

BULLETIN 32

OF THE INTERNATIONAL SOCIETY
OF SOIL SCIENCE

•

BULLETIN

DE L'ASSOCIATION INTERNATIONALE
DE LA SCIENCE DU SOL

•

MITTEILUNGEN

DER INTERNATIONALEN BODENKUNDLICHEN
GESELLSCHAFT

•

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

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

COUNCIL/CONSEIL/BEIRAT:

Executive Committee/Comité Exécutif/Verwaltungsausschuss:

- President : E. G. Hallsworth, C.S.I.R.O. Division of Soils, Private Bag No. 1 Glen Osmond, South Australia.
- Vice-President : J. P. Quirk, Dept. of Soil Science and Plant Nutrition, University of Western Australia, Nedlands, W. Australia.
- Secretary-General : F. A. van Baren, c/o Royal Tropical Institute, 63 Mauritskade, Amsterdam, Netherlands.

Honorary Members/Membres Honoraires/Ehrenmitglieder:

- Prof. Dr Sante Mattson, Båstad, Sweden.
- Prof. Dr Emil Truog, University of Wisconsin, Madison 6, Wisc., U.S.A.
- Prof. Dr E. C. J. Mohr, Huize „Het Oosten", Rubenslaan 1, Bilthoven, Netherlands.
- Dr Firman E. Bear, Rutgers University, New Brunswick, N.J., U.S.A.
- Prof. J. A. Prescott, 82 Cross Road, Myrtle Bank, South Australia.

Commissions/Commissions/Kommissionen:

- I — SOIL PHYSICS.**
Chairman: G. H. Bolt, Laboratorium Landbouwscheikunde, Prof. Ritzemabosweg, Wageningen, Netherlands.
- II — SOIL CHEMISTRY.**
Chairman: J. M. M. J. Fripiat, Institut Agronomique, Avenue Cardinal Mercier, 92 Héverlé-Louvain, Belgique.
- III — SOIL BIOLOGY.**
Chairman: J. Macura, Institute of Microbiology, Budájevická 1083, Praha 4, Czechoslovakia.
- IV — SOIL FERTILITY AND PLANT NUTRITION.**
Chairman: Y. Ishizuka, Hokkaido University, Department of Soil Fertility and Plant Nutrition, Sapporo, Japan.
- V — SOIL GENESIS, CLASSIFICATION AND CARTOGRAPHY.**
Chairman: V. A. Kovda, Academy of Sciences, Moscow, U.S.S.R.
- VI — SOIL TECHNOLOGY.**
Chairman: I. D. Stăicu, Institut Central de Recherches Agricoles, Bd. Marasti 61, Bucarest, Roumanie.
- VII — SOIL MINERALOGY.**
Chairman: B. D. Mitchell, The Macaulay Institute for Soil Research, Department of Pedology, Craigiebuckler, Aberdeen, Scotland.

BULLETIN
OF THE INTERNATIONAL SOCIETY OF SOIL SCIENCE
BULLETIN
DE L'ASSOCIATION INTERNATIONALE DE LA SCIENCE DU SOL
MITTEILUNGEN
DER INTERNATIONALEN BODENKUNDLICHEN GESELLSCHAFT

No. 32

1968

NEWS OF THE SOCIETY

The 9th International Congress, Adelaide, Australia
August 6-16, 1968

Unless all signs fail the Australian Congress will be a great success and another milestone in the history of our Society. This is to the fullest degree thanks to the devoted efforts of the Organizing Committee which recently reported that some 1,200 members will come to the congress, and of that number about 800 will come from 64 countries outside Australia. In certain fields, such as Surface Chemistry of Soils every authority of note in the world is expected to be present, whereas also all other aspects will get adequate attention by soil scientists of reknown.

The Organizing Committee may even have put a standard for future international congresses by carefully screening the papers sent in for presentation and to reject those which did not conform to the themes selected for this congress and published in the Congress bulletin sent to all the members.

