No. 42 1973

BULLETIN

OF THE INTERNATIONAL SOCIETY
OF SOIL SCIENCE

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BULLETIN

DE L'ASSOCIATION INTERNATIONALE
DE LA SCIENCE DU SOL

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MITTEILUNGEN

DER INTERNATIONALEN BODENKUNDLICHEN
GESELLSCHAFT

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DRUKKERIJ SYSTEMA B.V. — AMSTERDAM (HOLLAND

INTERNATIONAL SOCIETY OF SOIL SCIENCE

ASSOCIATION INTERNATIONALE DE LA SCIENCE DU SOL

INTERNATIONALE BODENKUNDLICHE GESELLSCHAFT

Office/Bureau: c/o Royal Tropical Institute, 63 Mauritskade, Amsterdam, Netherlands

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Dr L. A. Richards, 4455 Fifth Street, Riverside, Cal. 92501, U.S.A.

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NOTICE

The membership fee of three US-dollars per calendar year, or equivalent in any other convertible currency, should be paid preferably through the intermediary of your National Society, or by international money order, or directly into the ISSS account 54.02.62.706 with Algemene Bank Nederland, Spuistraat 150, Amsterdam (C.C.P. Bank: 6269))
Unesco Coupons, which may be procured from the national Unesco Commission, are also accepted.

B U L L E T I N

OF THE INTERNATIONAL SOCIETY OF SOIL SCIENCE

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No. 42 **1973**

NEWS OF THE COMMISSIONS, NOUVELLES DES COMMISSIONS NEUES DER KOMMISSIONEN

COMMISSION V

SUBCOMMISSION ON SALT-AFFECTED SOILS

International symposium on new developments in the field of salt affected soils
CAIRO, December 4 - 9, 1972

GENERAL REPORT

The Subcommission on Salt Affected Soils of the I.S.S.S., in association with the Soil Science Society of Egypt, held a Symposium in Cairo, Arab Republic of Egypt, December 4 - 9, 1972.

The Symposium was formally opened by H. E. Professor Dr. M. Elgabaly, Minister of Agriculture and Land Reclamation, Arab Republic of Egypt. Delegates were welcomed by Professor Dr. I. Szabolcs, Chairman of the Subcommission on Salt Affected Soils, Mr. T. Abuelwafa, representing the Academy of Scientific Research and Technology, Arab Republic of Egypt, and Professor Dr. H. Hamdi, President of the Soil Science Society of Egypt. A telegram of best wishes was received from Professor Dr. V. A. Kovda, President of the International Society of Science, who was unable to attend. Professor Dr. F. A. van Baren, Secretary General of the I.S.S.S., was prevented from attending through ill-health, but was represented by Professor Dr. P. Buringh, Deputy Secretary General of the I.S.S.S.

Attendance

The Symposium was attended by 215 participants representing 32 countries and international organizations as follows:

Algeria (3), Belgium (2), Bulgaria (1), Cyprus (1), Czechoslovakia (2), Egypt (123), France (2), GDR (1), G. F. R. (6), Greece (1), Hungary (11), India (2), Iran (2), Iraq (6), Kuwait (2), Lebanon (1), Netherlands (5), Peru (1), Saudi Arabia (1), Spain (6), Syria (1), Sudan (2), Thailand (1), UK (1), USA (2), USSR (15), Venezuela (1), Yugoslavia (4), and UNESCO (2), OAU (1), FAO (5), IAEA (1).

Officers of the Symposium

The following officers were elected:

1. *Board of the Symposium*

Honorary President H.E. Professor Dr. M. Elgabaly, Minister of Agriculture and Land Reclamation, Dokki, Cairo.

President	Professor Dr. I. Szabolcs, Director, Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, Budapest.
Vice-Presidents	Professor Dr. H. Hamdi, President, Soil Science Society of Egypt, Professor of Soils, Ain Shams University, Cairo.
	Professor Dr. C. J. Bardaji, Head of Section, Cartography and Analysis of Soils, IRYDA, Madrid.
Members	Professor Dr. G. Aubert, Director of Soils Department, ORSTOM, Paris
	Dr. D. R. Bhumbla, Director, Central Soil Salinity Research Institute, Karnal, India.
	Professor Dr. P. Buringh, Deputy Secretary General, International Society of Soil Science, Professor of Tropical Soil Science, University of Wageningen.
	Dr. R. Dudal, Chief, Soil Resources Development and Conservation Service, FAO, Rome.
	Professor Dr. A. El-Damaty, Professor of Soils, Ain Shams University, Cairo.
	Professor Dr. G. P. Petrosian, Director, Armenian Research Institute of Soil Science and Agrochemistry, Yerevan.
	Dr. J. Rhoades, Research Soil Scientist, U.S. Salinity Laboratory, Riverside, California.

2. *Drafting Committee*

Chairman	Professor Dr. P. Buringh, Deputy Secr. Gen. I.S.S.S.
	Dr. Y. Barrada, Joint FAO/IAEA Division of Atomic Energy in Food and Agriculture, Vienna.
	Professor Dr. A. El-Shabassi, Under Secretary of State for Agriculture, Head of the Soil and Water Research Institute, Cairo.
	Professor Dr. A. Finck, Director, Institute for Plant Nutrition and Soil Science, University of Kiel.
	Professor Dr. N. Hassan, Director, Land Reclamation Institute, University of Alexandria.

3. *Rapporteur-General*

Mr. J. H. Stevens	Lecturer in Soil Science, Department of Geography, University of Durham, Durham, U.K.

Papers

43 papers, abstracts of which were available prior to presentation were read to the Symposium. Keynote addresses were given on salt balance studies of salt affected soils (Professor Dr. I. Szabolcs), reclamation and management of salt affected soils in the Middle East (H. E. Professor Dr. M. Elgabaly) and on mineral transformations (Dr. J. Rhoades). The papers covered the following aspects of new developments in the field of salt affected soils:

I. Salt balance studies of salt affected soils	21 papers
II. Problems of sampling, analysis and interpretation of data	4 papers
III. Reclamation and management of salt affected soils	12 papers
IV. Secondary formations in salt affected soils	6 papers

The papers were presented on the first days of the Symposium so as to allow an extensive excursion to the northern Nile Delta. As a consequence, only a short time was available for the formal discussion of the papers, though informal discussion continued throughout the period of the meeting.

Field Excursion

A field excursion was made to the northern Nile Delta during the period December 7 - 9, with delegates being accommodated in Alexandria. A number of

salt-affected profiles were examined and the techniques employed in the reclamation of calcareous and salt-affected soils were fully demonstrated in the Abis, North Tahrir and Marinet sectors of the Delta. Some of these reclaimed areas are below sea level and, prior to reclamation, were saline lakes. Now, wines, alfalfa, citrus (on the sandy soils) oil crops, such as sunflower and flax, and vegetables are grown on these lands, which have been reclaimed for less than ten years.

In addition to seeing the reclaimed lands visits were also made to two research institutes dealing with the problems of salt-affected soils — the Soil Salinity Laboratory and the Faculty of Agriculture, University of Alexandria.

World Map of Salt-Affected Soils

A special afternoon session was held for the presentation of the map of Africa indicating the salt affected areas of that continent.

Prof. Szabolcs, Chairman, gave a review of the present stage of the maps of the various continents. Prof. Aubert, who is the correlator of the map on salt affected soils of Africa, presented the map which is now almost complete. During the discussion that followed special attention was paid to:

a. the potential salt affected areas. These are not indicated in the map of Africa, whereas they will be shown on the maps of some other continents;

b. the criteria of the various map units, the methods of sampling and the evaluation, which are not the same on all maps;

c. The acid-sulfate soils. These will be included on the map of Africa.

It was recommended that these points should be given special attention and that the work on the maps should be completed as soon as possible.

Professor Dr. A. Zavaleta also outlined briefly the progress beging made on the map of salt-affected soils in South America.

Social Activities

A full programme of activities and visits was arranged for ladies accompanying delegates to the meeting.

