

# 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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**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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- II — SOIL CHEMISTRY.**  
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- III — SOIL BIOLOGY.**  
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- IV — SOIL FERTILITY AND PLANT NUTRITION.**  
Chairman: O. T. Rotini, Facoltà di Chimica Agraria dell' Università degli Studi, Via S. Michele degli Scalzi 2, Pisa, Italy.
- V — SOIL GENESIS, CLASSIFICATION AND CARTOGRAPHY.**  
Chairman: R. Dudal, World Soil Resources Office, F.A.O., Via delle Terme Caracalla, Roma, Italy.
- VI — SOIL TECHNOLOGY.**  
Chairman: T. J. Marshall, C.S.I.R.O., Division of Soils, Private Mail Bag 1, Glen Osmond, S.A., Australia.
- VII — SOIL MINERALOGY.**  
Chairman: K. Norrish, C.S.I.R.O., Division of Soils, Private Mail Bag 1, Glen Osmond, S.A., Australia.



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No. 39

1971

## NEWS OF THE COMMISSIONS, NOUVELLES DES COMMISSIONS, NEUES DER KOMMISSIONEN

### COMMISSIONS I AND VI

#### International symposium on soil-water physics and technology

A joint meeting of Commission I (Soil Physics) and Commission VI (Soil Technology) of the International Soil Science Society was held at the Faculty of Agriculture of the Hebrew University in Rehovot, Israel from August 29 to September 5, 1971. It was attended by some 130 visitors and some 200 colleagues from Israel. Nearly 60 papers were delivered at the regular sessions on such basic and applied topics as water movement in soils, energy relations and soilwater interactions, evaporation from soils and plants, crop water requirements, ion activity and migration, and management of soil and water salinity. The papers were followed by comprehensive and lively discussions, the proceedings of which will be published in book form by Springer Verlag (Dr. A. Hadas, chief editor).

In addition to the regular sessions, a special invitational panel was convened on the topic of "Optimizing the Soil Physical Environment toward Greater Crop Yields". The aim of this panel was to bring together some of the most active researchers in applied soil physics in an attempt to trigger a common effort to summarize and evaluate the current status and trends of research in this vital field. The proceedings of this panel will shortly be published as a special volume by Academic Press (Prof. D. Hillel, editor).

A pre-conference pedological excursion highlighted the major soils of the eastern Mediterranean region. Extensive post-conference tours, which were very well attended, took the visitors through Galilee, Sharon, the Jordan Valley, Samaria, Judea, and the Negev Desert.

The enthusiastic response of the participants in this conference testifies to its success and to the desirability of convening periodic meetings of this kind to explore the mutual interests of complementary Commissions of our International Society.

**Professor Daniel Hillel, Head  
Department of Soil Science  
The Hebrew University  
Faculty of Agriculture**

### JOINT SESSION COMMISSIONS II AND IV

#### International Symposium on Soil Fertility Evaluation New Delhi, India, February 9 - 14, 1971

The following note on this Symposium, composed by Drs. Kanwar and Biswas, was received too late to be inserted in Bulletin 38. As a consequence only a rather short account of this important event was published. For completeness' sake, and thus giving due emphasis to the first meeting of this nature, it was deemed justified to present this review to the members of the Society.

JOINT SESSION COMMISSIONS I AND VI  
REHOVOT, 1971



*Opening Session Rehovot Meeting*



*Dr. Marshall, President Commission VI greets Opening Session*



The proposal to hold the Symposium was made at the 9th International Congress on Soil Science at Adelaide (Australia) by Dr. J. S. Kanwar, the leader of the Indian Delegation on behalf of the Indian Society of Soil Science and the Indian Council of Agricultural Research and it was accepted. The Symposium was organised jointly by the Indian Society of Soil Science, Indian Council of Agricultural Research, Indian Society of Agronomy under the aegis of the International Soil Science Society. It was held at Vigyan Bhavan, New Delhi (India) from 9th to 14th February, 1971. The Organising Committee consisted of representatives from the sponsoring organisations and worked under the Chairmanship of Dr. J. S. Kanwar. Dr. T. D. Biswas acted as Secretary of the Symposium.



*Dr. J. S. Kanwar*



*Dr. T. D. Biswas*

About 500 scientists of which 108 were from 26 foreign countries, such as Austria, Australia, Belgium, Canada, Cambodia, Denmark, France, Federal Republic of Germany, German Democratic Republic, Hungary, Iran, Italy, Japan, Madagascar, Malaysia, Nepal, Netherlands, Norway, Peru, Philippines, Singapore, Thailand, U.A.R., U.S.A. and U.S.S.R., participated in this Symposium.

The inaugural session was presided over by Mr. T. P. Singh, Secretary to the Government of India, Ministry of Food, Agriculture, Community Development and Cooperation and the inaugural address was delivered by Dr. B. P. Pal, Director General, Indian Council of Agricultural Research. In his opening remarks, Mr. Singh dealt in detail on the importance of the fertiliser used for increasing production and underlined the importance of soil fertility evaluation. In his inaugural address, Dr. Pal urged the soil scientists and agronomists to cooperate in devising ways and means through which it would be possible to build up and maintain the soil fertility.

He stressed the need for more and more science based information in relation to soil particularly the assessment of soil fertility, climate and other factors.

Professor F. A. van Baren, Secretary General of the International Society of Soil Science, Dr. O. P. Gautam, Executive Chairman of the Indian Society of Agronomy and Dr. N. P. Datta, Past President of the Indian Society of Soil Science welcomed the participants on behalf of the respective societies. Dr. T. D. Biswas Secretary of the Indian Society of Soil Science and Organising Secretary of the Symposium introduced the overseas delegates. Dr. J. S. Kanwar, President of the Indian Society of Soil Science and the Chairman of the Organising Committee of the Symposium explained the genesis and objectives of the Symposium. He particularly drew attention of the participants to the need for quantification of the soil tests data and crop responses to fertilisers. The necessity of micronutrient assessment in soil and plants and remedial measures for correcting their deficiency was keenly felt. Mr. K. P. A. Menon, Secretary of the Indian Council of Agricultural Research proposed a vote of thanks.

