result in improved plant growth. Philosophies on soil test correlation and interpretation are interwoven in the papers. Two presentations (Melsted and Nelson) deal more completely with correlation while the major theme of the other papers is interpretation.

Partitioning of soil test-crop, response probability, ion activities, inorganic nitrogen soil tests, micronutrient soil tests, and nutrient intensity and balance are some of the topics discussed in the text. The correlation methods provided reflect the development of correlation research and techniques of analysing existing research.

Price: \$ 6.00 (prepaid orders). Add \$.50 per order outside U.S.A.

Orders to: American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America, 677 South Segoe Road, Madison, Wisconsin 53711, U.S.A.

Trace-Element Contamination of the Environment, Fundamental Aspects of Pollution Control and Environmental Science 1, by David Purves, Spectrochemistry Department, Edinburgh School of Agriculture, Edinburgh, Great Britain, 1977, x + 260 p., 5 figures, 39 tables.

In recent years a great deal of attention has been given by scientific workers to problems of pollution caused by the dispersal of individual toxic elements, such as cadmium, lead and mercury, in the environment. The purpose of this book is to evaluate the global consequences of dispersal of trace elements, originally mined from localized limited deposits in the environment. The study of this kind of environmental pollution provides a clear picture of the overall process of dispersion of trace elements in the biosphere and, within that perspective, highlights certain aspects of the subject.

While consideration is given to the problems arising from trace element contamination of the atmosphere and hydrosphere, the author focuses on the effects of contamination of the soil. Toxic trace elements in the soil can pass into plants and thence into food chains. Sources of trace-element contamination of the soil, the factors governing availability to plants and animals, the nutritional consequences of soil contamination are therefore discussed at some length.

This book considers what previously appeared to be unrelated problems of environmental pollution and exhaustion of finite resources and reserves of metals such as cadmium, copper, lead, mercury, nickel and zinc, as aspects of a single global problem. It should therefore be of interest to environmentalists and conservationists, to those concerned with resource management and waste disposal, and to agricultural chemists and soil scientists.

Price: US \$ 34.75 / Dfl. 85.00

Orders to: Elsevier / Excerpta Medica / North-Holland, Associated Scientific Publishers, P.O. Box 211, Amsterdam, The Netherlands.

(for U.S.A. and Canada: Elsevier North-Holland, Inc., 52 Vanderbilt Ave., New York, NY 10017).

Proceedings of the Symposium on Erosion and Solid Matter Transport, IAHS publication no. 122, 352 pages.

These proceedings make available the technical papers presented at the International Symposium on Erosion and Solid Matter Transport in Inland Waters, held in Paris, France on 4-8 July 1977. The symposium was convened jointly by Unesco and the International Association of Hydrological Sciences in cooperation with FAO and the International Association of Hydraulic Research.

Price: U.S. \$ 25

Orders to: H.W. Hastings, Treasurer, International Association of Hydrological Sciences, 1909 K Street, N.W., Lower Level, Washington, D.C. 20006, U.S.A.

Trees, Food and People: Land management in the tropics, by J.G. Bene, H.W. Beall and A. Côté. International Development Research Centre, Ottawa, Canada, 1977, 52 p. ISBN: 0-88936-121-5.

This monograph deals with the combined production systems in the tropics, integrating forestry, agriculture and/or animal husbandry to optimize tropical land use.

It is stated that within the next 25 to 30 years most of the humid tropical forests as we now know it will be transformed into unproductive land, and the deterioration of the savanna into desert will continue at ever-increasing speed, if no remedial action is taken.

Short chapters deal with the ecological importance, methods of utilization of tropical forests, and the constraints on resource development. Of major importance for the development of 'agroforestry' 23 major problem areas have been identified. It is suggested that an internationally financed council for research in agroforestry be created to administer a comprehensive program leading to better land use in the tropics.

No doubt, soil scientists have an important role to play in such an undertaking.

Orders: International Development Research Centre Box 8500 Ottawa, Canada, K1G 3H9

Soil Organic Matter Studies, Proceedings of a Symposium, Braunschweig, 6-10 September, 1976, Jointly organized by the International Atomic Energy Agency and the Food and Agriculture Organization in co-operation with Agrochimica, 1977, 2 vols., 818 p., 77 papers (in English, French, Spanish, and Russian).

The nature, content and behaviour of the organic matter, or humus, in soil are factors of fundamental importance for soil productivity and the development of optimum, conditions for growth of crops under diverse temperate, tropical and arid climatic conditions. Unfortunately, the study of soil organic matter presents some of the most complex problems with which the soil specialist and his collaborators in soil biochemistry and soil microbiology have to deal. However, through the co-operation of scientists of various disciplines and the use of tracer and other modern techniques in research, valuable contributions have been and are being made to a better understanding of the behaviour and functions of organic matter in soil; this will, in turn, lead to the increase in crop production that is sorely needed.

The Food and Agriculture Organization of the United Nations and the International Atomic Energy Agency had jointly convened two international meetings, the first in 1963 and the second in 1968, in co-operation with the International Soil Science Society to review the progress that had been achieved through the use of tracer techniques in studies of soil organic matter, and the ways in which these methods could contribute to the growth of better crops. In the present, third symposium, as in the two preceding ones, due consideration was given to studies involving the use of radioactive and stable isotopes, but this third symposium departed from previous practice in that it was organized in co-operation with AGROCHIMICA and that non-isotopic approaches to research on soil organic matter were included. The meeting was the first sponsored by the IAEA and the FAO to deal with the subject matter without any restriction regarding specific techniques.