This resulted in the acceptance of 310 papers classified as follows:

| Congress Programme — Theme | no. of papers |
|---|---------------|
| 1. <i>Transport Processes in Soils</i> | |
| (a) Movement of water, plant nutrients, oxygen & CO ₂ | 29 |
| (b) Entry and retention of water | 6 |
| 2. <i>Irrigation and Drainage</i> | |
| (a) Soil and salinity factors | 15 |
| (b) Rice (Soil features and water-logging) | 7 |
| 3. <i>Colloid and Surface Chemistry</i> (Fixation, release and interaction of water and plant nutrients) | 23 |
| 4. <i>Nutrients in Soils</i> | |
| (a) Potassium | 10 |
| (b) Phosphorus | 16 |
| (c) Sulphur | 2 |
| (d) Micro-nutrients | 8 |
| (e) Mechanisms of nutrient uptake | 11 |
| 5. <i>Soil Organic Matter</i> | |
| (a) Humus forms (definition, classification and chemistry) | 6 |
| (b) Role of humus in soil formation | 5 |
| (c) Composition, synthesis and decomposition of organic matter | 7 |
| (d) Accumulation and release of organic matter | 6 |
| (e) Nitrogen fixation | 13 |
| (f) Nitrogen transformations in soils | 9 |
| (g) Nitrogen fertilizers | 3 |
| (h) Interaction between cell products and soil colloids | 6 |
| (i) Microbial stimulation and inhibition of plant growth | 6 |
| 6. <i>Weathering and Soil Formation</i> | |
| (a) Chemical weathering | 6 |
| (b) Mineral weathering | 7 |
| (c) Biological weathering | 6 |
| (d) Development of soil features (profiles, horizons, hard-pans etc.) | 14 |

| | |
|---|-----|
| 7. <i>Structure and Formation of Clays</i> | 14 |
| 8. <i>Soil Strength</i> (Tillage, root penetration and seedling emergence) | 8 |
| 9. <i>Soil Classification</i> | 29 |
| 10. <i>Soil Management</i> (Tillage, fertilizer programmes, etc.) | 10 |
| 11. <i>Tropical Crops</i> | 3 |
| 12. <i>Techniques</i> (Methods, procedures and equipment) | 22 |
| 13. <i>Miscellaneous</i> | 3 |
| | 310 |

The, as compared to former congresses, limited number of papers will be ready in printed form before the meeting, a fact which should guarantee high level discussions for which now ample time is available. This will be further stimulated by the standing by of professional interpreters who will make possible an exchange of views in the three languages of the Society.

IMPORTANT NOTICE

Would members please note that all wives attending any official or convened function during this Congress must be registered as associates and this should be done at the earliest convenience. The fee for associates is AU\$10.— and cheques should be made payable to the 9th International Congress of Soil Science.

NOUVELLES DE L'ASSOCIATION

9e Congrès International, Adélaïde, Australie 6-16 août 1968

Sauf imprévu, le Congrès australien sera un grand succès et constituera une pierre angulaire dans l'histoire de notre Société. Ce succès est dû principalement aux efforts dévoués du Comité Organisateur qui a récemment déclaré que quelque 1200 membres assisteraient au Congrès. Parmi eux, il y aura environ 800 personnes venant de 68 pays autres que l'Australie. Dans certaines disciplines comme par exemple en chimie de surface, de nombreux savants de réputation mondiale sont attendus tandis que dans d'autres disciplines, on trouvera également d'éminentes personnalités du monde scientifique. Le Comité Organisateur a pris des dispositions générales qui s'appliqueront aux futurs congrès internationaux en triant soigneusement les communications envoyées, en rejetant celles qui ne sont pas conformes aux thèmes sélectionnés et en les publiant dans le bulletin du congrès qui sera envoyé aux membres.

Il s'en suit que 310 communications ont été acceptées. Elles sont classées comme suit:

| Programme du Congrès — Thèmes | nombre de communications |
|---|--------------------------|
| 1. <i>Processus de Transport dans les Sols</i> | |
| (a) Mouvement de l'eau, des éléments nutritifs, de l'oxygène et du CO ₂ | 29 |
| (b) Pénétration et rétention de l'eau | 6 |
| 2. <i>Irrigation et Drainage</i> | |
| (a) Sol et facteurs de salinité | 15 |
| (b) Riz (caractéristiques des sols et engorgement) | 7 |
| 3. <i>Colloïde et Chimie de Surface</i> (Fixation, libération et interaction de l'eau et des éléments nutritifs) | 23 |
| 4. <i>Éléments Nutritifs dans les Sols</i> | |
| (a) Potassium | 10 |
| (b) Phosphore | 16 |
| (c) Sulfure | 2 |
| (d) Oligo-éléments | 8 |
| (e) Mécanismes de prélèvement des éléments nutritifs | 11 |