In addition, both ladies and delegates had an opportunity to visit the magnificent Agricultural Museum and to see the spectacular Son-et-Lumiere at the Giza Pyramids. H. E., the Minister of Agriculture and Land Reclamation, gave a dinner at the conclusion of the paper-reading sessions at which traditional Egyptian dances were performed, while mention too must be made of the hospitality afforded to delegates in Alexandria, by the Governor and the Minister of Land Reclamation.

A number of delegates also visited Upper Egypt at the conclusion of the Symposium where, again, the wonderful hospitality of the Egyptian people was much in evidence.

Final Session

One resolution, recording the appreciation of the meeting for the hospitality afforded by the Government of the Arab Republic of Egypt and the efforts of all those who contributed to the success of the meeting, was passed. In addition, a number of recommendations were agreed. These concerned on intensification of research work on salt-affected soils, greater efforts in the practical applications of land improvement and the further work of the Subcommission on Salt-Affected Soils of the International Society of Soil Science.

Invitations to hold further symposia were received from India and Peru.

Rapporteur-General for the Symposium
J. H. STEVENS

Resolutions and Recommendations

The Symposium resolves that:

The Subcommission on Salt-Affected Soils of the International Society of Soil Science would like to record its appreciation for the kind hospitality afforded by the Government of the Arab Republic of Egypt on the occasion of its meeting in Cairo, December 4 - 9, 1972. It would like to thank in particular H. E. Professor Dr. M. Elgabaly, Minister of Agriculture and Land Reclamation, the Soil Science Society of Egypt and the Organizing Committee for all their efforts in making the

Symposium so succesful. Grateful thanks are also extended to the Secretariat for their help and to all those who contributed papers.

The Symposium recognising the importance of salt-affected soils in that their area is increasing both as a result of existing cultivation and as these soils are reclaimed to provide more land for agriculture:

Recommends

1. An intensification of research work with an emphasis on new techniques. In particular, areas of research should include:
   a. fertility studies on improved salt affected soils, not forgetting soil structure, micro-nutrient studies, the toxicity of certain elements, mineralogical studies, and microbiological studies;
   b. the potential use of water of low quality in leaching and irrigation of salt affected soils, and the role of amendments in this respect;
   c. the identification of agricultural practices, cropping patterns and rotations suitable for the best utilization of salt-affected soils;
   d. an extension of agro-meteorological studies, noting the current lack of information;
   e. efforts to standardize sampling and analytical techniques; consideration should be given to the publication of an up-to-date handbook on salt-affected soils;
   f. the monitoring of changes occurring in the soils of existing land reclamation schemes and the Symposium noted that these activities could be implemented, in part, in the FAO/UNDP Near East Applied Research Programme.
2. Stronger efforts should be made in the practical applications of land improvements. To this end, there should be:
   a. an increased promotion and exchange of both information and soil scientists among participating countries;
   b. increased collaboration between soil scientists and scientists of other disciplines in the fields of reclamation, improvement and management of salt-affected soils;
   c. the increased training of all concerned in the practical management of salt-affected soils;
   d. encouragement given to extension officers to disseminate and simplify the research results for the benefit of farmers; in this respect, the value of demonstration plots should be noted.
3. Papers, discussions and recommendations of this Symposium should be published and made available to all participants as soon as possible.
4. The Symposium further recommends, to the Subcommission on Salt Affected Soils of the International Society of Soil Science, that points raised in the Symposium be followed up and that further meetings be held.

COMMISSIONS V AND VI

The proceedings of the joint meeting held in Stuttgart-Hohenheim, D. F. R., in September 1971 on **Pseudogley & Gley — Genesis and Use of Hydromorphic Soils** are now available. They are edited by E. Schlichting und U. Schwertmann. The volume of 771 pages contains 7 invited papers, 80 submitted papers (35 in English, 34 in German and 11 in French) and 13 summarizing reports.
The price is 150,— DM.

Orders are to be sent directly to:
Verlag Chemie
Poppelallee 3
D-694 Weinheim/Bergstrasse
Fed. Rep. of Germany

NEWS OF THE NATIONAL SOCIETIES
NOUVELLES DES SOCIETES NATIONALES
NEUES DER GESELLSCHAFTEN IN EINZELNEN LÄNDERN

Sociedade Portuguesa da Ciencia do Solo

At the occasion of the General Meeting of the Soil Science Society of Portugal, December 1972, the following officers were elected for the period 1973-1976:

Office of the General Assembly
- President : Eng. Lúcio Mercês de Mello
- 1st Secretary : Eng. Teodósio A. Salgueiro
- 2nd Secretary : Dr. António F. A. Sanchez Furtade

Executive Committee
- President : Dr. Eng. Antoónio J. da Silva Teixeira
- Secretary : Dr. Eng. Augusto Cordeiro Zagallo
- Treasurer : Dra. Maria A. Silveira

Delegate to I.S.S.S. : Prof. Eng. Ario Lobo Anzevedo.

Venezuelan Society of Soil Science

At the occasion of the January 1973 meeting the following board was elected:

President : J. V. Salazar
Vice-President : J. G. de Brito
Secretary : J. Sucre
Treasurer : J. Pérez P.
Member : J. Comerma

R. Herrera was re-elected International Delegate to the I.S.S.S. Working Commissions were established consisting of the following members:

1. Soil Genesis and Classification : L. Arias and A. Mayorca
2. Soil Fertility and Biology : L. Bascones and N. Rodríguez
3. Soil Chemistry and Mineralogy : R. Herrera and A. Chirinos
4. Soil Physics and Technology : P. Homes and I. Pla
5. Teaching : A. Mayorca and R. Pinto
6. Documentation : E. Hidalgo and J. G. de Brito.

Yugoslav Society of Soil Science

The 4th national Soil Science Congress was held on 4 - 12 September 1972 in Belgrade. About 120 papers were read at the Congress under different sessions.

The following were elected as office bearers:

President: Prof. Dr Mirko Leskosek
Biotehniska fakulteta
Krekov trg 1
61000 LJUBLJANA
Yugoslavia

Vice-Presidents: Prof. Dr M. Antic
Prof. dr Z. Racz
Prof. dr H. Resulovic
Doc. dr B. Petrovski

Secretary-General: Prof. dr Nikola Jovic
Forestry Faculty
Kneza Viseslava 1
11000 BEOGRAD
Yugoslavia

Members: Dipl. ing. F. Lobnik
Dr C. Burlica
Dr A. Vajnberger
Prof. dr M. Todorovic
Prof. dr S. Manojlovic
Dr G. Antonovic
Prof. dr O. Petijevic
Prof. dr A. Kukin
Doc. dr T. Saric
Mr D. Dusic
Dr M. Knezevic
Prof. dr M. Vlahinic
Dr J. Susin
Prof. ing. Dj. Janekovic
Dr P. Jovandic
Doc. dr R. Kurunovic
Dr J. Spirovski
Prof. dr V. Mihalic
Prof. dr Z. Popovic

The next 5th National Soil Science Congress will be held in May 1976 in Sarajevo. The president of Organizing Committee is

Prof. dr M. Ciric
Forestry Faculty
Zagrebacka 20
71000 SARAJEVO
Yugoslavia

Sociedad Colombiana de la Ciencia del Suelo

The Colombian Society of Soil Science will organize a Symposium on the Use of Phosphorus in the Tropics as from 26 - 31st August 1973.