The symposium was attended by 146 participants from 33 countries and two international organizations. The 77 papers published here were presented in nine sessions. A number of papers, dealing with the behaviour and functions of organic matter, make a contribution to increasing agricultural production by proposing improved management practices. Other papers discuss turnover of plant residues, release of plant nutrients through biodegradation of organic compounds, and nitrogen economy and the dynamics of transformation of organic forms of nitrogen. Among other topics raised and discussed are: the biochemical transformation of organic matter, the characterization of humic acids, carbon dating and the impact of modern techniques on soil organic matter research.

Price: US \$ 30.00

Orders to: Division of Publications, International Atomic Energy Agency, Kärltner, Ring 11, P.O. Box 590, A-1010 - Vienna, Austria.

(for U.S.A.: UNIPUB, P.O. Box 433, Murray Hill Station, New York, NY 10016).

Soils for Management of Organic Wastes and Waste Waters, by L.F. Elliott and F.J. Stevenson (Editors), 1977, 672 p., 25 papers, illustrated.

Municipal garbage, food processing industries, pulp and paper mills, animal and poultry enterprises, domestic and municipal sewage, and many other sources supply a produce called organic waste. The U.S. production of municipal refuse totals 113 million metric tons of organic waste annually. These wastes are not only plentiful, they are also a potential, multi-dimensional resource.

Waste is being considered as a resource for crop growth due to increased fertilizer and energy costs. By disposing of organic waste on drastically disturbed lands, it could be employed for reclamation. Irrigation and renovation tasks could be performed by waste waters. However, questions about environmental quality, pathogens, nutrient imbalances, odors, and social acceptance have made this endeavor a controversial issue. A great deal of literature has emerged on the role of land for recycling organic wastes and waste waters.

This book has been published by the American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America to synthesize the current literature on the subject of organic wastes. The papers reflect the various views of the authors and are not organized to emphasize any single aspect of the subject.

Price: \$ 17.50 (\$ 14.00 to members of ASA, CSSA, SSSA) + \$.50 postage

Orders to: American Society of Agronomy, 677 South Segoe Road, Madison, Wisconsin 53711, U.S.A.

Soils in the British Isles, by L.F. Curtis, F.M. Courtney and S.T. Trudgill, 1976, 376 p.

This book is an introduction to a range of ecological and land-use problems in which soil is the vital dimension. Concepts and terms in soil science are introduced, and a number of problems are examined with local examples.

The examples include sections dealing with the uplands and the impact of prehistoric man on early soil formation, the scarplands and clay vales and their agricultural properties, the effects of glaciation and the influence of periglacial conditions on soils in the British Isles.

Price: Cased £ 9.95 net; paper £ 5.95 net

Orders to: Longman Group, Longman House, Burnt Mill, Harlow, Essex, U.K.

Soil Classification, A Binomial System for South Africa, Science Bulletin 390, by C.N. Macvicar, J.M. De Villiers, R.F. Loxton, *et al*, 1977, 150 p., with figures, tables and colour plates.

A Report on a research project conducted under the auspices of the Soil and Irrigation Research Institute, Department of Agricultural Technical Services.

The object of this book is to present a simple, definitive statement of the first detailed system for classifying the soils of South Africa. The system has evolved over a period of years and is now being formally released for general use after extensive performance-testing by a wide variety of individuals and organizations. Its general acceptability in the agricultural sphere has been established and its implementation as a national system approved by the Department of Agricultural Technical Services.

As part of an integrated information system, soil classification has immense utility; alone it has limited value. This soil classification has as its primary aim the identification and naming of soils according to an orderly system of defined classes, whereby the inter-relationships between soil properties are clearly shown. The classifications are related to land utilization and management by pointing out the similarities and differences between soils that are pertinent to land use.

This is not a publication intended to deal with theory or interpretations based on the soil classifications made, but rather to serve as a handbook to facilitate the interpretation of maps and reports relating to soil quality. Included are explanatory notes on various terms as Appendix 2. Appendix 1 is an outline of diagnostic horizons and of classes in the highest categories of the USDA and FAO soil classification systems.

Price: R7, 50 / other countries R9, 50

Orders to: Director, Division of Agricultural Information, Private Bag X144, Pretoria 0001, Republic of South Africa.

Soils, An Introduction to Soils and Plant Growth, by R.L. Donahue, R.W. Miller, and J.C. Shickluna, 4th edition, 1977, 626 p., 24 figures, 24 tables, with map.

Rapidly changing technology and human needs have had a great impact on use of the land. Farms have become larger, equipment larger and more sophisticated, more land is needed for waste disposal, and federal regulations are more restrictive in the use of land as it affects water and air pollution.

This book is written as an introduction to soil science for the student at all levels, emphasizing an easily understandable text and including details for further study, an extensive glossary and a list of conversion tables. Each chapter ends with a summary and review questions; over 230 drawings and photographs illustrate the discussions, extensively footnoted.