| | | |
|---|----|-----|
| 5. <i>Matière Organique du Sol</i> | | |
| (a) Formes d'humus (définition, classification et chimie) | 6 | |
| (b) Rôle de l'humus dans la formation des sols | 5 | |
| (c) Composition, synthèse et décomposition de matière organique | 7 | |
| (d) Accumulation et libération de la matière organique | 6 | |
| (e) Fixation de l'azote | 13 | |
| (f) Transformations de l'azote dans les sols | 9 | |
| (g) Engrais azotés | 3 | |
| (h) Interaction entre les produits cellulaires et les colloïdes du sol | 6 | |
| (i) Stimulation microbienne et inhibition de la croissance des plantes | 6 | |
| 6. <i>Altération et Formation du Sol</i> | | |
| (a) Altération chimique | 6 | |
| (b) Altération minérale | 7 | |
| (c) Altération biologique | 6 | |
| (d) Développement des caractéristiques du sol (profils, horizons, couches indurées, etc.) | 14 | |
| 7. <i>Structure et Formation des Argiles</i> | | 14 |
| 8. <i>Résistance du Sol</i> (Labour, pénétration des racines et levée des semis) | | 8 |
| 9. <i>Classification des Sols</i> | | 29 |
| 10. <i>Aménagement des Sols</i> (Labour, programmes de fumure, etc.) | | 10 |
| 11. <i>Cultures Tropicales</i> | | 3 |
| 12. <i>Techniques</i> (Méthodes, systèmes et équipement) | | 22 |
| 13. <i>Divers</i> | | 3 |
| | | 310 |

Comme pour les congrès précédents, les communications, en nombre limité, seront imprimées et à la disposition des congressistes avant le meeting. Cela garantit un haut niveau de discussion pour lequel on ne peut prévoir un temps trop long. De plus, la présence d'interprètes professionnels rendra possible un échange de points de vue dans les trois langues de la Société.

Note importante

Les membres voudraient-ils bien noter que les épouses qui ont un rôle officiel pendant le Congrès devront être inscrites comme membres associés. L'inscription devra être prise très rapidement. Le droit d'inscription pour les associés est de AU \$ 10.— et le paiement doit être adressé au 9e Congrès International de la Science du Sol.

NEUES AUS DER GESELLSCHAFT

Der 9. Internationale Kongress, Adelaide, Australien

vom 6. —16. August 1968

Wenn nicht alle guten Vorzeichen trügen, wird der Australische Kongress ein grossartiger Erfolg werden und ein neuer Markstein in der Geschichte unserer Gesellschaft sein. Der Dank gebührt in hohem Mass den opfervollen Bemühungen des Organisations-Komitees, das kürzlich berichtete, dass etwa 1.200 Mitglieder zu dem Kongress kommen werden und zwar von dieser Zahl etwa 800 aus 64 Ländern ausserhalb Australiens. In bestimmten Fachgebieten, wie Oberflächen-Chemie der Böden, wird jeweils ein Fachmann von Weltbedeutung erwartet, während auch alle anderen Gebiete eine angemessene Berücksichtigung durch bekannte Bodenkundler erhalten werden. Das Organisations-Komitee hat wahrscheinlich eine Regelung für zukünftige internationale Kongresse getroffen bezüglich einer sorgfältigen Überprüfung der vorgelegten Vorträge und bezüglich der Ablehnung solcher, die den für diesen Kongress ausgewählten, in den Kongress-Mitteilungen veröffentlichten und allen Mitgliedern zugesandten Themen nicht entsprachen. Die Folge davon war die Annahme von 310 Vorträgen, die folgendermassen klassifiziert sind:

| | |
|---|----|
| 1. <i>Bewegungsvorgänge in Böden</i> | |
| (a) Bewegung von Wasser, Pflanzennährstoffen, Sauerstoff und CO ₂ | 29 |
| (b) Anlagerung und Zurückhaltung von Wasser | 6 |
| 2. <i>Bewässerung und Dränung</i> | |
| (a) Boden und Versalzungsfaktoren | 15 |
| (b) Reis (Bodenmerkmale und Wasserhaushalt) | 7 |
| 3. <i>Kolloidik und Oberflächen-Chemie</i> (Fixierung, Freisetzung und Übermittlung von Pflanzennährstoffen) | 23 |
| 4. <i>Nährstoffe in Böden</i> | |
| (a) Kalium | 10 |
| (b) Phosphor | 16 |
| (c) Schwefel | 2 |
| (d) Mikro-Nährstoffe | 8 |
| (e) Mechanismus der Nährstoffaufnahme | 11 |
| 5. <i>Organische Stoffe des Bodens</i> | |
| (a) Humusformen (Definition, Klassifikation, Chemie) | 6 |
| (b) Die Rolle des Humus in der Bodenbildung | 5 |
| (c) Zusammensetzung, Synthese und Abbau von organischen Stoffen | 7 |
| (d) Festlegung und Freiwerden von organischen Stoffen | 6 |
| (e) Stickstoff-Fixierung | 13 |
| (f) Stickstoff-Transformation in Böden | 9 |
| (g) Stickstoff-Düngemittel | 3 |
| (h) Beziehung zwischen Zellprodukten und Bodenkolloiden | 6 |
| (i) Mikrobiologische Stimulation und Hemmung des Pflanzenwachstums | 6 |
| 6. <i>Verwitterung und Bodenbildung</i> | |
| (a) Chemische Verwitterung | 6 |
| (b) Mineral-Verwitterung | 7 |
| (c) Biologische Verwitterung | 6 |
| (d) Entwicklung von Bodenmerkmalen (Profile, Horizonte, verfestigte Schichten etc.) | 14 |
| 7. <i>Struktur und Tonbildung</i> | 14 |
| 8. <i>Bodenfestigkeit</i> (Bearbeitung, Durchwurzelbarkeit und Durchbruch des Keimlings) | 8 |
| 9. <i>Bodenklassifikation</i> | 29 |
| 10. <i>Bodenbehandlung</i> (Bearbeitung, Düngerprogramm etc.) | 10 |
| 11. <i>Tropische Nutzpflanzen</i> | 3 |
| 12. <i>Technik</i> (Methoden, Durchführung und Gerät) | 22 |
| 13. <i>Verschiedenes</i> | 3 |