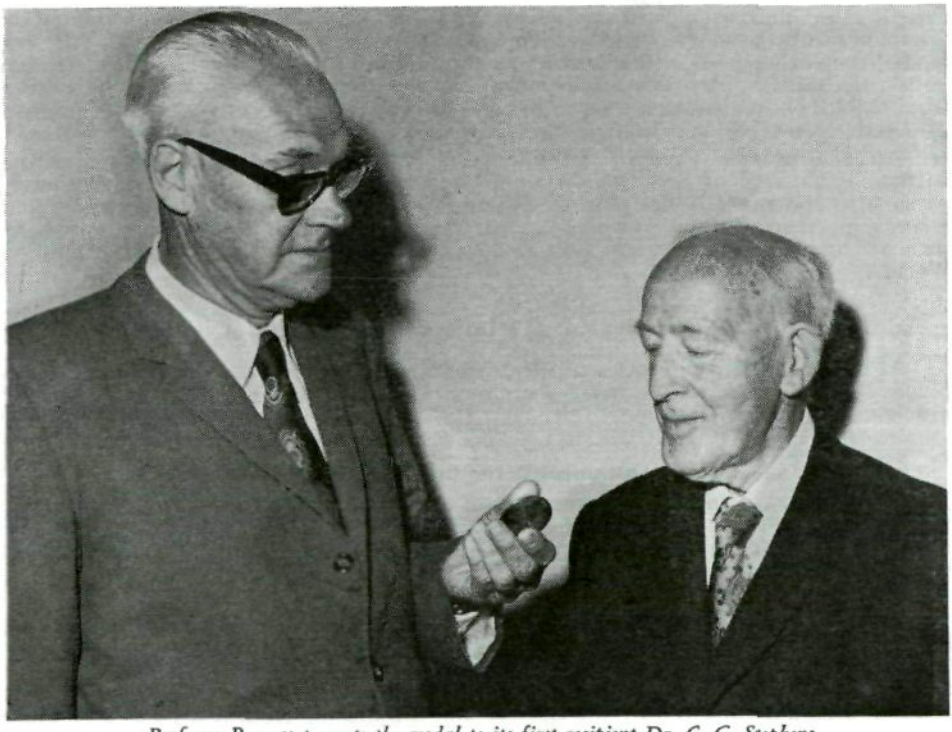
The proceedings of the earlier Symposium on Nitrogen in the Tropics are now available at the price of US $ 7.—, including postage. They should be ordered directly with the Society, address:

Dirección, AA 51791, Bogotá, Colombia.

The Society of Soil Science of South Africa

The Society had a very well organized and successful congress at Salisbury. A new committee was nominated with Prof. A. A. Theron of the University of Stellenbosch as the President and Mr. J. J. N. Lambrechts as the Secretary-General.

The J. A. Prescott Medal of Soil Science



Professor Prescott presents the medal to its first recipient Dr. C. G. Stephens

MISCELLANEOUS NEWS — INFORMATIONS DIVERSES VERMISCHTE MITTEILUNGEN

The J. A. Prescott Medal of Soil Science

On behalf of the Australian Society of Soil Science, Emeritus Professor J. A. Prescott presented the first J. A. Prescott Medal of Soil Science to Dr C. G. Stephens at a meeting of the South Australian Branch of the Society on Thursday, 16 November 1972.

The Medal was established by the Australian Society of Soil Science as a National Award to honour the outstanding achievements of Professor Prescott in soil science and agricultural climatology.

During the past 60 years, Professor Prescott has published over 80 scientific papers. One of his most outstanding contributions, published in 1931, was „The soils of Australia in relation to climate and vegetation". This paper laid the foundation of soil science in Australia, and the present high international standing of Australia in this field owes much to his work.

Professor Prescott came to Australia in 1924, after holding appointments at Rothamsted and in Egypt, to be the first Professor of Agricultural Chemistry at the Waite Agricultural Research Institute. From 1929 to 1947 he was the first Chief of the Division of Soils, C.S.I.R.O., Australia and from 1938 to 1957 was the Director of the Waite Agricultural Research Institute. He has travelled overseas on a number of agricultural missions, including visits to Russia, India and Pakistan. He was appointed Commander of the Order of the British Empire in 1947. He is a Foundation member of the Australian Academy of Science and in 1951 was elected a Fellow of the Royal Society, London. Professor Prescott is a life member of the Australian Society of Soil Science and he was elected an Honorary Member of the International Society of Soil Science in 1964.

It is most appropriate that Dr. C. G. Stephens, who has been so closely associated with Professor Prescott, is the first recipient of the J. A. Prescott Medal of Soil Science. For 30 years from 1938, Dr. Stephens was Head of the Soil Survey Section in the Division of Soils, C.S.I.R.O., Australia, concerned with the mapping, classification and use of Australian soils; many of his surveys were related to Commonwealth post-war land settlement and assessment of erosion risk. He extended the earlier work of Professor Prescott and published a „Manual of Australian Soils" in 1953. Dr. Stephens wrote more than 60 scientific papers before he retired from C.S.I.R.O. in 1967 to return to his original interest in forestry. He is at present a forestry research consultant for a softwood forestry company.

After Professor Prescott presented the Medal, Dr. Stephens thanked the Australian Society of Soil Science honouring him and spoke of his indebtedness, personally and professionally, to Professor Prescott. He thanked his colleagues and friends in Australia and overseas for all the help he had received. Dr. Stephens then addressed the Society on „Soil Science and Technology in a Rapidly Changing World".

Honours to the President of the International Society of Soil Science

At a special ceremony at Paris, Professor Victor Kovda was awarded the Unesco Science Price for 1972 for his research on the "salting" of soil and the use of brackish water for irrigation.

Memorial Fund Established for Emil Truog Science Award

A memorial for a truly eminent member of our societies has been established under the authority of the Soil Science Society of America. This memorial will be in honor of the late Professor Emil Truog, one of the founding members of SSSA, and vigorous participant in numerous ASA and SSSA activities throughout his career. (See obituary in Necrology section).

This new Emil Truog Soil Science Award will absorb and greatly supplement a Truog Award Fund established when he retired in 1954. At that time an Emil Truog Recognition Committee collected a fund that was presented to the Soil Science Society of America in the name of Prof. Truog. The committee stated: „This fund is to be administered by the Society and the income from it used as an annual award for an outstanding soil scientist... This will be known as the 'Emil Truog

Award.' It is hoped that enough funds will be received so that the income from the fund will provide a $ 500 prize annually."

The original fund had grown to $ 3,800 and was recently supplemented by a bequest of $ 1,000 from the estate of Mrs. Emil Truog who died five months before her husband. It is now proposed that a widespread effort be made to double or triple the present fund so that the annual income from it will be $ 500 or more. This amount will be awarded each year as the Truog Soil Science Award to an individual selected by an SSSA committee established for this purpose. The SSSA Executive Committee is planning to specify that the biennial award go to a young soil scientist in recognition of an exceptional thesis or oral presentation at the annual meetings. The Committee believes this would round out the present Society program of annual awards to outstanding senior scientists.

SSSA President C. I. Rich has appointed an ad hoc committee to carry out the following functions:

1. Prepare a letter to be forwarded to Professor Truog's former students for the purpose of soliciting donations towards an awards fund bearing his name which will be administered by the SSSA.
2. Prepare a set of criteria for the selection of the Truog awardee.
3. Draft a proposal of the amount of the award, frequency of it, and duration in terms of years before the principal is used up or the remainder turned over to the SSSA for general use.
4. Submit a list of names of individuals who should be considered for appointment to the Awards Committee for selection of the awardee.

The members of this committee, all former students of „Prof" Truog, are the following:

R. J. Muckenhirn and A. E. Peterson, Co-chairmen; Soil Science Dept., Univ. of Wisconsin, Madison 53706;

C. A. Bower, U.S. Salinity Lab., P.O. Box 672, Riverside, Calif.

W. T. Dible, Terra Chemicals International, Sioux City, Iowa;

M. Drosdoff, Cornell University, Bradfield Hall, Ithaca, N. Y.;

H. L. Hamilton, ASA, 677 S. Segoe Rd., Madison, Wis.;

U. S. Jones, Dept. of Agronomy & Soils, Clemson Univ., Clemson, S.C.

All society members are invited to contribute to this fund which will honor a former member and a number of present members. Contributions may be sent to the Truog Fund Headquarters Office, 677 S. Segoe Rd., Madison, Wis. 53711.

World population year 1974

A big concern to anyone who directly or indirectly is involved in increased plant production studies, be it through improvement of soil conditions, developing high quality seeds, or better agricultural technics, is the threat of the world's ever growing population. The same concern, very much alive with UN-executives, led to the proclamation of 1974 as World Population Year. It is not only the population problem to-day, but more pressing that of to-morrow with a possible eight billion people in the year 2000 that asks for world-wide cooperation. To cope with the human and technological aspects of the problem on a global scale a special fund has been credited in 1967, whereas in 1971 the UN General Assembly passed a resolution recognizing this so-called Population Fund as the focal point of the population efforts of UN system. It seems to be our mutual responsibility to support the activities of those UN agencies with which ISSS has now direct relationship, viz. FAO and UNESCO, the more general goal being to maintain and improve the capacity of the earth to provide benefits of civilized living to all.