The fourth edition of this text has been completely rewritten to make soil science more relevant to the ecological environment, the metric system, land use, irrigation, reclamation of saline and sodic soils, and to world population and food production.

Orders to: Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632, U.S.A.

Can Desert Encroachment Be Stopped? A Study With Emphasis on Africa, Ecological Bulletin No. 24, by A. Rapp, H.N. Le Houérou and B. Lundholm (Editors), 1976, 241 p., 20 papers.

This volume in the series *Ecological Bulletins* deals with the ecological and social problems of desert encroachment. It puts man and his activities into an ecological context and outlines the causes of desert encroachment and remedies which can be used.

The report has been prepared in close cooperation between the United Nations Environment Programme and the Secretariat for International Ecology, Sweden, as a background document for the 1977 U.N. Conference on Desertization.

Orders to: Editorial Service, Swedish Natural Science Research Council, NFR, Wenner-Gren Center, Box 23136, S-104 35 Stockholm, Sweden.

1977 Annual Book of ASTM Standards, Part 19, Natural Building Stones; Soil and Rock; Peats, Mosses and Humus, 1977, 491 p.

The 1977 Annual Book of ASTM Standards consists of forty-eight parts, of which this is one. It contains all currently formally approved ASTM standard and tentative test methods, definitions, recommended practices, classifications, and specifications, and other related material such as proposals.

Contents are listed by subject and include Natural Building Stones; Soil and Rock; Bituminous Materials for Highway Construction; Peats, Mosses, Humus and Related Products; Termometers, Hydrometers, and Other Laboratory Apparatus; General Methods of Testing; and Metric Practice Standard.

A complete subject index covers the standards, tentatives and related material appearing in this volume only.

Price: \$ 17.00

Orders to: American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103 U.S.A.

Forestry Reclamation of Anthropogenous Soils in the Area of Sokolov Lignite District, Scientific Monographs, 7, by K. Dimitrovsky, 1976, 220 p., [43 p. in English; remainder in Czech], 29 figures (English/Czech); 24 tables, 15 graphs, 12 profiles (Czech).

This monograph represents a complex of fifteen years research work in forestry reclamation of anthropogenous soils taken by open-cast mining. The major portion of factual material thus gleaned has wider application than for the conditions of the Sokolov lignite district only, in the context of the recovery of industrial landscape protection. The publication attempts to present a complete view of forestry reclamation in CSSR with reference to the experience reached abroad.

Chapters 1-3 deal with the content and extent of reclamation problems in Czechoslovakia. Included is a list of relevant terminology. Chapter 4 covers the geological structure of overlying rocks, stripping methods and transport of earth, placing and construction methods of spoil banks, reclamation aspects in the formation of forest stands; acreage of completed reclamation; and an analysis of industrial air pollution. Chapter 5 includes a study of the principles of technical treatment of recent formations, and the choice of the appropriate reclamation method. The procedures applied in determining chemical, physical and hydrogeological features, including biometrical and bioindication investigations are discussed in Chapter 6.

In Chapter 7 is the geological-pedological characteristics of stripped and spoil bank earths, with the geological origin, deposition and mineralogical structure of clays of the cyprine series, with macroscopic properties of soil profiles, plus general profile studies. More detailed data on anthropogenous soils by laboratory technique and bioindication are found in Chapter 8; chapters 9-15 include the results for specific non-forest sites, to their growing methods, control of browsing, care of plantations, as well as the economic, effectiveness of reclamation.

Orders to: Research Institute for Land Reclamation and Improvement, Prague. Středočeské tiskárny, n.p. Praha 1 - Staré Město, Klimentaská 10 CSSR.

Woodlands of Wisconsin, Science, Art and Letters of Growing Timber, by S.A. Wilde, formerly of the College of Agricultural and Life Sciences, University of Wisconsin-Madison, 1976, 150 p., 10 figures.

The subject of this publication is a general land survey of the State of Wisconsin. The author is a forester and woodsman who believes it «appropriate that an account of the ecological characteristics of Wisconsin be enriched with a dash of historical reminiscence». In fact, the technical information presented here, which is substantial, is completely interwoven with literary allusions and anecdotes. Such embellishment of factual data extends the information given to the wider context of the forest as part of the biosphere and human life.

The text attempts to mend the split between scholastic taxonomy and biological reality by studying environmental relationships, and the complications which result from the interaction of living and non-living constituents of natural entities. Thus, instead of an abiotic picture of biological phenomena, trees are more than angio- or gymnospermous, but ecological elements.

A deductive method of «silvicultural» instruction is favoured, to consider the essential features of forest stands and productive potentials of lands before considering morphological details of either trees or soil profiles.

Price: \$3.50 (plus postage).

Orders to: Agricultural Bulletin Building, 1535 Observatory Drive, Madison, Wisconsin 53706 U.S.A. (reference Serial No. G 2780).

Computer Simulation of Soil-Water Dynamics: A Compendium of Recent Work, by Daniel Hillel. International Development Research Centre, Ottawa, Canada, 1977, 216 p. 72 figures. ISBN: 0-88936-119-3.

The first 33 pages consist of a philosophy of the possibilities and limitations of simulation models. Many terms which are often used by model builders, without sufficient definition, are very clearly described. The statement that simulation modeling «is not an extension of the human mind's faculties of imagination or intuition or ingenuity», but merely «serves to extend the capability of the mind's ability to calculate rapidly and to account for simultaneous phenomena» is characteristic for the authors attitude. This together with the concept that verification of a model is impossible but that it can be validated will certainly decrease the misunderstandings and misappreciation which often exist between modelers and non-modelers.