Im Vergleich zu früheren Tagungen wird die Anzahl der Vorträge beschränkt sein. Die Vorträge werden vor der Tagung in gedruckter Form vorliegen, ein Weg, der ein hohes Diskussionsniveau gewährleistet, für das dann genügend Zeit zur Verfügung steht. Dieses wird fernerhin angestrebt von den unterstützenden Dolmetschern, die einen Meinungsaustausch in den 3 Sprachen der Gesellschaft möglich machen.

Wichtige Mitteilung

Mitglieder wollen bitte beachten, dass alle Frauen, die während dieses Kongresses irgendein Amt oder eine Veranstaltung besuchen, als Teilnehmer eingetragen werden müssen. Dies sollte so früh wie möglich geschehen. Die Teilnehmergebühr ist AU \$ 10,—; Schecks können bei dem 9. Internationalen Bodenkongress eingelöst werden.

NEWS OF THE COMMISSIONS

Commission V Subcommission on Salt Affected Soils

The Subcommission on Salt Affected Soils will organize a symposium on the "Reclamation and Utilization of Soils of High Sodium Carbonate Content" under the auspices of the Ministry of Agriculture of the USSR and the Armenian Institute of Soil Science and Agricultural Chemistry in Erevan, Armenian SSR, from 26-31 May 1969.

Contributions to be presented at the symposium should not exceed 1500 words (about 15 minutes) and they should be submitted to Dr. I. Szabolcs, Chairman of the Sub-commission / Budapest, II, Herman Ottó-út 15, Hungary / not later than 31st December 1968.

The subjects of the meeting are:

1. The role of sodium carbonate in soils. The distribution and the chemical, physical, physico-chemical and biological properties of soils of high sodium carbonate content.
2. Reclamation and utilization of these soils with particular regard to irrigation, drainage, chemical improvement and soil technology.

According to plans, 3 days of discussion will be followed by two professional excursions in the course of which the salt affected soils of the Ararat Plain as well as characteristic Armenian landscapes and soil profiles will be shown to the participants.

Those who intend to participate are requested to inform Prof. Dr. G. P. Petrosian, Director of the Armenian Institute of Soil Science and Agricultural Chemistry / Erevan, Central Post Office, P.O. Box 33. Armenian SSR / not later than 30th November 1968 because the number of participants is limited (100 persons).

NOUVELLES DES COMMISSIONS

La Sous-Commission des Sols Salés organisera un symposium sur les „Exigences et l'utilisation des sols très riches en carbonate de sodium" sous les auspices du Ministère de l'Agriculture de l'URSS et de l'Institut Arménien de la Science du Sol et de la Chimie Agricole d'Everan, Arménie, du 26 au 31 mai 1969.

Les communications à présenter au symposium ne doivent pas excéder 1500 mots, ce qui correspond à environ 15 minutes d'exposé, et doivent être transmises au Dr I. SZABOLCS, Président de la Sous-Commission, Budapest, II, Herman Otto-ut 15, Hongrie, au plus tard le 31 décembre 1968.

Les sujets du meeting sont:

1. Le rôle du carbonate de sodium dans les sols. Distribution et propriétés chimiques, physiques, physico-chimiques et biologiques des sols à forte teneur en carbonate de sodium.
2. Exigences et utilisation de ces sols plus spécialement aux points de vue irrigation, drainage, amélioration chimique et technologie.