**Objectives:** The objectives of the Symposium were to provide a valuable opportunity to review the present position of research on various aspects of soil fertility



*Dr. Hallsworth, Part-President ISSS greets Opening Session*



*Reception held for Symposium guests by Tel Aviv Municipality*



evaluation and to identify the priority items of research. Through its international and interdisciplinary character, the Symposium provided the scope to facilitate exchange of knowledge among countries and persons in this specific field. While exposing the objective of the Symposium, Dr. J. S. Kanwar explained that it was particularly important to India which had almost reached the physical limits with regard to the area that could be brought under the plough and was facing the problem of food shortage. He emphasised that fertiliser being costly input had to be used economically and efficiently and that was possible with an efficient system of soil fertility evaluation. New problems, such as pollution of the environments, deficiency of micronutrients as a result of exploitive agriculture had become very serious.

The papers presented in the Symposium were divided in six groups:

- (i) Methods of evaluation of soil fertility.
- (ii) Relation of soil test with crop response.
- (iii) Response to fertilizers in soil climate complex.
- (iv) Residual and cumulative effect of fertilizers and manures.
- (v) Methods of evaluation of micronutrient status of soils.
- (vi) Soil testing service.

The upshot of the Symposium was the Panel discussion on soil testing.

*Significant Contributions:* A number of new techniques for assessing the fertility status of soils were described and major emphasis was given to the relationship between availability of nutrients to plants and soil characteristics. A number of communications presented related to the evaluation of trace element status of soils. The effect of intensive cropping and high yielding varieties in accentuating micronutrient deficiency problem was highlighted. The Indian experience of genetic differences in varieties of cereal crops with respect to sensitivity to micronutrient deficiency was very significant. It opened a new chapter in crop and soil management with regard to micronutrients.

The principles and practices essential for a coordinated field-laboratory programme of research to develop useful relationship to predict crop yield response from fertilizer applications were discussed. Emphasis was given to the type of field experimentation needed to study various controlled and uncontrolled variables and the analysis of representative soil samples from the field. Indian experimental approach for correlating soil tests with crop response data and fertiliser recommendation for targetted yields was very interesting.

Dr. J. D. Colwell explained the Australian approach and Dr. Fitts outlined the approach of international soil fertility evaluation system developed by the North Carolina University group. These relationships provide the basis for making appropriate fertilizer recommendations to farmers. Various approaches for economically sound fertilizer recommendations based on soil analysis were also discussed.

In a paper from FAO, it was opined that fertilizer use recommendations must be valid and profitable under the prevailing farming conditions, and should be determined with a high degree of reliability in the shortest possible time using appropriate statistical design and methods of analysis. A number of communications discussed the best ways for efficient utilisation of nitrogenous and phosphatic fertilizers and the importance of studying the residual and cumulative effect of fertilizers and manures.

*Special Features:* The main highlight of the Symposium was the panel discussion on soil fertility evaluation approach in which Dr. Fitts, Dr. W. V. Barthelmew, Dr. N. P. Dutta, Dr. B. Ramamoorthy, Dr. N. S. Randhawa, Dr. D. J. D. Nicholas, Dr. A. Fink and Dr. J. D. Colwell participated and Dr. J. S. Kanwar presided. The panel concluded that research on soil fertility evaluation should be broadened to a simultaneous and integrated coordination of the several important factors affecting plant growth rather than restricting it to studies of individual factors in isolation.

The panel also proposed a critical examination of soil testing to assess its effectiveness as an aid to the practical farmer. The soil test procedures also need to be examined for their accuracy and reproductivity of the data.

The other highlights of the Symposium included the Chatterjee Memorial Lecture delivered by Professor F. A. van Baren, Secretary General, International Society of Soil Science, on some aspects of soil mineralogy and soil farming processes. He stressed the importance of primary mineral study for better understanding of soil genesis. In another interesting invitational talk on 'Recent Trends

in Agricultural Research in India, Dr. M. S. Swaminathan, Director of the Indian Agricultural Research Institute, projected the significant contributions of agricultural research in India. Another interesting talk on "The causes for declining soil fertility in some of the soils of U.P." was delivered by Dr. Elizabeth Whitcomb who, from historical data and cartographic information, showed the deterioration in soil fertility in canal irrigated areas of Uttar Pradesh (India).

A seven-day conducted tour provided an opportunity for the foreign delegates to visit many important places of agricultural interest in Northern India. It also included visits to Punjab Agricultural University, Ludhiana, U.P. Agricultural University, Pantnagar, Indian Agricultural Research Institute and experimental fields in Delhi villages.

*Plenary Session:* The Plenary Session of the International Symposium was held under the Chairmanship of Prof. F. A. van Baren, Shri B. Sivaraman, Vice-Chairman, National Commission on Agriculture, India gave the valedictory address. Shri Sivaraman said that although this country had adopted planned programme of industrialisation, it could not absorb vast rural population. Farming in this country had witnessed a phenomenal progress through application of science to agriculture and its extension over wider areas. However, considering a very large number of farmers with small holdings, it would be necessary to formulate compact instructions to motivate these farmers to adoption of new technology and expand the benefit of exploitive agriculture over wider areas. The following recommendations drafted by the Resolution Committee with Dr. S. K. Mukherjee as Convenor were passed unanimously.

(See Bulletin no. 38, 1971, page 10).