International conference on land for waste management

The Canadian Society of Soil Science is organizing an „International Conference on Land for Waste Management" to be held in Ottawa, Canada during October 1 - 3, 1973.

The purpose of the conference is to collect and disseminate information on waste disposal and waste utilization in soils, to evaluate systems of waste management on land, and to identify the problem areas requiring research and

development. For achieving this purpose the three day conference will be organized around the following themes:

a. climate, vegetation and soils as factors in waste disposal, including special problems in the North;
b. soil properties and processes in relation to waste recycling and disposal;
c. hydrogeology and geomorphology as factors in waste management;
d. nature of wastes in relation to disposal on land;
e. socio-economic and land use planning for waste disposal, including health and legal aspects;
f. land waste disposal systems — present and future designs.

The program will feature keynote speakers and will include volunteered papers, discussion and printed proceedings which pertain to the above themes. The conference will take place in the Ottawa Conference Centre and will include simultaneous translations in English and French.

Requests for further information and instructions for submitting papers should be addressed to:

Mr. M. K. Ward, Executive Secretary,
International Conference on Land for Waste Management,
National Research Council,
OTTAWA, Ontario, Canada K1A OR6

LAND EVALUATION FOR RURAL PURPOSES

Summary of an expert consultation

This publication is the result of the Expert Consultation on Land Evaluation for Rural Purposes, convened by the Food and Agriculture Organization in cooperation with the Agricultural University and ILRI, and held in Wageningen from 6 - 12 October 1972. (See Bulletin 41, page 17).

„Land evaluation for Rural Purposes, Summary of an Expert Consultation"

is now in press. It will appear as an ILRI publication, 24 x 17 cm, about 120 pages, and is expected to appear mid-1973.

The price, postfree, will be Dutch guilders 9,60* (about US $ 3,40 at present rate of exchange).

Copies may be ordered by writing directly to:

International Institute for Land Reclamation
and Improvement (ILRI),
Staring Building,
Wageningen, Netherlands,

stating your name and address as well as the title of the book, and enclosing an international money order or bank draft, made payable to ILRI, Wageningen.

* *Only on orders from the Netherlands:*
please add 0,40 value added tax.

Soil and Fertilization Study Week
3 - 7 September 1973, Gembloux, Belgium

The State Agronomical Sciences Faculty and the State Agronomical Research Center in Gembloux organize this study week on Soil and Fertilization.

Each day two lectures are given on such subjects as soil capability, soil physics and fertility, soil chemistry and fertility, soil biology and fertility, technology of fertilizer application, soil conservation, etc. These will be followed by communications and discussions. The official languages are French and English and simultaneous translation will be provided.

The participation fee is 2000 Belgian Francs. This does not include accommodation and meals. Registration before 1 August.

Application and information:

Semaine d'Etude Sol et Fertilisation,
Avenue de la Faculté d'Agronomie 2,
B 5800 Gembloux, Belgium.

International Commission of Agricultural Engineering

This Commission will organize an International Conference September 17 - 22, 1973 in Warsaw, Poland, on Perspectives of Agricultural Tractors Development. For further information please contact:

Dr A. Soltynski
Institute of Mechanization and
Electrification of Agriculture IMER
Rakowiecka 32
Warsaw, Poland

Bulgarian Committee for Science, Technical Progress and Higher Education

The Scientific-Technical Union for Machine-Building, the Committee for Science, Technical Progress and Higher Education, and the Ministry of Machine-Building, are organizing the National Scientific-Technical Conference (with foreign participation) on

„Contemporary Problems and Machines for Soil Cultivation"

from 3 to 5 October 1973 in the House of Technique-Russe, Bulgaria.

Those interested are requested to address themselves to the

Organizing Committee, House of Technique,
„9th of September" St. No. 28,
Russe, Bulgaria

INTERNATIONAL SYMPOSIUM ON ACID SULPHATE SOILS

Wageningen, 13 - 20 August 1972

Resolutions and Recommendations

The participants of the International Symposium on Acid Sulphate Soils, convening at Wageningen, The Netherlands, August 13 - 20 1972, and considering the contents of the papers presented and the tenor of the discussions, recognize that Acid Sulphate Soils are problem soils which normally require expensive inputs for improvement, and that only in special circumstances should these soils be given a high priority in reclamation.

Nevertheless, they emphasize that where these special circumstances do occur, e.g. in areas where population pressure is demanding the cultivation of Acid Sulphate Soils or where such soils are already being cultivated, reclamation and improvement have to be considered.

Considering further that although certain clearly recognized principles are involved in the reclamation, management, and improvement of Acid Sulphate Soils, the application of these principles to suit the divers local conditions, in many instances requires further applied research.

In the context of the above considerations and recognitions, the participants recommend that during the coming years special attention be given to the following subjects and problems:

1. The relationship between pyrite formation and specific combinations of vegetation, flooding patterns, and types of deposits.
   This subject is considered of special importance for both the use of remote sensing techniques in soil surveying and for soil and water management practices. It implies the study of what is often called the primary and secondary pyrite formation.
2. The relationship between the characteristics of sulphidic soil material and the dynamics of acid sulphate soils during development, in the field and after handling in the laboratory.
   Sulphidic soil material is very sensitive to air oxidation and characteristics may change within days after sampling. Also for the comparison of laboratory experiments with field conditions, it is considered of importance that these experiments simulate field conditions more closely and that the results obtained with the laboratory models be correlated with those of controlled field experiments. Important factors that need consideration are: kinetics of pyrite oxidations, closed versus open systems, spatial differentiation of soil acidity on a micro scale.
3. The dynamics of water soluble Fe and Al and of N, S, and pH in seasonally waterlogged acid sulphate soils, bearing in mind the wide differences in behaviour of such soils in terms of pH changes, ferrous iron contents, etc.
   An effort should be made to relate these dynamics to soil properties measurable in the dry state.
   This subject is of special importance in tropical areas where populations depend for their subsistence on rice growing on Acid Sulphate Soils.
4. Investigations of the behaviour of Al in respect to the structural stability of Acid Sulphate Soils and its interaction with such amendments as lime.
   Such research is expected to be of particular benefit to agricultural production on drained Acid Sulphate Soils and also to contribute to a better understanding of the productivity of Para- or Pseudo Acid Sulphate Soils.
5. Quantitative field methods for the identification of Potential Acid Sulphate Soils and for the evaluation of their potential acidity.
   Improvement of these methods is required to enable more precise and accurate soil survey and land classification.
6. The development and use of well defined and generally acceptable diagnostic criteria, descriptive and analytical methods, and nomenclature in research and in reporting.
   This is urgently needed for world wide correlation of data and exchange of information. The convention agreed to the establishment of a working party to select and define such generally acceptable criteria, methods, and nomenclature. It was suggested that this working party present its results to the International Society of Soil Science in 1974.

7. The performance of vegetations, plant species and varieties important for reclamation and agriculture, with respect to the presence of major toxic components of Acid Sulphate Soils, i.e. Al, Fe, and S compounds.
   Detailed study in this field is considered very important for widening the agricultural possibilities of these soils.
8. Long term, well monitored field experiments with various combinations of reclamation methods and soil-water-crop management systems.
   These experiments should be conducted in at least two key areas i.e. in tropical rainy and in wet and dry tropical environments. The convention hopes through this recommendation to interrupt the long standing vicious circle of insufficient information and abortive trials.
9. The exchange of relevant data among field and research workers.
   The convention recommends that the working party for methods and nomenclature, mentioned sub 6, promote this exchange for the time being and that in due course another International Symposium on Acid Sulphate Soils be organized, preferably in one of the tropical areas concerned.

Having recommended the above topics, the convention wishes to stress that these topics represent those aspects of Acid Sulphate Soil Research that merit special attention in studies and schemes in the majority of the world's large Acid Sulphate Soil Areas. At the same time it does not deny that, locally, other problems might well deserve higher priority.