Suivant les projets, 3 jours de discussions seront suivis de 2 excursions au cours desquelles des sols salés de la plaine d'Ararat, ainsi que des paysages arméniens caractéristiques et des profils de sols seront montrés aux participants.

Ceux qui comptent participer à ce symposium sont priés d'en informer le Prof. Dr. G. P. PETROSIAN, Directeur de l'Institut Arménien de la Science du Sol et de Chimie Agricole, Everan, Bureau Postal Central, Boite postale 33, République d'Arménie, au plus tard le 30 novembre 1968 car le nombre de participants est limité à 100.

NEUES AUS DEN KOMMISSIONEN

Die Unterkommission für versalzte Böden wird vom 26.—31. Mai 1969 ein Symposium abhalten über die „Verbesserung und Nutzung von Böden mit hohem Natrium-Karbonat-Gehalt" unter der Leitung des Ministeriums für Landwirtschaft der USSR und des Armenischen Instituts für Bodenkunde und Landwirtschaftliche Chemie in Erevan, Armenische SSR.

Beiträge für das Symposium sollen 1500 Wörter und etwa 15 Minuten nicht übersteigen und sollen bis spätestens 31.12.1968 an Herrn Dr. I. Szabolcs, Vorsitzender der Unterkommission, Budapest II, Herman Ottó-út 15, Ungarn, gesandt werden.

Die Tagungsthemen sind:

1.) Die Wirkung des Natrium-Karbonates in Böden. Die Verbreitung und die chemischen, physikalischen, physiko-chemischen und biologischen Eigenschaften der Böden mit hohem Natrium-Karbonat-Gehalt.

2.) Verbesserung und Nutzung dieser Böden mit besonderer Berücksichtigung der Beregnung, der Dränung, der chemischen Verbesserung und der Bodentechnologie.

Es ist vorgesehen, nach 3 Diskussionstagen 2 Fach-Exkursionen durchzuführen in das Gebiet der versalzen Böden der „Ararat Ebene“; ebenso sollen den Teilnehmern charakteristische armenische Landschaften und Bodenprofile gezeigt werden.

Diejenigen, die beabsichtigen, an der Tagung teilzunehmen, werden gebeten, dieses Herrn Prof. Dr. G. P. Petrosian, Direktor des Armenischen Instituts für Bodenkunde und Landwirtschaftliche Chemie, Erevan, Central Post Office, P.O.Box 33, Armenische SSR, bis zum 30. November 1968 mitzuteilen, da die Teilnehmerzahl auf 100 Personen beschränkt ist.

COMMISSION V

Transactions of the Meeting on Mediterranean Soils

Madrid, 1966.

A 470 page volume containing the 59 papers read at the Mediterranean Soils Conference, organized by the Spanish Soil Science Society, is now available.

Copies must be ordered directly from:

Sociedad Espanola de Ciencia del Suelo, Serrano 113, Madrid, Spain.

The price is \$ 7.50 for members of the Society, \$ 10.— for non members.

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

Rumanian Society of Soil Science

The Rumanian National Society of Soil Science held its sixth conference at Eforie, 23-28 september 1967.

62 papers were read during the plenary and commission meetings. Three days were devoted to scientific excursions in south-eastern Rumania. The General Assembly elected the Council for the next three years period as follows:

Officers: Gr. Obrejaanu (President), C. D. Chirita, D. Davidescu, A. Canarache (Vice presidents), D. Teaci (Secretary general), M. Motoc, N. Florea, L. Gustiuc, M. Nemes.

Members of the Council: Ir. Staicu, I. Maxim, Cr. Oprea, C. Paunescu, H. Simota, N. Bucur, M. Botzan, St. Cirstea, P. Stanescu, I. Crisan, T. Danet, P. Papacostea.

Bodenkundliche Gesellschaft der Deutschen Demokratischen Republik

(Status still under consideration with the Council)

On 21 December, 1967, 185 soil scientists residing in the German Democratic Republic affiliated the newly founded Soil Science Society of the D.D.R. The following Board was elected:

President: Prof. Dr. P. Kundler, Direktor des Instituts für Mineraldüngung Leipzig der Deutschen Akademie der Landwirtschaftswissenschaften zu Berlin.

Members: Prof. Dr. W. Borchmann, Rostock.
Dr. I. Lieberoth, Berlin.
Dr. H. Lindner, Berlin.
Prof. Dr. K. Rauhe, Leipzig.
Dr. K. Steinbrenner

Secretary: Dr. W. Barufke, Deutsche Akademie der Landwirtschaftswissenschaften zu Berlin.

Of the 185 members, 73 are registered with the I.S.S.S.