*Publications:*

1. Proceedings of the International Symposium on Soil Fertility Evaluation, Vol. 1 (contents : 110 papers presented at the Symposium) (Price: Rs. 150/—).
2. International Symposium Souvenir — Papers by leading scientists on specific subjects covering conspectus of agricultural developments in India retrospects and prospect: pages 112 (Price Rs. 10/—).
3. Review of Soil Research in India: A comprehensive and up-to-date review of research work done in India in the various fields of soil science (available free to delegates).
4. A Review of Soil and Water Research in India in retrospect and prospect (pages 391): 32 leading review papers on eight subjects summarise the status of research in soil and water in India upto 1966: (Price: Rs. 10.50 ICAR Bulletin).

**Joint Meeting of Commissions V and IV  
of the International Society of Soil Science  
"Pseudogleys and Gleys-Genesis and Use of Hydromorphic Soils"  
Stuttgart-Hohenheim, 6 - 13 September, 1971\***

**RECOMMENDATION**

The Joint Meeting of Commissions V and VI of the International Society of Soil Science held at Stuttgart-Hohenheim from 6 - 13 September 1971.

*Considering* the importance of the water regime of soils both for their formation and for their use.

*Recognizing* the considerable difference which exists between soils influenced by groundwater and those influenced by surface water with regard to their characteristics as natural bodies, their value for geological studies, their role as a medium for plant growth and as a source of useful raw materials.

*Recommends*

1. That research and experimentation on hydromorphic soils be specifically to both those influenced by groundwater and those influenced by surface water.
2. That a Working Group be set up within Commissions V and VI to study and correlate the nomenclature and classification of hydromorphic soils and appraise how important differences in soil water regime are reflected in existing classification systems.

\* A full report on the meeting has not yet been received. It will be published in the next number of the Bulletin.



# INTERNATIONAL SYMPOSIUM ON ACID SULPHATE SOILS

13 - 20 August 1972, Wageningen, Netherlands

The Symposium to be held from 13th till 20th of August 1972 at Wageningen, the Netherlands, will be organized by the Department of Regional Soil Science of the Agricultural University, the International Institute for Land Reclamation and Improvement (both at Wageningen) and Rothamsted Experimental Station at Harpenden, England.

The International Agricultural Centre at Wageningen will be the executive agency, I.S.S.S. the sponsor.

The aim of the Symposium will be to summarize the available information on the subject and to present the recent advances in management practices and research concerning acid sulphate soils. The focus will be on soils in coastal areas, that have been notably influenced by acidification as a result of the oxidation of pyrite.

Information on similar effects in other soils (e.g. developed in older pyritic clays or shales) or in relation to mining (e.g. in case of strip mining or disposed colliery spoil) will also be of interest.

The Symposium should be of value not only to soil scientists and agronomists, but also to ecologists, geochemists, microbiologists, mining engineers, civil engineers, and those concerned with the corrosion of metals and concrete by sulphuric acid and sulphate.

## General programme

August 13	1972	— Arrival at Wageningen, Registration
August 14 - 15		— Working Sessions, Ladies program
August 16		— Field excursion
August 17 - 18		— Working Sessions, Ladies program
August 19		— Field excursion

The sessions will deal with the following subjects:

1. Formation and accumulation of sulphides.
2. The genesis of Acid Sulphate Soils (oxidation of sulphides and sulphur, weathering and formation of minerals, buffering processes and horizon differentiation).
3. The influence of acidity on ion exchange characteristics and the development of structure stability.
4. The identification of potential Acid Sulphate Soils (field and laboratory methods of estimating the content of oxidizable sulphur and buffering components).
5. Physiography, classification and mapping.
6. The effect of extreme soil acidity on the nutrient uptake and physiology of plants and micro-organisms.
7. The management of Acid Sulphate Soils and Pseudo Acid Sulphate Soils for agricultural and other uses.
8. Reclamation and improvement of developed and potential Acid Sulphate Soils.

## Paper presentation

Specialists in different fields will be invited for the presentation of one review paper for each session.

Those interested are invited to contribute original research papers and notes for the subjects mentioned under **2, 3, 4, 5, 7 and 8.**

The papers are to be written preferably in English, although French and German will also be accepted. However, summaries in English (max. 200 words) are obligatory.

Papers should not exceed 3,000 words; for directions concerning the preparation of the manuscripts reference should be made to a recent issue of Soil Science.

During each session a number of research papers dealing with one subject will be presented in summarized form by a summarizer. After each summary ample

time will be devoted to a panel discussion during which the authors of the original papers will have the opportunity to elaborate on their individual contributions.

The summaries and complete texts of the papers should be sent in before January 1st and March 1st, 1972 respectively.

Because preprints of the papers will be surface mailed to all participants before the symposium the deadline should be observed strictly.

The registration costs are Dfl. 155,— p.p. and include the costs of the first excursion, preprints and the proceedings. Reprints can be ordered by the authors and must be paid for separately. The additional fee for the last excursion is to Dfl. 30,— p.p.

Abstracts, manuscripts of papers and registration forms should be sent to:

**Mr. N. van Breemen**  
**Department of Regional Soil Science**  
**P.O. Box 37**  
**Wageningen — The Netherlands**

where also additional information on the symposium can be obtained.

From April 1st, 1972 onwards all correspondence concerning the symposium should be directed to:

**Mr. H. Dost**  
**International Institute for Land Reclamation**  
**and Improvement**  
**P.O. Box 45**  
**Wageningen — The Netherlands.**

## **THE FOURTH INTERNATIONAL WORKING MEETING ON SOIL MICROMORPHOLOGY**

**Queen's University, Kingston, Ontario, Canada, August 27 - 31, 1973**

The Working-Meeting is being sponsored by The Department of Geography at Queen's University and support is being canvassed from the National Research Council of Canada, The Canada Department of Agriculture and The Canadian Society of Soil Science.