The present recommendations express a careful balancing of specificity against generality and as such they provide a frame of thought which may serve to guide soil scientists, agronomists and other persons involved in deciding on priorities in the specific areas under their consideration.

H. DOST
Secretary,
Organizing Committee

STANDARDIZATION OF METHOD USED IN SOIL ANALYSIS FOR INTENSIVE HORTICULTURE

Already for several years in Horticulture a need is felt for more uniformity in the methods used for soil analysis and the way the results are presented. In the present situation it is very difficult or even impossible for horticulturists to compare the results of soil research on plant nutrition. The interpretation and application of published figures is therefore very difficult.

Attempts in the past to realize a standardization of methods used in soil analysis has failed. The most important and also the most complicated aspect is the choice of extractant. In protected cultivation a water extractant has advantages and is often used. This method of extraction therefore is suitable if the level of nutrients is high, as is the case with protected cultivation and to a less extend also for intensive growing of horticultural crops outdoors. The problem of standardization for this branch of Horticulture could be simplified by excluding other types of extractants.

This may explain why already in 1967 within the Commission on Protected Cultivation of the International Society for Horticultural Science the idea has risen to stimulate a standardization for the limited field of protected cultivation. Even in this limited field it will be very difficult to get accepted a standardization of methods of soil analysis and methods of presentation of soil analysis results by all laboratories engaged. We think the first thing we could consider at the moment is to make an inventarisation of the methods used in soil analysis for protected cultivation and to collect all figures known about existing correlations between the results of different methods.

A second and very important step could be the introduction of a reference method of extraction. It will be much easier to agree about adoption of a reference method than to introduce uniform methods. In this case, it is required that the analytical data of the extraction methods used are compared with those of the reference method.

In the first week of April these possibilities will be discussed in a meeting of specialists in Weihenstephan, organised by the commissions on Plant Substrates and on Protected Cultivation.

Y. van Koot

UNITED NATIONS CONFERENCE ON THE HUMAN ENVIRONMENT

5 - 16 June 1972, Stockholm, Sweden

In the Recommendations for Action, adopted at the U.N. Conference on the Human Environment a chapter is devoted to Natural Resources Management. A part of Recommendation 20 reads as follows:

"It is recommended that FAO in co-operation with other international agencies concerned, strengthen the necessary machinery for the international acquisition of knowledge and transfer of experience on soil capabilities, degradation, conservation and restoration, and to this end:

a. Co-operative information exchange should be facilitated among those nations sharing similar soils, climate and agricultural conditions;

I. The Soil Map of the World being prepared by FAO, Unesco and the ISSS should serve to indicate those areas among which transfer of knowledge on soil potentialities and soil degradation and restauration would be most valuable;

II. This map should be supplemented through the establishment of international criteria and methods for the assessment of soil capabilities and degradations and the collection of additional data based upon these methods and criteria. This should permit the preparation of a World Map of Soil Degradation Hazards as a framework for information exchange in this area.

III. Information exchange on soil use should account for similarities in vegetation and other environmental conditions as well as those of soil, climate, and agricultural practices.

IV. The FAO Soil Data Processing System should be developed beyond soil productivity considerations to include the above-mentioned data and relevant environmental parameters and to facilitate information exchange between national soil institutions, and eventually soil-monitoring stations.

b. International co-operative research on soil capabilities and conservation should be strengthened and broadened to include:

I. Basic research on soil degradation processes in selected ecosystems under the auspices of the Man and Biosphere Programme. This research should be directed as a matter of priority to those arid areas that are most threatened;

II. Applied research on soil and water conservation practices under specific land-use conditions with the assistance of the FAO and, where appropriate, other agencies (UNESCO, WHO and IAEA);

III. Strengthening of existing research centres and, where necessary, establishment of new centres with the object of increasing the production from dry farming areas without any undue impairment of the environment;

IV. Research on the use of suitable soils for waste disposal and recycling; the UNIDO, FAO and the WHO should enter into joint consultations regarding the feasibility of an international programme in this area."

It will be clear that many more recommendations and resolutions deal with the varied activities carried out by institutions and individuals in the field of soil science.

SOIL RESOURCES IN ARID LANDS

In Arid Lands Research Newsletter no. 40, Professor Dan H. Yaalon has written the following thought-provoking Letter to the Editor:

... The definition and delimitation of arid lands is a useful and valuable academic exercise, which like all man-made classifications will never be fully satisfactory or completed, but which can be made a subject of agreement and periodically revised as new data accumulate and means of communication improve. ... It seems to me ... that there is one important field of studies where a rigorous inquiry and a large-scale program is very much needed — the study of *soil resources in arid lands.* The UNESCO Arid Land Program was guilty of not advancing more the study of soils in desert regions. Not one of the many international symposia was devoted to the soils of the deserts. No encouragement was given to the study of weathering and soil formation, nor were soil types or soil classification discussed.

Some desert surveys still confine themselves to the description of surface features only, and the notion that desert soils are undeveloped and undifferentiated prevails in most texts. The recent review of Deserts of the World clearly demonstrated the lack of adequate data on the properties and distribution of desert soils and on their horizonation. My own studies in the Negev and Sinai and observations in other desert regions certainly show that desert soil formation and horizonation is no less complex than in other zones and a worthy object for detailed pedological studies.

The soil is and will remain the main resource of the arid lands. The time when large scale desalinization of sea water will become economical is not too distant, and large tracts of soils in the coastal desert regions will become irrigable. To prepare for this we need to have good maps of the available soil resources, we need to know the quality and distribution of the various soil types, not only of their surface horizons but of the whole profile down to the bedrock.

To understand the distribution pattern of the soils we need to know the processes which give rise to the many typical desert features. We need to know how rapidly a desert pavement forms, what the vesicular structure indicates, what the rate of mass transport is, how often dust blows, what are the processes of salinization, how deep the soil is wetted after a storm, and under which conditions crusts are likely to form. The basic processes operating in desert soils are likely to be the same from place to place and their understanding would help in a better land evaluation for practical use. It is often thought that most desert features are relicts from past more humid climates, but a more careful study will reveal that this is not necessarily so. Our desert observations are often too sporadic and don't include consideration of seasonal or occasional occurrences. Thus long-terms observation and measuring stations have to be established.

And last but not least we must train people able to read and interpret the many and fascinating features of desert weathering and desert soils. Perhaps a first step in the right direction would be an international symposium on desert soils? DAN H. YAALON, Department of Geography and Environmental Engineering, Hebrew University, Jerusalem, Israel.

TAYLOR, STERLING A. Physical Edaphology. The Physics of Irrigated and Nonirrigated Soils. Revised and edited by G. L. Ashcroft. Freeman, 1972. Pp. XII and 533, 279 figures and 46 tables. Price £ 7.70.

This textbook provides a concise and practical treatment of the influences of soil, water and atmospheric conditions on plant production. The approach to soil physics of Dr. Taylor, who died in 1967, was ecological; he chose the name Physical Edaphology for his soil physics course at Utah State University to connote this viewpoint.

The present book is an outgrowth of his lecture materials, mimeographed in 1964 under the name „Physics of Irrigated Soils: Soil-Plant-Water Relations". Dr. Ashcroft, long-time colleague of Dr. Taylor, revised and edited the original manuscript. Some chapters had to be updated and were completely rewritten.

The book is not only a valuable basic text in courses in soil physics, agricultural physics, irrigation, soil and environmental science, but also a very useful reference for specialists working in any part of the soil-water-atmosphere-plant complex. This textbook certainly fills a need in the field of soil science. It provides a rich source of information, well illustrated with a great number of elucidative figures.

International Soil Museum
Utrecht, Netherlands

A. WALLACE: Regulation of the Micronutrient Status of Plants by Chelating Agents and Other Factors, Edward Bros. Inc. Ann Arbor, Michigan, 1971, 309 pp, 327 ref. Price $ 6.—.

In 1962, the first 10-year period of use of synthetic chelates in agriculture was reviewed in a booklet written by A. Wallace and entitled: A Decade of Synthetic Chelating Agents in Plant Nutrition". Recently the same author, with the aid of many co-authors, wrote a second book on the same subject. In addition to research on chelating agents, the new book also deals with the more general subject of minor-element nutrition of plants.