Five chapters describe each a complete simulation model of increasing complexity. Programs programmed in the special simulation language CSMP 111 are included. Although the programs are clearly explained, some knowledge of computer programming (e.g. some FORTRAN) seems essential to profit optimally from the monograph (The programs described contain EQUIVALENCE and DIMENSION Statements, CSMP 111 generates these statements, however, automatically, therefore the need for these statements is not clear).

The 5 simulation models describe: isothermal evaporation of soil water, with and without hysteresis, non-isothermal evaporation of soil water, with and without hysteresis, non-isothermal evaporation including effects of surface reflectivity; water dynamics and storage in fallow soils; hydrology of a sloping field, including surface runoff and ground-water flow; moisture extraction by roots, concurrent movement of water and salt in the soil profile. Especially the last two models are rather complex and based on many arbitrary assumptions. It is therefore not unlikely that others want to replace some of the assumptions by alternative ones to meet their special requirements. Fortunately the constructions of the model and the computer program are so clear, that such modifications can easily be performed. This means that all those who have similar or related problems can certainly profit from this monograph.

Price: Can \$ 10.00, microfiche edition Can \$ 1. - Advance payment required.

Orders to: IDRC, Publications Division Box 8500, Ottawa, Canada, K1G 3H9. (See also advertisement in this Bulletin).

M.J. Frissel, Association Euratom-ITAL, Wageningen

Water Retention, Porosity and Density of Field Soils, Technical Monograph No. 9, for the Soil Survey of England and Wales, 1977, 24 figures, 4 plates.

This book presents the results of water retention measurements from 261 soil profiles (c. 825 soil hori-

zons), determined on undisturbed cores. An introductory chapter discusses the background to the work, followed by two chapters on field and laboratory methods and the validity of the techniques in swelling soils.

Statistical analysis of the results takes up most of Chapter IV. Here the chief aim is to assess the possibilities of predicting water retention values from simple measurements such as particle-size distribution and bulk density. Chapter V demonstrates the interpretation of water retention values for complete profiles in terms of soil water regime and classification.

Chapter VI deals with practical applications of results to assess structural condition and droughtiness and discusses the effects of land use on these semipermanent properties.

Price: £ 1.

Orders to: Soil Survey of England and Wales, Rothamsted Experimental Station, Harpenden, Herts. AL5 2JQ, U.K.

Air Photo-Interpretation for Soil Mapping, by D.M. Carrol, R. Evans and V.C. Bendelow, for the Soil Survey of England and Wales, Technical Monograph No. 8, 1977, 85 p., 20 figures, 2 tables, 18 plates.

In April 1972 the Soil Survey of England and Wales held a week's course for its staff in «Air photo-interpretation for soil mapping». This monograph is based on the lectures given at the course, with the addition of material to illustrate the text. The eight chapters cover The Air Photo; basic Photogrammetry and Stereoscopy; Principles of Photo-interpretation for Soil Mapping Interpretive Features; Methods of Photo-interpretation for Soil Mapping; Photo-interpretation for Soil Mapping in the Lowlands, and in the Uplands; and use of Air Photos in Soil Mapping Programmes.

Price: £ 2 net.

Orders to: Soil Survey, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ, U.K.

Arid land irrigation in Developing Countries, Environmental Problems and Effects, by E. Barton Worthington (Editor), 1977, 472 p., 37 papers, (6 in French; 31 in English), 55 illustrations.

An international symposium was held in Alexandria in 1976, sponsored by the United Nations Environment Programme to bring together all the major scientific disciplines environmental problems of developing countries. This book is based on that symposium and presents a general, edited account of interests and activities of participants from twenty-eight countries, and nine international organizations.

The editor remarks, «Where big irrigation schemes are concerned there has been some tendency in recent years to emphasize the detrimental, environmental effects and to underplay the benefits which some schemes confer on mankind. The increase of diseases, reduction of fisheries, change in the erosion pattern, salinization of soils, however well predicted and taken into account, have received publicity, while the main purpose of the schemes—bringing water and a better standard of life to millions of people—is apt to be taken for granted. In this book emphasis is placed on how to ensure their permanence, as well as how to overcome the detrimental effects on the environment and on man himself».

Price: \$ 63.00.

Orders to: Pergamon Press, Headington Hill Hall, Oxford OX3 0BW, England, or, Maxwell House, Fairview Park, Elmsford, New York 10523, U.S.A.

Land use: Tough Choices in Today's World, Special Publication No. 22 of the Soil Conservation Society of America, 1977, paperback, 454 p.

Presented at the Soil Conservation Society of America 1977 symposium, are here published the compiled analyses of land use implementation experiences at the local, state and federal levels of government.

This book is a comprehensive review of land use planning problems, implementation experiences and the courts' reactions to the programs that regulate land use.

The papers deal with facing the difficult land use choices; competition for land; preservation of land for food and fiber; providing living space; land for natural space; federal and state involvement in land use planning; and the role of citizens, landowners, planners, elected officials, developers, attorneys and the courts in the land planning process.