All enquiries should be addressed to the organiser (in English, French, German, Spanish or Russian):

**Professor G. K. Rutherford**  
**Department of Geography**  
**Queen's University**  
**Kingston, Ontario, Canada.**

Papers are being canvassed for the following main topics:

1. Methods in soil micromorphology.
2. Soil formation with respect to (a) the influence of biologic factors, (b) weathering and new formations and (c) other factors.
3. Paleopedology.
4. Applications of micromorphology in the fields of agriculture, engineering, experimental pedology, etc.

In addition a session will be devoted to the reports of the International Working-Group on Soil Micromorphology.

### **Languages:**

The language of the meeting will be English and whilst papers will be accepted in any official language, there will for financial reasons be no translation service. Participants, whose mother tongue is not English may avail themselves of experienced lecturers who will read their papers and emphasize the points the authors desire.



#### *Proceedings:*

As all papers which are accepted for the meeting will be published in book form before the meeting, all papers must be in the organising secretary's hands before 1st January, 1973.

#### *Reports and discussions:*

Each lecturer will have 15 minutes to present his/her paper. At the close of each session there will be 20 minutes for questions and a chairman will sum up.

#### *Exhibition:*

There will be an exhibition of relevant materials and participants will be asked to send exhibition materials. There will also be an exhibition by commercial firms.

#### *Working Groups:*

Colour and black-and-white closed circuit television and other audio-visual aids will be available for informal groups of participants to discuss their own thin sections. Canadian workers have expressed a desire to see thin sections from overseas and it is hoped that many delegates will bring their "problem" slides for mutual discussion.

#### *Accommodation:*

Accommodation will be available at university residences and at a range of hotels and motels in Kingston.

#### *Ladies Program:*

If enough interest is indicated a ladies programme will be arranged to include visits to a number of interesting tourist attractions in and close to the City of Kingston, to the 1000 Islands area and to The Rideau Canal.

#### *Travel:*

Kingston is centrally situated in north eastern North America. The nearest airports to Kingston are in Montreal, Ottawa, Toronto, Syracuse (N.Y.) and Watertown (N.Y.) There are frequent train and bus services from Toronto, Montreal and Ottawa to Kingston. Travel time to Kingston from Ottawa is approximately 2½ hours, from Toronto 2½ hours and 3 hours from Montreal.

Participants from the eastern half of the United States may reach Kingston from Syracuse by a regular scheduled air service. This service operates both ways twice daily and takes 40 minutes. Syracuse airport is serviced by Mohawk, Eastern and American Airlines.

## NEWS OF THE NATIONAL SOCIETIES

### Columbian Society of Soil Science

The Sociedad Colombiana de la Ciencia del Suelo held its first symposium from 12 - 16 July 1970. The subject was: "Problems related to acidity and liming of tropical soils".

The proceedings of this meeting, edited by Ings. Jaime Navas A. and Francisco Silva M. under the title "Suelos Ecuatoriales" comprise in 307 pages the 17 papers presented. Twenty well-defined conclusions reflect the opinion of the participants as to the importance of various aspects of the central problem which deserve permanent consideration or which merit further study. The volume is available at the price of US \$ 5.— including postage from the Society's secretary: Francisco Silva M., A.A. 51791, Bogotá, Colombia, S.A.

### The Society of Soil Science of South Africa

#### *Fourth National Congress*

The fourth national congress of the Society was held at Stellenbosch from the 28th September to the 1st October 1971. Thirty one papers were presented and a field trip organised with the aim of inspecting some eight profiles distributed over the area known as the Western Province.

Classification of the papers according to subject is as follows:

Commission	Number of Papers
I	5
II	6
III	0
IV	10
V	7
VI	2
VII	1

A new committee was selected with Prof. E. R. Orchard of the University of Natal as President.

Salisbury (Rhodesia) will be the venue for the next Congress to be held in February 1973.



**MISCELLANEOUS NEWS, INFORMATIONS DIVERSES,  
VERMISCHTE MITTEILUNGEN**

**Soil Conservation Service  
U.S. Department of Agriculture  
Washington, D.C. 20250**



*William M. Johnson*



*Dr. Charles E. Kellogg*

**Johnson Named Deputy Administrator of Soil Conservation Service:**

Mr. William M. Johnson of the USDA Soil Conservation Service has been selected as Deputy Administrator for Soil Survey, SCS Administrator Kenneth E. Grant announced this week. He succeeds Dr. Charles E. Kellogg, pioneer soil scientist, who retired after a 37-year career with the Department of Agriculture.

Mr. Johnson, 55, assumed his new post effective June 1, moving from his previous position as Assistant Deputy Administrator for Soil Survey.

Born in Alexander, McKenzie County, North Dakota, Mr. Johnson lived and worked on a North Dakota wheat farm during his youth. He received his B.S. degree in agriculture from North Dakota State University in 1936, an M.S. degree in soils from the University of Wisconsin, and an M.S. degree in meteorology from the California Institute of Technology.

Mr. Johnson was assistant professor of soils at North Dakota State University from 1938 until 1943, when he became a U.S. Naval officer and served with distinction on the Navy's 3rd Amphibious Force Staff. In 1946 he began his full-time career with the Department of Agriculture as a soil scientist in Lincoln, Nebr. He has been Principal Soil Correlator for the Soil Conservation Service at Lincoln, Nebr.; Berkeley, Calif.; and Portland, Oreg.

Overseas assignments include serving as professor of soils on the Facultad Nacional de Agronomia, National University of Colombia, and a summer as a U.S. technical exchange team leader on soil use planning in the Soviet Union.

In September, 1968, Mr. Johnson was selected as Assistant to the Deputy Administrator for Soil Survey, in Washington, D.C., and became assistant deputy in 1970.