The increase in productivity of many soils resulting from the use of fertilizer, irrigation water and new varieties has led to an accelerated withdrawal of minor elements from these soils. The situation prompted a rise in investigations on the supplying capacities of soils regarding these elements and, whenever these capacities were found to be low, on the effectiveness of minor element fertilizers.

When the lacking element had been identified, in many instances it was found that small applications had a very beneficial effect on soil productivity. In many other instances, however, it was experienced that a mere addition of the lacking element was not sufficient to rectify the disorder. As a result, at many research stations, work is underway on the intricate behavior of minor elements in soils and in crops. Fortunately, there are a few centers of research an investigator can turn to for advice on trace-element matters. The experiment stations of the University of California at Los Angeles and Riverside are among those at which much knowledge on minor-element behavior has been compiled over the last twenty years.

In the present book, Wallace has brought together some 75 articles on minor-element nutrition, comprising many elements and many crop species grown in Southern California. Next to other books that have recently appeared on the behavior of trace elements in soils, the present book, stressing the relationship between soil and plant, will be found to be very useful by those who are interested in minor elements mainly from a soil-productivity standpoint.

For those looking for a concise discussion on the functioning of metal chelates in plant nutrition, the author has included some articles in which the knowledge acquired over the last ten years is skillfully edited. At the end of the book, 41 general conclusions concerning chelating agents in plant nutrition are listed. The bibliography contains 327 titles of articles on chelating agents having appeared

between 1961 and 1971. With each title, a short summary of the main conclusions is included.

The book can be warmly recommended to all interested in plant nutrition, and especially to those who are or will get involved in matters concerning the safeguarding of crops against minor element deficiencies.

A. van Diest,
Agr. University, Wageningen

HUTCHINSON, Sir Joseph: Farming and Food Supply, the Interdependence of Countryside and Town. Cambridge University Press.
Pp. 146. Price £ 3.— or $ 11.— in U.S.A.

Based on his experience in England, Africa and India, Sir Joseph Hutchinson, distinguished agriculturist, leading plant breeder and author of several books on mainly tropical crops, traces in this essay the achievement of agriculture in the promotion of human welfare.

A chapter on this history of agriculture is followed by an interesting part of the influences and interactions of climate and soil, crops and stock, husbandry and nutrition on the supply of food. After reviewing the agricultural systems in Britain, Sub-Saharan Africa and India, the book comes to a very readable synthesis on the place of agriculture and the farmer in the development process.

A stimulating account on the problem of feeding the world's population!

International Soil Museum
Utrecht, Netherlands

DRAINAGE PRINCIPLES AND APPLICATIONS, Volume I, Introductory subjects. International Institute for Land and Reclamation and Improvement (ILRI). Publication 16, Volume I. ILRI, Wageningen, 1972.
Pp. XIV and 241. Price $ 5.—.

Since 1962 the International Course on Land Drainage has been given annually by ILRI. Due to the increasing demand to make the notes, handed out to participants during the course, available to a wider public, the Board of the Course decided in 1969 to have the entire lecture notes re-edited and issued in four volumes, each of which forming an entity.

I Introductory subjects
II Theories of field drainage and watershed runoff
III Surveys and investigations
IV Design and management of drainage systems.

The first volume, describing the basic elements, physical laws, and concepts of the plant-water system in which the processes of land drainage take place, has now been issued. Given the time limit set by a three-months course, the authors lay emphasis on the practical agro-hydrological aspects, rather than on pure soil physics and groundwater hydraulics, although the basic principles are adequately treated to enable the introduction of modifications and special techniques adapted to local conditions.

Because of this practical approach, the book certainly fills a need. The reviewer has the opinion that this kind of publications is of special value for developing countries. Taking into account the very reasonable price, this series will certainly find its way to many libraries and individuals.

The publication is available from ILRI, P.O. Box 45, Wageningen, Netherlands. Please state Publication 16, Vol. I and enclose the amount due. Cheques should be made payable to ILRI, Wageningen.

International Soil Museum
Utrecht, Netherlands

KANWAR, J. S. and RAYCHAUDHURI, S. P., Editors. Review of Soil Research in India, Indian Society of Soil Science, Indian Agricultural Research Institute, New Delhi-12, India. 1971. Pp. 229 and 1 map.

This review of soil research carried out in India from the early days up to the 1970's has been published on the occasion of the International Symposium on Soil Fertility Evaluation, held in New Delhi in 1971.

In chapters on soil physics, soil chemistry, soil biology, soil fertility, soil genesis, and classification, soil technology, soil mineralogy and water technology the trends of various developments and the present position of soil research in India are described. Each chapter is followed by an extensive bibliography. A 1 : 7 million soil map prepared in 1970 by Dr. S. V. Govinda Rajan shows 25 Indian Soil Classification Units and their equivalents in the 7th Approximation.

The review also indicates gaps in the knowledge and is considered essential to plan future research. An interesting publication, also for soil scientists outside India, since many of the problems outlined in the review do also occur elsewhere.

International Soil Museum

BOZIC, I. and DELAC, I., Editors. Memorial Volume at the 70th Anniversary of Professor Mihovil Gracanin. Zagreb, 1971. Pp. 276.

Professor Gracanin, distinguished university professor and research worker in the field of pedology, plant physiology and plant ecology, celebrated his 70th birthday on 11 May 1971. His writings so far include more than 135 books and articles in Croatian and various other languages, concentrating on the interactions of soil and plant.

The volume contains over 30 papers in the field of Professor Gracanin's research interest and are not only contributed by Yugoslavian soil scientists, but also by such well-known people as Professors Mückenhausen, Schachtschabel, Scheffer and Zonn.

An interesting collection of short contributions, which could be obtained by writing to Dr. Ivo Delac, Duhanski Institut, Planinska 1, Zagreb, Yugoslavia.

International Soil Museum

MOHR, E. C. J. (†), van BAREN, F. A. and van SCHUYLENBORGH, J. Tropical Soils, 481 p., col. photographs, subj. index. Publ. Mouton-Ichtiar Baru-Van Hoeve, The Hague, Paris, Djakarta, 1972. Price US $ 34.—.

After its original publication in 1932 - 1938, Mohr's **Manual on Equatorial Soils** (in Dutch), more specifically those of Indonesia, was translated into English by Professor Pendleton, the well-known expert on tropical soils, and published in 1944.

In 1950 the idea of preparing a fully revised edition arose, with the intention of dedicating the book not only to Indonesian circumstances and soils but giving it a more fundamental and comprehensive character. The entire format was changed, resulting in the well-known book **Tropical Soils** (1954), with Van Baren as co-author. In 1958 a second edition appeared with only minor changes.

As knowledge of tropical soils has increased enormously in recent years, specifically in countries other than Indonesia, and as new approaches have been made in the study of chemical sedimentology and weathering, it was thought necessary to issue a completely revised edition, but maintaining the basic concepts of the former editions belonging to Van Baren's pedological credo: "In the beginning was the rock, and the rock was the mother of the soils." The changes comprise a condensing of the first eight chapters into four chapters of Part I; second, the chapters on soils are extended and discussed in Part II; finally, Part III has been added, giving the thermodynamic background of the weathering and soil forming processes.

Part I, Chapter 1, presents a detailed analysis of climate in all its aspects. Stress is laid upon the vital part played by the "soil climate", differing as it frequently does from the atmospheric conditions prevailing above the soil, a fact which even in modern pedological literature is not always appreciated.

In Chapter 2 ample attention is paid to the composition of rocks from both a chemical and mineralogical point of view, and the possibilities of deciding whether a certain soil profile has been formed from one and the same parent material, with or without the addition of foreign components.

Chapter 3 deals with the weathering of rocks, the genesis of clay minerals, and the importance of soil-water relationships (drainage conditions, permeability, etc.). These determine the composition of the interstitial waters, which in turn forms an aid in predicting mineralogical changes during weathering. This concept is elaborated further in Parts II and III.

Chapter 5 deals with the production and decomposition of organic matter as it depends on climatic conditions, such as sunlight, temperature, and precipitation.