Price: \$ 7.00 (cash for order under \$ 10 or official purchase order).

Orders to: Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa, 50021 U.S.A.

Biology of Earthworms, by C.A. Edwards and J.R. Lofty, Rothamsted Experimental Station, Harpenden, 2nd edition, 1977, 333 p., 62 figures, 26 tables.

The volume of literature published dealing with the earthworm is quite exceptional for an invertebrate group which is important neither as pest nor food. It stems from the inherent zoological interest of the earthworm as a terrestrial form retaining many of the characteristics of its aquatic ancestors; from its convenience as an experimental animal for behaviourists and physiologists; and from its effects on soil fertility. Ideas of the earthworm as an important element in the promotion of vegetation have been critically examined and extended at Rothamsted Experimental Station in a programme of earthworm research pioneered by Sir John Russell and continued by a number of workers during the last twenty-five years. This publication is the result of the task of surveying the bewildering mass of earthworm literature and summarising it at readable length.

Important land-use changes may be expected in Europe in the coming decades. It is in marginal and restored land, rather than in the agricultural lowlands, that earthworm research is likely to be most relevant and fruitful for it is under the less intensively managed land on base rich sites that soil processes generally become dominated by earthworm activity. Outside the temperate zone and particularly in the tropics, much progress has been made in recent years in the basic taxonomy of indigenous earthworm species, but knowledge of their functional role as components of ecosystems is, at the best, fragmentary. Dr. Edwards' and Mr. Lofty's re-

view of the current state of earthworm knowledge will prepare the way for another generation of research in these diverse and important fields.

No previous book has attempted the almost impossible task of reviewing all the aspects of biology, morphology, physiology, taxonomy and ecology of earthworms fully in a single volume. In particular, earthworm taxonomy is still in a very fluid state with considerable discussion and controversy. The authors have attempted to cover these topics and present the available data on biology and morphology in a straightforward manner emphasizing most, the ecology of earthworms and their important contributions to soil formation, structure and fertility.

An important part of this book which will be particularly valuable to soil zoologists is the bibliography of between five and six hundred literature references. There is in addition a glossary; a simplified key to common genera of terrestrial earthworms; and three indices-systematic, author and general.

Orders to: Chapman and Hall Ltd., 11 New Fetter Lane, London EC4P 4EE, England, U.K. (Available in hardbound and paperback editions.)

Clays and Clay Minerals in Natural and Synthetic Systems, *Developments in Sedimentology* 21, 1977, 218 p., 50 figures.

The study of clay minerals began early in the history of the geological sciences but made less progress than other disciplines. The introduction in the early 1950's of systematic X ray diffraction studies of clay mineral samples has added immeasurably to the basic understanding of natural mineral occurrence. These data, and the gradual accumulation of clay mineral chemical analyses, permit one to establish the groundwork for the physical chemistry and phase equilibria of clay minerals in nature.

This book uses the well-tested phase equilibria-facies methods of analysis which has been so effective in metamorphic studies. It is now time to unify the information gathered from studies in soil science, sedimentary petrography and clay mineral synthesis in order to treat the physical chemistry of clay minerals as a whole. In this book the existing chemical analyses of pure clay minerals are used to establish which chemical systems can be used to describe the phase relations of clay minerals in natural systems. This allows one to define the compatible assemblages of clay minerals which, in turn, allows the clay scientist to describe the chemical processes active in forming clay minerals in a given geological occurrence.

A number of phase diagrams are proposed in the text which can be used as a basis for the study of clay mineral genesis and stability in nature. More important, the method of analysis used in the text should lead to the development for other chemical systems which can better describe clay mineral occurrence.

Referenced, with subject index.

Price: US\$ 25.50/Dfl. 62.50.

Orders to: Elsevier Scientific Publishing Company, Review Department, P.O. Box 211, Amsterdam, The Netherlands. (for USA and Canada: Elsevier/North-Holland, Inc., 52 Vanderbilt Avenue, New York, NY 10017 U.S.A.)

A Review of «Crops and Crop Performance on Southeast Asian Lowland Peats» - Bulletin 4, by (1) P.M. Driessen, Soil Scientist, Netherlands Technical Cooperation Programme, and (2) Permady Sudewo, Staff, Soil Research Institute, Bogor, Indonesia. 94 pages, soft cover.

This bulletin has been prepared to give settlers and planners a better insight in the agricultural possibilities of the vast Malaysian coastal peat lands. It contains crop data: cereal, root and tuber, oil fibre, latex, fruit and nut, vegetable, stimulants, spices and flavours, dyes and tans, pasture and fodder, and miscellaneous crops, collected in the course of the execution of the Dutch-Indonesian Technical Cooperation Programme ATA 106. This information was gathered in talks with transmigrants in Sumatra and Kalimantan and during visits to farmers and research institutions in Sarawak and Peninsular Malaysia.

Orders to: Soil Research Institute, Bogor, Indonesia.

Environmental Effects on Crop Physiology, edited by J.J. Landsberg and C.V. Cutting, Long Ashton Research Station, University of Bristol, England. 388 pages, hard cover, ISBN: 0-12-435050-X.