Mr. Johnson is author of a number of articles on soil survey work and is a member of the Soil Conservation Society of America, the American Society of Agronomy, the Soil Science Society of America, and the International Society of Soil Science.

**Technical Consultation on the Application of Remote Sensing  
to the Management of Food and Agricultural Resources.  
Rome, Italy, 13 - 17 September, 1971**

Following a proposal of the 6th Session of the Scientific and Technical Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space, a group of nearly 30 highly qualified individuals was invited by the Food and Agriculture Organization of the United Nations, FAO, to discuss the present status and future trends of the applicability of space and other remote sensing techniques to agriculture, forestry and fisheries and to advise FAO on its involvement with regard to its regular and field programmes.

More than half of the total of 18 papers presented was of a technical, tutorial nature, dealing with the basic physics of remote sensing; the sensor types; sensing systems and methods; the types of platforms used to mount sensing instruments; telemetry; and methods of processing, analysing, and using remotely-sensed data. Other papers dealt with the distribution of information needed for the management of the resources and environment of all nations through a proposed Global Remote Sensing Information System, while the application of remote sensing was highlighted for the developed world, as well as for the developing world, with examples from Brazil, India and Mexico.

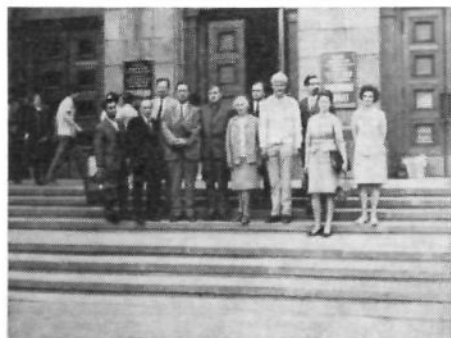
It was the general consensus of the Consultative group that useful applications of remote sensing of the earth's resources are unquestionably real and substantial. Their effects on an accelerated production of food on a world-wide basis, be it from the land or from the ocean, can be far reaching indeed. However, it was realized that much adaptive research is still needed, especially in developing countries, before FAO, being mainly concerned with these countries, can use remote sensing in the execution of its field programme in a substantive way.

It was recommended that FAO should pay more attention to the possibilities of the application of remotely-sensed data through the establishment of a special group of experts. This group would determine whether and how existing and future field projects could be effectively aided by the use of these data. It would also examine if solutions to problems in the field of agriculture, forestry and fisheries, dealt with by FAO, could benefit from the use of remote sensing. It was further recommended that a major function of FAO should be the education and training of staff from developing countries to become competent in the various fields of remote sensing.

It is hoped that meetings of this kind will link the few countries which have the facilities to run remote sensing programmes and those who have not, in order to fully utilize these new techniques which are potentially close at hand. The success of this first meeting under the umbrella of FAO is certainly a good indication.

**Working-Group on Soil Micromorphology**

The members of the Working-Group on Soil Micromorphology (ISSS Bulletin Nos. 35 and 37) held their semi-annual working-meeting at the University of Moscow, USSR, from 17th to 22nd May 1971. This meeting was held in association with Russian micromorphologists.





The working-meeting consisted of plenary and working sessions. At the former papers were presented by Russian workers and members of the Working-Group. During the working sessions cross-the-table discussions were held on soil micromorphological concepts and definitions. They were particularly successful and of historical significance to the Working-Group for the compilation of their glossary of micromorphological terms as both scientific and linguistic nuances could, for the first time, be explained at first hand in an informal way.

Members of the Working-Group were very hospitably received by their Russian colleagues: extramural activities included visits to the Earth Science Museum and several faculties at Moscow University, soil profile studies, sightseeing in Moscow and a visit to the ballet "Don Quixote" performed by the Bolsjoi Company. They extend to Academician I. P. Gerasimov and his colleagues their sincere appreciation for their hospitality.

**A. Jongerius**  
secretary

I fully agree with the opinion that the Moscow meeting of the Working-Group on Soil Micromorphology was a success. No forms of exchanging scientific ideas are better than direct contacts of specialists, especially in those cases when they are pioneers of a new progressive method, which is the case with micromorphology.

On behalf of the Soviet participants of the meeting I want to thank our guests for the valuable scientific information they have presented and to express my pleasure at having friendly and resultative discussions. It is a pity that the time was so short, but besides different opportunities for making contacts in the nearest future, we all of us have rather a concrete perspective of meeting again in 1974 at the International Congress of Soil Scientists in the Soviet Union to which all our guests are warmly welcomed.

**I. P. Gerasimov**

#### **United nations conference on human environments**

The Intergovernmental Working Group on Soils of the Preparatory Committee for the United Nations Conference on Human Envorinments met in Rome at the FAO-headquarters from 21 to 25 June 1971. The meeting was attended by representatives of 27 members states and also by representatives of ECA, FAO, UNESCO and the International Society of Soil Science

The main issue of the Conference was the place of the soil in the human environment, its degradation and conservation. Proposals for further actions, including political guidelines to meet soil degradation problems and to promote soil conser-



vation were discussed. Conclusions have been formulated into resolutions to be presented to the Conference on Human Environments scheduled to be convened in Stockholm in June 1972.

The most general resolution emphasizing the importance of soil, a matter often neglected or underestimated in the study of human environmental problems, runs: **The soil is a limited and irreplaceable resource, and the growing degradation and loss of soil mean that the expanding population in many parts of the world is pressing this resource to its limits. In its absence the biospheric environments of man will collapse with devastating results for humanity.**

Recommandations have been given for inventoring, national planning and licencing of land use, misuse and deterioration, irrigation, deforestation, agricultural and pastoral purposes and water demand. International organizations, among them the ISSS for some aspects, are asked to support and to develop methods, research, monitoring and the dispersion and interpretation of soil data, as well as in land use planning based on multi-disciplinary approach.