The second change is the more comprehensive discussion of the most important soils in tropical and subtropical areas. Part II: Soils presents a treatise of the genesis and characteristics of Oxisols, Ultisols, Alfisols, Spodosols, Vertisols, and Andosols. Whenever possible those examples were selected to illustrate the soil forming processes, where full analyses (chemical and mineralogical) were available. In this way it was possible to translate all chemical compositions into terms of minerals and to adapt the so obtained normative mineralogical composition to the "mode". Consequently, all profiles discussed in Part II can be mutually compared.

A special chapter in this part is devoted to typical soils which occur partly on a regionally important scale throughout the tropical and subtropical world but have never been treated in any textbook, viz. Paddy Soils and Acid Sulphate Soils.

The addition of Part III (the third change) contains a treatise on the theories important to an understanding of the weathering and soil forming processes. As the release of silica is an important process, the first chapter is called: Desilication. After a review of the most important literature on the experimental approach, the theory based on thermodynamic equilibria is discussed. The importance of stability diagrams of minerals as a function of the equilibrium-solution composition is stressed.

Chapter 2 of Part III deals with the thermodynamic treatment of redox reactions which play an important role in all hydromorphic soils. The theory is specially applied to an explanation of the formation mechanism of the plinthite horizon in some Oxisols.

Chapter 3 expounds the theory of the formation of complex metallo-organic compounds as an aid to explain the mobilization and immobilization of metaloxides in some podzolic soils and podzols.

Finally, some aspects of clay migration are discussed in Chapter 5. In particular, the possibility of migration of clay in calcareous materials is indicated.

Although the book deals with tropical and subtropical soils, the theories developed can be used equally well for the genesis in temperate climates; therefore the book will also be a useful asset to the library of students of soils in areas with temperate climates.

The Authors

PETTIJOHN, F. J., P. E. POTTER and R. SIEVER. Sand and Sandstone. Springer Verlag. 1972. Pp. XVI and 618, 258 figures. Price DM 98.—, $ 31.10.

This is the most up-to-date and authoritative book on all sedimentological and petrological aspects of sands and sandstones. It may be regarded as an enlargement and elaboration of Pettijohn's Sedimentary Rocks, which soon after its publication (1949, second edition 1957) acquired world fame. In fact, it is an outgrowth of a conference on sandstone organized by the authors in 1964 and 1965. The great interest and demand for the 200-page syllabus, issued at the occasion, prompted the authors to update and expand its contents, which resulted in the present 600-page book.

The volume consists of four parts, numbering in total twelve chapters, an appendix and index.

The first introductory chapter, in which the subject is delineated, is followed by Part I which deals with the fundamental properties of sandstones, such as mineral and chemical composition, texture and sedimentary structures. In Part II the petrography of sandstones is treated. General problems of classification and

nomenclature are discussed and a virtually complete glossary, containing both old, obsolete and new rock names, is given. Using a classification which is primarily based on the occurrence of quartz, feldspar and rock fragments and as a secondary criterion the percentage of matrix, a description is presented of the principal families of sandstone, and of some of the more important species. The importance of the use of thin sections is stressed by the presentation of many photomicrographs. A separate chapter has been devoted to sands rich in volcanic debris.

In Part III the processes that form sands and sandstones are discussed. Topics like the production and provenance, transport and deposition and diagenesis are elaborately treated.

Part IV considers the larger aspects of sand depositions. After a summary of the major sedimentary environments, an enquiry is made into the historical geology of sandstone, discussing such problems as the role of sands in the continental evolution. In the appendix, guidelines are given for the petrographic analysis.

Each chapter has an extensive and up-to-date reference list. In addition, many chapters have been provided with a very useful list of annotated references.

This is an excellent book. Although it is intended for geologists, sedimentologists and petrologists, great parts of it, notably Parts I and II, may prove very useful to soil scientists. It is certainly recommended as a reference book.

International Soil Museum
Utrecht, Netherlands

FITZPATRICK, E. A. Pedology, a Systematic Approach to Soil Science. Oliver and Boyd, Edinburgh. Pp. 306. Price £ 4.—.

Pedology is a clear, concise, well-illustrated introduction to the characteristics, relationships and global distribution of soils, and the factors and processes of soil formation. It should prove most suitable for undergraduate teaching.

Chapter 1 presents the concepts of soil profiles and horizons, soil as a continuum in space and time, and the unit of study. Chapter 2 deals with the „factors of soil formation" and the effects of the components of each factor; it includes a concise treatment of the common minerals of soils and parent materials. Chapter 3 deals with chemical, physical and biological processes; these are tied together by a discussion of soil as a weathering unit with explanatory idealized diagrams. Chapter 4 discusses the properties of soil horizons including thin-section data. Chapters 5 and 6 (about half the total text) present a new classification of "standard horizons" and soil profiles. In Chapter 5 the author acknowledges the difficulty of setting up such standard horizons, but sets out clearly his approach to the problem; this seems to follow the idea of "master horizons" of the Seventh Approximation, and "soil materials" of other workers. The named standard horizons are listed in a table with their characteristics, common associations with overlying and underlying standard horizons, and brief notes on genesis. In Chapter 6 the author's 33 soil classes of the world are described, and subclasses listed in terms of standard horizons (group formulae); genesis, variability, distribution and utilization are discussed briefly. Chapter 7 is a short review of soil classification systems; some idea is given of the equivalence of the soil classes to groupings in the Seventh Approximation. Chapter 8, the last, discusses relationships between soil classes, and between soil classes and the five major soil-forming factors.

Specific criticisms can be made: use of *matrix* (all material less than about 20μ) — micrographs of a number of "isotropic" matrices show numerous birefringent mineral grains smaller than 20μ; perpetuation of *prismatic* for one particular structure with prism-shaped peds; redefinition of *papules* while still attributing the definition to the originator of the term; insufficient references in some sections, and so on. On a more general note, some interpretations could be questioned, but generalizations are necessary in undergraduate teaching. A major criticism could be the use of an undergraduate text for publication of a new classification system. This is justified only if it makes student teaching significantly more effective; this reviewer believes it does, but this aspect may militate against wide acceptance of the book.

This textbook is an admirable teaching vehicle that fills a real need. The systematic recognition of kinds of materials (standard horizons) and their mutual arrangement in profiles should have more reality for students than the systems

presently used, and it provides a sound basis for pedologists and others interested in soil materials for any purpose. The tables (which virtually constitute a key), illustrations and colour plates are quite effective in transmitting the characteristics of the standard horizons accurately. This is a perennial problem in teaching pedology that will be completely solved only by setting up museums and interchanging type specimens.

R. Brewer.
Guelph, Ont., Canada

(by courtesy of Earth Science Reviews)

BUOL, S. W., F. D. HOLE and R. J. MCCRACKEN. Soil Genesis and Classification. The Iowa State University Press, Ames. 1973. Pp. X and 360. Price $ 13.50.

This book, dedicated to James Thorp, summarizes in a clear manner the current knowledge of soil morphology, soil genesis and soil classification. The basis is formed by the new concepts and nomenclature of the Comprehensive Soil Classification System ("7th Approximation"). As such it is the first of its kind and of great interest, also internationally. Some attention has been given to the uses of soil survey, which have greatly increased through their interpretation for application to rural and urban land use and productivity studies.

In the first half of the book the authors discuss the soil forming factors and processes in a conventional way.

The second part starts with summarizing the principles and historical development of soil classification, the world's most important soil classification systems, the legend of the FAO/Unesco Soil Map of the World, and the numerical classification of soils. The authors subsequently discuss the ten orders distinguished in the Comprehensive Soil Classification System, giving for each a short characteristic, the setting, the occurrence in the US, the pedogenic processes, the land use and the lower categoric levels down to great groups. In the ten pages available for each order, the authors succeeded to give the gist of the matter in admirably written summaries.

A final chapter deals with the applications. The appendix contains descriptions and laboratory data of one profile of every order.

The book can certainly be recommended, not only as a textbook for university students, but also as profitable study material for planners, engineers and others interested in soil, land and land use. It is to be regretted that only a very limited use has been made of data from outside the US. This would have enlarged the usefulness of this otherwise first-rate book for readers outside North America.