This book studies the quantification and interaction of climatic influences at various stages in the physiological development of crops. The physiological processes of assimilate production, respiration and translocation are surveyed on the basis of experiments both in the field and in controlled environments; among the contributory factors considered are carbon-dioxide exchange and monitoring; stomatal conductance; water status and stress; root functioning; and carbohydrate allocation. Phytotron studies determine the significance of these factors at critical stages of development, and the wide treatment of these topics includes consideration of the environmental factors controlling flower bud development in «*Coffea arabica*».

Price: £ 14.50; US\$ 28.35.

Orders to: Academic Press Inc., (London) Ltd., 24-28 Oval Road, London NW1 7DX, England.

Animal Wastes, by E. Paul Taiganides (Editor), Department of Agricultural Engineering, Ohio State University, 1977, 429 p., 127 tables, 98 illustrations.

This book contains revised material based upon 36 papers presented at the Seminar on Animal Wastes organized by the Regional office for Europe of the World health organization and the Government of the CSSR in co-operation with the United Nations Development Programme, and held at the Czechoslovak Research and Development Centre for Environmental Pollution Control, Bratislava.

Only topics relevant to modern feedlots are considered; modern large feedlots require and can afford considerable technology inputs. The technical presentations were aimed at developing guidelines for the practical application of current technology and to identify gaps in knowledge.

This book is not a literature review of research or of available technology, nor are the papers reports of

research or work done by the author alone. The papers contain the essential information and data needed by engineers, planners or scientists to evaluate alternative systems for feedlot waste and wastewater handling, treatment, disposal and utilization on the basis of their technical, economic and ecological feasibility. It is intended to serve as a practical reference book for planners, engineers, scientists, administrators and policy-makers working on all aspects of large feedlot development and feedlot operation, waste management and environmental health. It may also prove useful for college and university undergraduate courses in agricultural waste management and utilization.

The papers are divided under five main topics: The Animal Industry and the Quality of Environment; Technologies for Processing and Treatment of Animal Wastes; Utilization and Disposal of Animal Wastes; Economics of Animal Waste management; and Feedlot Waste management in Selected Countries.

With an appendix: glossary of terms.

Orders to: Applied Science Publishers, Ltd., Ripple Road, Barking, Essex, England.

Soil Conservation & Management in the Humid Tropics, edited by D.J. Greenland, professor of Soil Science, University of Reading, England, and R. Lal, International Institute of Tropical Agriculture, Ibadan, Nigeria. 283 pages, 36 plates, hard cover, ISBN 0 471 99473 1.

This volume is based on the Proceedings of the International Conference on Soil Conservation and Management in the Humid Tropics held in Ibadan, Nigeria, in June 1975.

Farming systems in Western Europe do not need to take account, to any great extent, of soil erosion, because of the prevailing rainfall pattern. However, the increasing population density in developing countries, where heavy rainfall is a regular characteristic of the climate, is now producing a soil erosion problem far more serious than existed previously in the indigenous cultivation scheme. Modification of the present system, or development of new systems, is essential. This book deals with the characteristics of soils and climates in the humid tropics and soil erosion under existing systems, and discusses new systems needed to control it.

Orders to: John Wiley & Ltd., Baffins Lane, Chichester, Sussex, England.

The Soils of the Central Burnett Area, Queensland, Soil and Land Use Series No. 56, by C.J. De Mooy, G.D. Hubble, and G.G. Beckmann, 1977, 91 p., 17 figures, 9 tables, with two maps.

The Central Burnett district is situated in the subcoastal zone of Queensland, Gayndah — the central township with the largest population (1800) — being approximately 126 km west of the coastline. It is hilly country, typical of the southern end of Queensland's spear grass zone which extends from near Brisbane to 160 km north of Townsville. By characterization of the soils of the Central Burnett, some of which had not been recognized before, the present reconnaissance soil survey gives information in support of research with sown pastures at various localities in the spear grass lands to improve nutritive value.

A second aim of the survey was to carry the distinction between various soil patterns to a level suitable for a general agronomic appraisal of the area and for extrapolation of results obtained on the soils of the local «Brian Pastures» Research Station to other districts. This was achieved both by defining subgroups within great soil groups and by distinguishing associations having various proportions of such soils where this could assist in giving a more balanced account of those soil variations which will become more significant with the development of systems of intensive land use.

Maps: Soils of the Central Burnett Valley: Gayndah and Mundubbera sheets; and Appendix I, Description of Representative Soil Profiles.

Orders to: Editorial Service, Swedish Natural Science Research Council, NFR, Wenner-Gren Center, Box 23126, S-104 35 Stockholm Sweden.

Nitrogen, Phosphorus and Sulphur-Global Cycles, Ecological Bulletin No. 22, by B.H. Svensson and R. Söderlund (Editors), 1976, 191 p., 10 papers.

Report from a project on Biogeochemical Cycles initiated by the Scientific Committee on Problems of the Environment (SCOPE), Orsundsbro, Sweden, 14-18 December, 1975.

The biogeochemical cycles of nitrogen, phosphorus and sulphur constitute the life-supporting system for our planet since their dynamics determine the composition of the atmosphere as well as the fertility of land and water. Disturbances in these cycles may have global, regional and local implications, and must be assessed against the background of integrated, interdisciplinary knowledge of the budgets and the flows of the cycle components and of the mechanisms mediating their conversions and transport.