The Stockholm conference will be attended by politicians of Member States. Its aim is to stimulate actions and agree on action guidelines for governments and international organizations.

**J. J. Reynders**

## NEW EDITIONS — NOUVELLES EDITIONS — NEUE AUSGABEN

**WALSH, L. M. editor: Instrumental Methods for Analysis of Soils and Plant Tissue, 222 pp. 36 tables, 52 fig. Publ. S.S.S. of America, Madison, Wisc., U.S.A., 1971. Price \$ 5.—.**

The objective of this publication was to compile a series of papers covering the techniques and uses of various instrumental methods for analyzing soil, plant tissue, and water. The methods discussed include many of those presently used in routine analytical laboratories, as well as a number of relatively new instrumental techniques which may be used as a standard in the future. Recent developments in instrumentation are now, or likely will be, very useful for analysis of potential pollutants and for study of nutrient movement and metabolic processes within the plant.

The methods dealt with are: automatic combustion for carbon, nitrogen and sulfur investigation; automatic absorption and photometry; the use of specific ion electrodes; X-ray emission spectrography; the use of auto-analyser (wet-ashing technique followed by simultaneous analysis of plant tissues); fluorometry and nephelometry; gas chromatography; neutron activation (monitoring of isotopes); and microprobe techniques on plants.

Each chapter gives a short outline of the basic principle of the method discussed and of the apparatus used, and is concluded by a list of literature references, allowing further detailed study.

The publication should prove to be very useful for research scientists, supervisors of analytical laboratories, and extension agronomists. Also, students in advanced courses in soil chemistry and plant nutrition should find the book a valuable reference.

**J. J. Reynders**  
Soils Institute, Utrecht.

**VOINOVITCH, I. A., Editeur. L'analyse minéralogique des sols argileux. 96 pages, 17 fig., 16 tabl., 6 photos. Publ. Éditions Eyrolles, Paris 1971. Prix F 51.90.**

This volume is the result of the collaboration of 8 French specialists in clay-mineralogy, including the editor. It presents a concise review of the structure of the clay minerals and of the various analytical methods at present available in any modern soil institute. The authors succeed in giving a basic understanding of the composition of the main clay components, paying due attention to the quantitative analysis of clays. A valuable contribution in the field of clay mineralogy for soil scientists who are familiar with the French language.

**SZABOLCS, I. Editor. European solonetz soils and their reclamation, pp. 204, maps, figs., phot. Akadémia Kiadó, Budapest, 1971. Price \$ 8.40. Distributors: Kultura, P.O.B. 149, Budapest 62, Hungary.**

This book comprises eight papers and a 40-page bibliography and is the outcome of a study by the ISSS sponsored Working Party on the Reclamation of Solonetz Soils in European Countries. The information presented is intended to elucidate the present state of research on these soils and to serve as a basis for future reclamation efforts.

The opening paper by the editor provides an overall picture of European solonetz soils and defines the subject matter at issue. In a contribution on Bulgarian solonetz soils Raikov demonstrates the feasibility of their reclamation through chemical amelioration methods. In the third paper Hrascko gives a broad discussion on Czechoslovakian salt-affected soils, both sodic and non-sodic, which were found to occur in the sub-Carpathian plain only.

From Hungary is a thorough report by Abrahám and Bocskai. A detailed field and laboratory characterization of various types of solonetz soils is followed by an interesting account on their utilization, covering use of the natural vegetation as well as their potential for cultivated crop production, tree plantations and fish ponds. Obrejanu and Sandu describe long-term investigations in the improvement of Rumanian solonetz and solonetic soils. Reclamation of salt-affected soils in the



Guadalquivir delta (Spain) is discussed by Grande Covián. The agrobiological method for reclamation of solonchets and the use of chemical amendments as practiced in the western USSR is related to various subtypes of solonchets soils by Pak. Properties of Yugoslavian solonchets soils, finally, are treated by Miljkovic and Plamenac. All in all a most interesting account of the present stage of knowledge of European solonchets soils and their potentialities.

**J. Buursink**  
Int. Soil Museum, Utrecht

**MILLOT, G., Geology of clays. Weathering, sedimentology, geochemistry. 429 pp., 85 fig., over 1000 references, index. Publ. Springer Verlag, Berlin, New York; Masson, Paris; Chapman & Hall, London. Price DM 61.—; \$ 16.80.**

This is the English translation of MilLOT's French textbook "Géologie des Argiles" 1964. It reflects 20 years of research into the geochemistry of the surface of the earth. The author, the well-known professor of geology of the Strassburg University presents fundamental information on clay formation by weathering to their disappearance due to metamorphism. Sedimentology and geology are augmented by chapters on pedology, oceanography, petrography, and geochemistry. The author utilizes his own system to account for the various mechanisms by which clays are formed, their types of development and their progressive disappearance. Some stages in this geochemical evolution are fairly well known, while others are still obscure. Thus the areas where further research is most needed are pointed out.

A very well organized textbook of high quality which merits the thorough study of any one interested in the various aspects of earth science enumerated above.

**SOILS AND TROPICAL WEATHERING. Proceedings of the Bandung Symposium 16 to 23 November 1969, UNESCO, Natural Resources Research XI, Paris 1971. pp. 149. Price \$ 7.50.**

This symposium, convened by UNESCO, dealt with the various aspects of soil formation in the warm and humid areas of the world. The first section of the Proceedings presents reviews of research on:

1. Formation and transformations of clay minerals (Fripiat and Herbillon),
2. Metallic oxides and hydroxides: formation, identification and evolution (Segalen),
3. Weathering and soil-forming processes (Van Schuylenborgh),
4. Mineral weathering in relation to utilization of soils (Sherman).