**INTERNATIONAL CONFERENCES OF ALLIED SCIENCES
CONGRES INTERNATIONAUX DE SCIENCES CONNEXES
INTERNATIONALE KONGRESSE VON VERWANDTEN WISSENSCHAFTEN**

Commission Internationale de Genie Rural

The 7th International Congress of Agricultural Engineering will be held in Baden-Baden (Federal Republic of Germany) from October 6-11, 1969. The general theme is: Training of Engineers in Agricultural Engineering. For further information apply to:

Organizing Committee of the Congress, 6000 Frankfurt/M-1, Zeil 65-69.

Commission for the Hydrometeorology of the World Meteorological Organization

The third session of the Commission for Hydrometeorology of WMO, scheduled to take place in Rio de Janeiro (Brazil) from 17 to 30 April 1968, had to be postponed. The present indications are that it will be held in Geneva in September 1968.

MISCELLANEOUS NEWS
INFORMATIONS DIVERSES
VERMISCHTE MITTEILUNGEN

Scientific reward to Professor Primavesi of Santa Maria, Brasil



The Institute of Soils and Plant Nutrition of the Federal University of Santa Maria, Santa Maria, RS, Brazil, besides of education and research, has a large extension program of technical assistance to improve the productivity and drought resistance of crop and range soils in the geo-educational zone of its University.

In this program, the results of the scientific research are transmitted directly to the farmer and the cattle breeder, to improve crop and livestock production.

In the most important range land region of the State of Rio Grande do Sul, where the mineral deficiencies and the decadence of soils are responsible for low forage and livestock production, this program already obtained fine results.

That's why the Faculty of this zone decided, by unanimity of its congregation to give to the Director of the Institute of Soils and Plant Nutrition, Prof. Dr. Artur Primavesi, the rare title "Doctor honoris causa" as reward for the excellent and important researches in soil productivity and the economical benefits

conquered by their application, including also the afflictive problem of droughts in that zone with its compact and shallow soils.

Dr. Artur PRIMAVESI is a active member of the INTERNATIONAL SOCIETY OF SOIL SCIENCE and of the Soil Science Society of America. He is already holder of the Cross of Honour of Austria for Science, First Class; of the Great Medal of Especial Merits from the University of Bonn, Germany; of the Cross of Science and Culture Merits of São Paulo, Brazil, and of many other brazilian distinctions, as acknowledgment of his pioneer works in the field of Soil Productivity and Plant Nutrition.

The Whole Story on Potassium in Agriculture

A conference on Potassium in Agriculture will be held on June 18 and 19, 1968 at the National Fertilizer Development Center, TVA, at Muscle Shoals, Ala.

The symposium is sponsored by the American Society of Agronomy (ASA), its associate societies, the Crop Science Society of America (CSSA), and Soil Science Society of America (SSSA), and by the American Potash Institute, and TVA.

The first session on June 18, Potassium Fertilizers and Soil Mineralogy, will include discussion of the world's potassium reserves and potassium in compound fertilizers. Leading fertilizer experts will speak at all sessions.

The role of potassium in plant and animal nutrition will be covered that afternoon and soil behavior and crop requirements in relation to the element the next morning. The session on the 19th will cover potassium nutrition of tropical, forage, grain, tree and vegetable crops.

Proceedings of the entire program will be published in hardcover book form after the meeting.

New Editor-in-Chief of SOIL SCIENCE

John C. F. Tedrow will become editor-in-chief of "Soil Science" as part of his duties as professor of soils at Rutgers University. Dr. Tedrow has degrees from

Penn State, Michigan State and Rutgers Universities and has been on the Rutgers faculty since 1947. He teaches and conducts a variety of research projects, and is known internationally as an authority on soils of the arctic and antarctic.

Particle Size and Distribution

The existing systems of particle size distribution in granulometric research have been subject to a study by the Committee of the Soil Science Society of America, presided by Professor Whiteside of Michigan State University. The Committee arrived at the following conclusions:

1) The Soil Science Society of America has a great investment in its present system of particle size distribution analysis. Data accumulated since 1928 are based on essentially the scheme presently in use and have been obtained by reasonably similar techniques. Hence, more than 90 % of the data presently available are directly comparable. Moreover, these data are serving well both for studies in soil genesis and for practical soil survey interpretation. Most data available since 1947 also include the fractions of the system of the International Soil Science Society, which are also essential components of the MIT system. The SSSA recognizes that a common scale of particle size classes would be beneficial to this society and other professional groups. In view of the Society's investment in its present system a change should be contemplated only if a common scale is adopted by the majority of other users of particle size analyses of earthy materials.