International Soil Museum
Utrecht, Netherlands

SOILS AND TROPICAL WEATHERING — PROCEEDINGS OF THE BANDUNG SYMPOSIUM, 1969. Natural Resources Research Series 9. Unesco, Paris, 1971. Pp. 149. Price £ 2.25.

The content of this book consists of fifteen papers presented at the Bandung Symposium (16 - 23 November, 1969) on **Soils and Tropical Weathering.** The purpose of this meeting was to review the existing knowledge of tropical weathering and of problems connected with it. The scientific programme consisted of four topics: (1) Mechanisms of tropical weathering; (2) tropical weathering and soil composition; (3) tropical weathering and geomorphology; (4) tropical weathering and soil conservation and utilization.

Papers presented under topic 1 give a very good review of the formation and transformation of clay minerals, the formation, identification and evolution of metallic oxides and hydroxides, and the soil-forming processes (desilication and plinthization) in the tropics. The chemical equilibrium and mineral stability in function of pH, rH and other factors are elaborated upon in a paper devoted to a subject rarely discussed: the chemical weatherability of common minerals.

The discussion under topic 2 was unfortunately not sufficiently supported by soil analytical data. The soils described were not classified according to inter-

nationally-correlated schemes, which represented a difficulty in comparing information between different countries.

There were no papers especially dealing with topic 3.

Topic 4 was the subject of the paper dealing with the application of mineral weathering in relation to utilization of soils: lime and fertilizer requirements. One paper called attention to the difficulty of correlating pedogenesis and chemical fertility in West Malaysia.

This book provides a very informative account on present knowledge of tropical weathering. However, it reflects the need for further study of a number of scientific problems related to soil formation in the tropics.

J. Riquier
FAO, Rome

(by courtesy of Earth Science Reviews)

HISTORY OF AGRICULTURE, a News Release

History of Agriculture provides the channel of communication for a world wide net work of people interested in establishing an agricultural historiography of a high standard of scholarship. It aims to integrate the research of historians of agriculture on an international plane and thereby to contribute towards a better understanding of the development of world wide agriculture.

The journal's field of interest embraces all epochs of agriculture, all aspects of agricultural development and activity and agricultural institutions in the whole range of their cultural, scientific and social implications. Authoritative and constructively critical book reviews of the most important books in the field of agricultural history are also included.

History of Agriculture also publishes information concerning the most important events of international agrico-historical activity. A special "News and Notes" section illuminates projects such as the establishment of new museums, agrico-historical institutes and societies and the proceedings of national or international congresses etc. Contributions of original articles whose conclusions have been reached through a use of methods, criticism and knowledge of modern agrico-historical research are respectfully invited. Contributors of main articles will receive twenty five reprints free of cost. Particulars of the cost of additional reprints, if required will be sent before publication and orders for additional reprints should be made by return.

The journal is published quarterly in the third week in February, May, August and November.

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KULLMANN, A. Synthetische Bodenverbesserungsmittel, 141 Seiten, 15 Abb., 12 Tab. VEB Deutscher Landwirtschaftsverlag, Berlin, 1972. Price: 9,50 Mark.

This book on synthetic soil conditioners is based upon literature studies and field data originating from many different countries. Its content is limited to a description for agricultural use, so e.g. the existing information on soil stabilization of highway research institutes is omitted. All processes named, are treated predominantly in a qualitative way; most attention is given to the time and ways for applying the many products. At various places effects are cited on plant growth.

Some attention is paid to the thermal behaviour of treated soils and compared with results from untreated soils. The last chapter deals with the economic aspects of the application of soil conditioners. This book can be seen as an introduction for the practical use of these synthetic materials. It is far from complete, and does even not suggest the many theoretical unsolved problems.

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BOUCHE, M. B. Lombriciens de France. Ecologie et Systematique. Editions I.N.R.A., Paris, 1972. pp 671, 100 fig., 18 tab. Price Fr. 150,—.

This is a publication principally based on data collected from 1400 places distributed all over France. At each station inventories of earthworm populations are associated especially with the botanical, pedological and topographical conditions concerned. The results thus obtained are also viewed in the light of facts already known from 380 references.

The author has divided his book into eleven chapters.

The first chapter is a short, general introduction describing the historical and contemporary context in which this book may be seen.

The second chapter contains a detailed description of the methods used in behalf of the morphology studies, the acquisition of ecological data both qualitative as well as quantitative, the cartography, and the mathematical analyses.

The next chapter concentrates on the morphology and anatomy of earthworms. In addition to the classic description and the nomenclature of the organs new characteristics are introduced.

In the fourth chapter, dealing with the functional morphology, the author discusses the morphological adaptations and the part that earthworms play in the soil. This chapter may contribute to a clear conception of the systematics of earthworms and a comprehension of the role of earthworms in the soil ecology as well.

The following chapter contains a discussion of present classifications and the sources of informations concerned that eventually led to the author's elaboration of a provisory taxonomy suited for more complete interpretations.

The sixth chapter, with 335 pages the largest of this book and dealing with the taxology, covers the identification of lumbricids and a description of ecological, biogeographical, and morphological characteristics of 224 taxons with illustrations of 89 species.

The seventh chapter continues with the theme relative to the causes of the spatial distribution of earthworms. In this chapter we are given analyses of the historical factors and those internal as well as external to the species that may explain the distribution of lumbricids. The author then continues with a reconstitution of the situation at the beginning of the tertiary period by a simultaneous examination of paleogeographical phenomena, the migratory possibilities of the species, and the ecological barriers.

The eigth chapter deals with an examination of environmental factors influencing worm populations, which is in part a monofactorial and in part a multifactorial study. So food competition appeared to be an important factor.

A study of the position and function of lumbricids in the biological community, the energetics and the pedogenesis of ecosystems is the main issue of the ninth chapter. Among the activities of earthworms, as an ecological indicator, those influencing the stability of ecosystems are discussed.

In the tenth chapter the author ends with a concise description of profitable effects of earthworms and their possible applications.

The last chapter is an annex containing characteristics of the 1400 stations, definitions, references, and finally an index of taxonomy and subjects.

In short this is a good book, which is intended not only for worm specialists but naturally also for ecologists, teaching staff, and such-like.

J. A. van Rhee
Research Institute for Nature Management, Arnhem

NECROLOGY — NECROLOGIE — NEKROLOGIE

Emil Truog, ASA Fellow, former president of ASA and SSSA, and long-time leader in the societies, died December 19, 1969, at Madison, Wisconsin, after a long illness. He was born March 6, 1884, near Independence, Wis. He received his B.S. degree from the University of Wisconsin in 1909 and the M.S. in 1912. He then joined the staff as instructor and was named Professor in the soils department in 1921. He served as department chairman from 1939 to 1953 and was named Emeritus Professor of soil science in 1954.

More than 55 years ago Prof. Truog developed the first practical soils test that could be made without extensive laboratory equipment. He, more than anyone else, started among farmers the now widely used practice of soil liming. This was especially important to alfalfa growth in Wisconsin. In later years, he proved that alfalfa could be grown in acid soil areas by extensive liming and use of potash.

With help from his graduate students, Prof. Truog developed many soil tests, including those for phosphate, potash, nitrogen, calcium, and boron. Much of his early research dealt with processes by which plants secure these and other nutrients from the soil. He also helped to develop a treatment for clay in making bricks that cut costs and improved quality.

Prof. Truog was as well known for his teaching as for his practical research. During his career at Wisconsin, he guided nearly 100 students to the doctorate degree, and more than 80 to master's degrees. These students have moved into successful positions throughout the U.S. and the world.

Prof. Truog was a member of the American Society of Agronomy for almost 60 years and of the Soil Science Society of America since it was founded in 1936. He was also active in many other societies and was manager of the Seventh International Soil Science Congress when it met in Madison in 1960.

He was elected a Fellow of ASA in 1926 and was also a Fellow of AAAS. He was president of ASA in 1938 and president of SSSA in 1954. He was also one of only three Americans to be an honorary member of the International Society of Soil Science at the time of his election.

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by

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