The first three papers have a strong theoretical basis, and as such contribute to a much needed fundamental understanding of the pedogenetic processes that lead to soil formation, and which do allow an explanation of particular differences as f.i. (paper 3), the occurring of oxisols with and without plinthite. Professor Sherman's contribution has a more applied aspect discussing e.g. fertilizer requirement as related to mineral composition and weathering stage of soils; utilization of stages of mineral weathering in the location of mineral ores; engineering properties and finally land use classification.

The second section under the heading "Tropical weathering in Asia" contains supporting material to the four key-papers, with examples from East-Pakistan, India, Serawak, Cambodia, Philippines and West-Malaysia, North Viet-Nam, and one more theoretical paper on chemical weatherability (H. Ling Ong, Bandung).

A final report highlights the main conclusions of the symposium, which undoubtedly touched on a number of basic issues that merit the attentive reading by all soil scientists interested in the various chemical and mineralogical aspects of pedogenesis particularly in tropical regions.

**SULPHUR IN AGRICULTURE. Proceedings of a Conference sponsored jointly by An Foras Taluntais and the Sulphur Institute, 226 pp. Dublin, 1970. Price £ 1.50. Copies are available from Dr. P. K. Hanley, The Agricultural Institute, Soils Division, Johnstown Castle, Wexford, Ireland.**

During this symposium the problem of sulphur deficiency resulting from the lower content in S of the normal phosphate and nitrogen fertilizers was discussed

from both quantitative and qualitative aspects as well as from the animal nutrition point of view. Professor Walsh, Director of the Agricultural Institute, outlined the main issue which was dealt with on a Western European basis with contributions from France, U.K. and Ireland. An interesting account of the present state of knowledge and understanding of the nutritional role of sulphur.

**FOREST FERTILIZATION. Proceedings of the Third International Conference on Forest Field/Forest Fertilization, pp. 357. Publ. by Forestry and Management Research Institute, Zbraslav-Strnady, Czechoslovakia, June 1969.**

The volume contains papers presented at the international conference on forest soil fertilization, held in Prague June 23 - 26, 1969. Introductory report of the publication is by L. Hruzík, Minister of Forests and Water Management; he points to the significance of fertilizer application in Czechoslovak forestry. The four subsequent reports are of fundamental character (Tamm, Carbonnier, Kraus, Svendsrud), covering the general problems associated with forest soil fertilization, potential elevations of the timber production and the economy of fertilization in forestry. The other papers, 22 in number, are concerned with partial questions within the general problem of forest soil fertilization and the policy towards timber produce elevation in forest stands. There is a group of papers presenting the results of new studies on the chemism of fertilized soils and on that of woody and green matter. Further, there are studies in the volume which deal with the nutrition of forest stands developing on fertilized soils, considered from the aspect of production with separate forest species in the territory of central and western Europe. Data of importance are included in the papers given over to nitrogen fertilization, improvement of kaolinic soils, combined fertilization applied in different forest soils, and the fertilization practices using different nutrients. Of special interest is the study on the use of annual ring analysis for fertilization purposes. The papers include ample tabulated data and diagrams. The book concludes with the text of the resolution adopted and the programme suggested for the next conference to be held in Denmark, and with a list of the participants in this international meeting. The 'Proceedings' is a significant publication, for it informs the reader on the latest results and trends in the sector of forest soil fertilization aimed at increasing the timber production of forest stands.

**Professor J Pelíšek**

**HARTGE, K. H. Die physikalische Untersuchung von Böden, 168 Seiten, 45 Abb., Ferdinand Enke Verlag, Stuttgart, DM 25.—.**

In this manual a series of methods for the physical characterization of soils is described. The following subjects are treated: sampling, moisture content, particle size, pore volume, density, moisture retention, wet aggregate stability, saturated and unsaturated water conductivity, moisture tension in the field, penetrability. Often more than one method is given. Always the most simple instruments and techniques are preferred, the use of more sophisticated ways of approach being unwarranted by the variability of the soil itself. Illustrations show clearly how to use and construct the instruments. The book is therefore especially recommended to students and those who are not supported by a well instrumented laboratory.

**F. F. R. Koenigs**  
**Agric. University, Wageningen.**

**DABIN, B., et THOMANN, Ch. Etude comparative de deux méthodes de fractionnement des composés humiques (méthode Tiurin et méthode électrophorétique). ORSTOM, Documentation Technique No. 16, Paris 1970. pp. 66. Prix Frs. 20.—.**

This paper from the well-known ORSTOM-center of scientific research in Paris presents a most interesting account of a study of Tiurin's as compared to the electrophoretic method of fractionized analysis of organic matter. For that purpose 24 profiles have been analyzed: three from France (podzol, podzolic and "lessivé"), twelf from Tunesia (various types of brown and red mediterranean soils, vertisols, hydromorphic soils, brown calcareous and "lessivé" soils), finally 6 tropical soils from Cameroun, Sénégal and Haute-Volta (ferrallitic, ferruginous, brown eutrophic and vertic soils).

A detailed list of results, including CEC-measurements and clay mineralogical data complete the paper. As an overall result it is concluded that, although the two methods give different results, each depending on the nature of the soils and the climatic conditions that prevail, both have their merit. They give not comparable but complementary results which conjointly present a most interesting picture of the processes of humification under diverging conditions.

**PELLOUX, P., Editor. Méthodes de détermination du cations échangeables et de la capacité d'échange dans les sols. ORSTOM, Documentation Technique No. 17, Paris 1971. pp. 117. Prix Frs. 24,—.**

This technical paper, edited by Dr. Pelloux with the collaboration of ORSTOM scientific officers, Drs. Dabin, Fillmann and Gomez, contains a detailed review of the various existing methods to determine CEC and exchangeable cations. Not only the methods are described in detail but also the laboratory outfit including chemicals needed for a correct procedure is enumerated completed with examples of the calculations to be executed for a final result. Drafts of the set-up of automatized operations as e.g. complexometric, potentiometric and conductometric measurements contribute to the usefulness of the manual as a guide for soil physico-technical research. The reader should of course have a basic knowledge of the French language.