In 1975, a literature survey and workshop was organized to accomplish this assessment. The ten papers published here, in addition to the three main chapters, include some special topics related to the cycling of the three elements: transfer processes, and time scales; man and biogeochemical cycles-impact, problem and research needs; nitrogen cycle between microorganisms, vegetation and soil; an economic analysis of nitrogen leaching caused by agricultural activities; and rates of soil erosion.

Orders to: Editorial Service, Swedish Natural Science Research Council, NFR, Wenner-Gren Center, Box 23126, S-104 35 Stockholm Sweden.

Modes d'Humification et Différenciation Podzolique dans deux toposéquences guyanaises — Mémoire ORSTOM No. 84, par Jean-François Turenne, Pédologue de l'ORSTOM, Docteur ès Sciences Naturelles, 1977, 173 pages, 45 figs

L'étude de la dynamique actuelle de transformation de sols ferrallitiques en podzols est présentée dans ce travail, à travers l'analyse des processus biochimiques de l'humification en zone tropicale humide. La méthode d'étude utilisée ici consiste à retrouver, à travers la composition et l'évolution du stock organique, le maximum d'information sur les étapes pédogénétiques atteintes; les podzols et les sols podzoliques représentent le

stade de maturité du système et montrent une hydrolyse intense des minéraux non seulement primaires (muscovite résiduelle) mais aussi secondaires (kaolinite).

La description de l'organisation latérale des séquences de sols montre un développement continu de la pédogenèse, dans lequel la formation, le battement d'une nappe superficielle et la redistribution du fer qui en résulte régissent les processus d'humification.

L'importance des contrastes pédoclimatiques et en particulier l'importance des phases d'hydromorphie, est mise en évidence dans les processus de dépolymérisation des composés organiques; il en résulte une accélération des processus de podzolisation et ceci de façon indépendante du climat général; à chaque instant les caractères de la matière organique sont révélateurs des conditions édaphiques, annoncent les étapes suivantes de l'évolution pédogénétique et traduisent le basculement de l'équilibre lié à la remontée des nappes au quaternaire récent.

Commandes: Service des Publications de l'ORSTOM, 70-74, route d'Aulnay, 93140 Bondy, France.

Recherches sur la transformation des sols ferralitiques dans la zone tropicale à saisons contrastées — Evolution et réorganisation des sols rouges de moyenne Casamance (Sénégal), Travaux et documents de l'ORSTOM, No. 62, par Armand Chauvel. 1977, 532 pages, ISBN 2-7099-0440.3.

L'existence de sols différents, dits sols «rouges» et sols «beiges», développés en Casamance sur les mêmes formations grésio-argileuses, permet de penser que le contact si marqué entre les deux types de sols pouvait permettre d'étudier efficacement le «passage» des sols ferralitiques aux sols ferrugineux tropicaux. Le problème est de savoir si la limite entre les sols rouges et les sols ferrugineux tropicaux beiges avait bien cette signification. Son volume est donc divisé en quatre parties: (1) étude détaillée du milieu naturel de la moyenne Casamance où se trouvent associés sols rouges et sols beiges; elle aboutit à montrer que la distribution des deux types de sols obéit en fait à une certaine loi de répartition; (2) étude morphologique et analytique de ces sols, distribués de façon ordonnée dans le paysage sous forme de toposéquences; elle aboutit à démontrer que les sols beiges proviennent effectivement de la transformation des sols rouges; (3) étude des mécanismes responsables de la transformation de l'organisation des sols ferralitiques, en faisant appel à des techniques analytiques originales et à des travaux de pédologie expérimentale; (4) une interprétation d'ensemble: après avoir effectué une synthèse morphologique, l'auteur s'efforcera de préciser les conditions générales de la transformation des sols, avant de récapituler les principaux enseignements de l'étude.

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Les Eléments Traces dans les Sols — Travaux et documents de l'ORSTOM, No. 11, par M. Pinta et G. Aubert, 1977, 104 pages, annexe contenant 98 tableaux.

Dans le domaine particulier de l'agronomie, l'influence des éléments traces dans les différents milieux est grande sur la fertilité des sols. Leur absorption, en trop faible ou trop forte quantité, par les plantes, peut provoquer des maladies de carence ou de toxicité dans les cultures et, par voie de conséquence, chez les animaux qui s'en nourrissent. Aussi les agronomes, les géochimistes, les pédologues, les biochimistes se sont-ils depuis longtemps intéressés à ces problèmes. Ils ont publiés de nombreux ouvrages, articles et notes à ce sujet.

Dans cet ouvrage, il a paru intéressant aux auteurs de faire le point de ces études, de rassembler les résultats obtenus, en vue d'une synthèse.

Les renseignements qu'ils ont réunis dans cette étude bibliographique concernent principalement une quinzaine d'éléments, ceux le plus fréquemment étudiés pendant les dix dernières années, sans que cela puisse préjuger d'une moindre importance des éléments non cités. Ils n'ont pas compris dans cette étude les éléments tels que: aluminium, fer et silicium, qui sont classés comme oligo-aliments des plantes, mais qui se trouvent normalement dans les sols en fortes proportions. Pour certains éléments, tels le bore, le molybdène, le manganèse, le cobalt, le zinc, le cuivre, le nickel, ils ont pu réunir un nombre relativement important de références bibliographiques et les publications se rapportent à des travaux assez différents. *Commandes:* Service Central de Documentation de l'ORSTOM, 70-74 route d'Aulnay, 93140 Bondy, France.