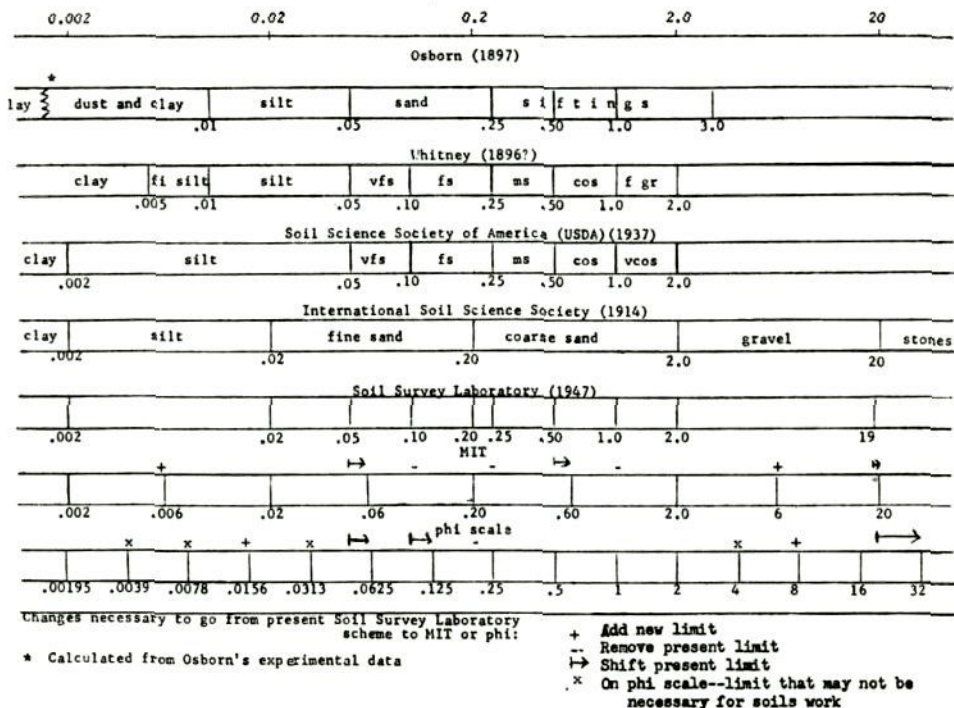
2) This committee holds that there are few or no narrowly defineable natural particle size boundaries that would be equally significant in all soil materials. Hence, the continuum of particle sizes should be divided in a regular and preferably logarithmic fashion. The phi scale and the MIT system meet these requirements and the scheme presently adopted by the SSSA is a reasonably close approximation, at least in parts of the scale. If, for the sake of conformity with other professional groups, a new system were adopted, this committee would strongly favor the MIT scale over the phi scale because the MIT scale contains the essential elements of systems presently used by soil scientists throughout the world. Adoption of the MIT scale would require shifting the present 0.05-mm upper silt boundary to 0.06 mm and the 0.5-mm upper medium sand boundary to 0.6 mm. The introduction — or re-introduction — of a 0.06-mm separation should also be considered. The changes would probably be small enough as not to make present data obsolete. It may be desirable to create a mechanism for making further subdivisions of the MIT scale to make it as flexible as the phi scale. For several reasons a scale based on 1 mm with subdivisions at 0.315 mm, 0.1 mm, etc. would seem to be the ideal scale for agricultural purposes. The advantages, however, are not sufficient to outweigh the disadvantages of such a radical departure from existing systems in soil science and engineering.

Adopting the phi scale also seems possible. Points of the present SSSA scale could be shifted to points of the phi scale but the full phi scale has more points than would be useful to soil scientists. Alternate points are too far apart and too far away from present class limits to be useful. If only selected points of the phi scale were used the advantage of a regular progression would be lost. Adoption of the phi scale would also disassociate our society from the International Soil Science Society. The various scales and the changes involved in shifting from the present scale to either the phi or MIT scale are shown in the figure on the next page.

3) Whether a common particle size distribution scale is realized or not, the possibility of creating a computer program for converting analyses using the different systems should be investigated. Likewise, a punch card file of particle size distribution analyses should be established and programmed so that results would be available in more than one system of particle size distribution.

4) Reasonable efforts should be made to standardize major aspects of particle size distribution analyses including the selection of one or two size limits on which particle size distribution analyses are to be based. The Soil Science Society is quite firmly committed to 2 mm as one of the bases, but a second basis at 60 mm (MIT scale) or 64 mm (ϕ scale) may be desirable. A significantly larger basis would seem impractical.

Log scale (mm.)