**DEMEK, J., STRIDA, M. et al. Geography of Czechoslovakia. Academia, Prague. 1971. 330 pages — 16 plates. Price Kcs. 108,—.**

This book deals with physical as well as economic geography; the authors have been assisted by a team of fourteen. The part on physical geography (153 pages) has been directed by J. Demek and comprises geology, geomorphology, climate, hydrology, soils, biogeography and environment s.l.; the part of economic geography (119 pages) by M. Strida and includes economy, population, settlement, industry, agriculture, transport and tourism. Although one may not expect very detailed information on every subject, the great value of the book lies in the fact that it makes available ample recent information (up to 1968) on the geography of Czechoslovakia for those who do not understand the Czech or Slovak tongues. For instance in the chapter on soil geography, the authors have succeeded in outlining the complex zonality of Czechoslovakian soils in few pages, well understandable to geographers. Each chapter is followed by references for further reading. An extensive index (32 pages) concludes this well executed and well illustrated book, although the reproduction of colour plates is of lesser quality.

**J. A. K. Boerma**  
Soils Dept. Utrecht.

**LIEBER, W. Mineralogie in Stichworten. 244 Seiten, 120 Abb. Verlag Ferdinand Hirt, Kiel, Germany, DM. 16.80.**

Again a neat little, low priced, volume in Hirt's series of "catchwords of natural sciences". It presents concise information on most of the better known minerals, their occurrence, chemical, crystallographical, optical characteristics, physical properties, etc.

The species enumerated are grouped in 9 sections based on their chemical composition, starting with the elements, via sulphate, carbonate and the like and ending up with the silicates.

In a final section mining and use of the major elements as far as they are dominant components of the minerals are discussed. A rich source of information for any one interested in minerals, well illustrated with a great number of elucidative figures.

**HEADY EARL O., Editor. Economic models and quantitative methods for decisions and planning in agriculture. Iowa University Press, 1971. Price \$ 10.50.**

A collection of papers presented at a 1968 seminar held in Hungary, this new title offers current thinking from East and West European and North American agricultural economists on the problems of agricultural planning equating demand with available supply of food on a worldwide scale.



Earl O. Heady, Distinguished Professor of Economics, Iowa State University, was chairman of the seminar planning committee which gathered under the sponsorship of the Ford Foundation to evaluate potential interest and to formulate the program.

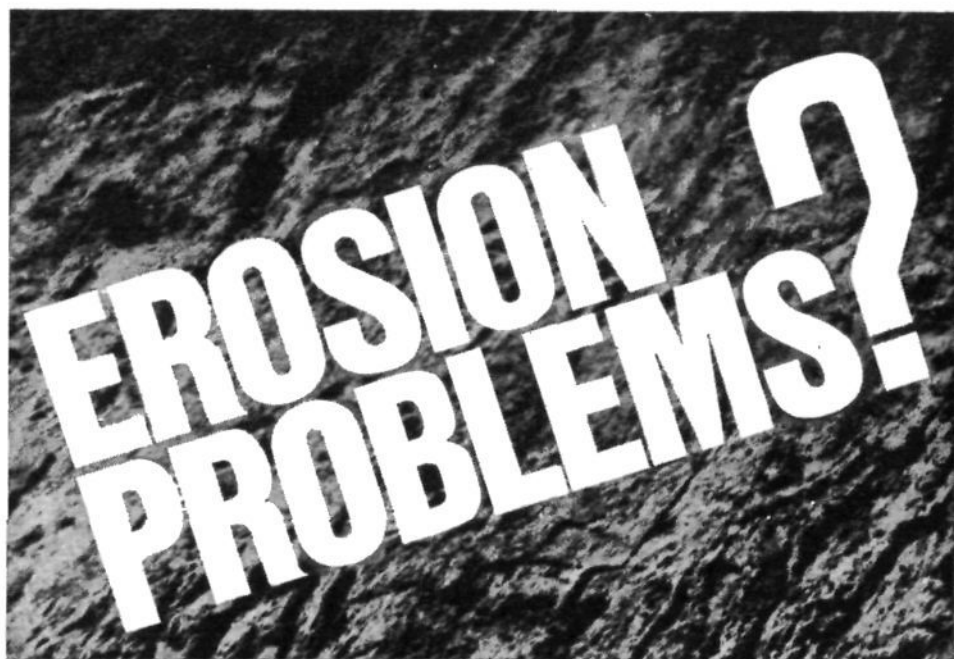
Representatives from the United States, Poland, Hungary, U.S.S.R., Yugoslavia, the United Kingdom, Czechoslovakia, Romania, Germany, Canada, France, Sweden, Austria, Norway, Italy, and the Netherlands met at the East-West Seminar in Hungary to discuss the increasingly valuable use and applications of economic models and econometric techniques to the problems of agriculture.

Their papers reviewed those decision and planning concepts which are now in use and discussed those which are being developed and those which can be formulated in the future to apply to the changing problems of world food demand and supply.

The form of the economic models thus established, those attending the East-West Seminar discussed the application of these models to problems of resource, efficiency, and future potential in improved planning and policy at the farm, regional, national and international levels of agriculture.

The attendees examined the gap between ideal decision and planning conditions and those policies actually in use today in East and West Europe and in North America. They further discussed ways of acquainting extension and administrative personnel with newer decision and planning models with great potential in improving management at the individual farm level and policy at the national level.

All papers presented at the East-West Seminar in Hungary in 1968 are collected into **ECONOMIC MODELS AND QUANTITATIVE METHODS IN DECISION AND PLANNING OF AGRICULTURE**, available at \$ 10.50 from bookstores or from the Iowa State University Press.



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