Sols de Tunisie — Bulletin de la Division des Sols, rédigé par le Ministère de l'Agriculture, Division des Sols, Tunis. 1976, 90 pages, deux cartes en couleurs: (1) Carte de la sensibilité à la désertisation, échelle 1: 1.000.000, et (2) Carte des zones traitées contre la désertisation, échelle 1: 1.000.000.

Les cartes thématiques illustrent les phénomènes dynamiques de la désertisation. Elles concernent la partie du pays où les sols et la végétation sont les plus «sensibles» aux facteurs de la désertisation et où la probabilité d'une dégradation irréversible des ressources naturelles sont les plus grandes, en raison de l'aridité du climat peu propice à la régénération biologique du milieu. La limite Nord des cartes a été fixée arbitrairement à un parallèle passant par la ville de Sidi Bou Zid. Il est bien évident cependant qu'au Nord de cette limite des phénomènes de dégradation peuvent avoir lieu et qu'au Sud certaines parties du territoire ne sont pas affectées par la désertisation. Ainsi définie la zone cartographiée représente 106.200 km². On peut en soustraire les 33.300 km² de zones proprement désertiques, qui présentent depuis une très longue période les caractéristiques des déserts (erg, reg, chott), et qui de ce fait n'intéressent pas directement le thème étudié.

Cet ouvrage traite aussi les sujets suivants:

- Historique des activités humaines en Tunisie aride et saharienne
- Les facteurs de la désertisation
- Données générales sur la zone cartographiée et changements écologiques: les régions naturelles, le climat, les variables édaphiques, évolution des ressources en eau, la végétation naturelle, la population, l'utilisation du sol
- Sensibilité à la désertisation: principes de cartographie et légende de la carte, analyse par régions naturelles

— Etat actuel de la désertisation

Commandes: Ministère de l'Agriculture, Division des Sols, Avenue de la République, Tunis-Port.

The influence of physical factors of soil environment on plant production, in English, with Polish and Russian summaries, in 2 volumes, *Zeszyty Problemowe Postępów Nauk Rolniczych*, 1978.

Proceedings of an international symposium organized by the Committee of Soil Science and Agrochemistry and the *Institute of Agrophysics in Lublin*, 11-14 October 1977.

The materials of the symposium comprise 6 plenary reports on:

- the development of investigations on physics on soil environment carried out in Poland,
- soil water as a basic factor of growth and yield of plants,
- the role of soil aeration for plants,
- the formation of heat properties of soils,
- the relationships between mechanical soil properties and yield of crops,
- the role of soil structure in the formation of optimal environment for plant growth.

Orders to: Ars Polona — Ruch, 7 Krakowskie Przedmieście, 00-68 Warszawa, P.O. box 10.01, Poland.

Handbook on Fertiliser Usage, by The Fertiliser Association of India, New Delhi, 1977, 4th revised edition, 150 p., 18 figures, 16 tables.

Published in the vernacular language, Gujarati and Marathi editions, and Hindi, as well as English.

This handbook covers all aspects of fertilisers and their usage and is designed to be a handy reference book for extension workers, students, research workers and non-technical personnel interested in agriculture. Information on various aspects of fertiliser use has been updated and elaborated to incorporate the latest developments in this field.

Concomitant texts, the **Handbook on Fertiliser Technology** (1975), and the **Handbook on Fertiliser Marketing** (1976), have been published by The Fertiliser Association of India to form a trilogy of handbooks relating to the major facets of the growing fertiliser industry in India.

Contains a glossary of terms used in the fertiliser trade and industry; conversion factors and tables; and a Schedule of the Fertiliser Control Order of India of Specifications of Fertilisers.

Price: Rs 10-00 (Postage extra); 5% discount to all on published price for single order of Rs. 500/- and above. 10% discount to bona-fide students, teachers and research scholars.

Orders to: The Fertiliser Association of India, Near Jawaharlal Nehru University, New Delhi, 110, 056.

Water Retention, Porosity and Density of Field Soils, by D. G. M. Hall, M. J. Reeve, A. J. Thomasson and V. F. Wright, for the Soil Survey of England and Wales, Technical Monograph No. 9, Harpenden, 1977, 75 p., 24 figures, 13 tables, 4 colour plates.

In recent years the Soil Survey of England and Wales has determined a range of physical properties on samples taken from fully documented soil profiles. This publication gives the results previously supplied in the Soil Survey Records and Memoirs accompanying the published soil maps for users concerned with agricultural development and research involving the physical properties of British soils.

The results presented here come from 261 soil profiles sampled between 1970 and 1975. Samples were chosen by individual soil surveyors who generally aimed to sample a typical profile of a soil series under the typical land use for that district.

Chapters cover Analytical Methods; Discussion of Laboratory Methods; Analysis of Results; Profile Interpretation and Agronomic Aspects. References are given plus two appendices: I gives Regression Equations for the Calculation of Various Moisture Retention Parameters, and II, the Mean Values of Available Water for Some Common British Soils.

Price: £ 1 net.

Orders to: The Soil Survey, Rothamsted Experimental Station, Harpenden, Herts., AL5 2JQ, U.K.

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