5) Statements of the standard error of determinations in completely dispersible soil materials and guidelines for the acceptability of results of analyses in incompletely dispersible soil materials should be established.

Reproduced from Soil Science Society of America Proceedings Vol. 31, No. 4 July-August 1967, pages 579-584.

The Mokady Memorial Symposium

Rehovot, Israel, July 1-5 1968.

The Israel Societies of Soil Science and of Clay Research are organizing a memorial symposium dedicated to the late Dr. R. S. Mokady, on topics from the field of Physical Chemistry of Soils and Clays. Papers will be presented by scientists from several countries and will be followed by discussions and working sessions, on ion exchange properties of clays and soils, clay systems saturated with mono- and divalent ions, clay-water interaction, and clay-organic interaction. The symposium proceedings are being published as a special memorial volume by the Israel Journal of Chemistry.

Further details can be obtained from:

Dr. A. Banin, Chairman, The Organizing Committee, Dept. of Soil Science, The Hebrew University, Rehovot, Israel.

BRIGGS, F. N., and KNOWLES, P. F.: Introduction to plant breeding.

New York etc., Reinhold publishing Corporation, 1967. Reinhold Books in the Biological Sciences. XIII, 426 p. Tables. Figs. Photos. Map. Ref. Price US \$ 13.50.

This introductory textbook on plant breeding requires a fair knowledge of botany, genetics, and crop husbandry; a few subjects with which potential users should be familiar are recapitulated and chapters on statistics of variables and the design of field trials included. The book is only concerned with general principles and practical aspects of breeding; it does not contain chapters on specific plants but the many examples relating to wheat and maize add up to a fairly complete account of breeding methods for these crops. On the whole the authors have succeeded in presenting a satisfactory, well-balanced presentation of their subject. One of the two features that the reviewer decidedly disliked is the inclusion of sections on lamarckism and michurinism, especially as these appear as an introduction to a discussion of chimeras; the other is the treatment of regression which, though it does not say so, is restricted to linear regression and yet is not clearly linked up with correlation.

The volume has been written for students whose prospective jobs will be in the U.S.A.; though the authors are by no means provincial in their outlook (as is reflected in the lists of references at the end of the chapters), the emphasis throughout is on the main crops and on conditions in that country. Tropical crops, for instance, are barely or not mentioned. This will seriously restrict the usefulness of the text outside the U.S.A. The book is well produced and contains practically no printer's errors. A few mis-spellings of scientific terms and of titles of publications in languages other than English were noticed but they are not very serious. The only mis-spelt scientific plant name found is in a filing card made up by the junior author and reproduced as an example to his students.

F. W. OSTENDORF

SLATYER, R. O.: Plant-water relationships.

Academic Press, London and New York, 1967. XII + 366 pp. 90 s.

This second volume of an international series of monographs in experimental botany is devoted to the various aspects of the relationship between plants and water. As the cover says: this book provides an important reference source for a wide spectrum of scientists not only in plant physiology, ecology, soil science and micrometeorology, but also in the interdisciplinary fields of agronomy, horticulture and forestry. Therefore it is a fine example of the achievements that can be made by a „horizontal" or interdisciplinary specialism.

The broad scope of the book may be read from the titles of the 9 chapters: 1. Some properties of water and aqueous solutions; 2. Environmental aspects of plant-water relationships; 3. The state of water in soils; 4. Movement of water in soils; 5. Water as a plant component; 6. Water exchanges in plant cells and tissues; 7. Water movement through the plant; 8. Special aspects of transpiration; 9. Development and significance of internal water deficits.

The first two chapters deal with the physical and physico-chemical properties of water and introduce relevant concepts such as water vapour pressure, saturation deficit, chemical potential, water potential, osmotic pressure, evapotranspiration and water balance, from the point-of-view of thermodynamics and energetics.

Chapters 3 and 4 are concerned likewise with water retention in soils, classification of soil water, problems of swelling, several water potentials, infiltration, hydraulic conductivity, capillary rise and the movement of water to plant roots.

Chapters 5-7 cover the general physiology of water relations, including an application and elaboration of the terminology from the foregoing chapters, to cells, tissues and organs. Chapters 8 and 9 are physiological as well.

Altogether the author, who is well-known for many contributions in this field, has presented a very thorough account that will certainly serve as a major reference source for years. The main value of the book is the sound theoretical basis and its elaboration throughout the text. Slatyer's book will find its place among the important books already available on this subject, such as Penman's *Vegetation and Hydrology*, the UNESCO symposium report on *Plant-water relationships in Arid and Semi-Arid Conditions*, the B.E.S. symposium report on the *Water relations of plants* and the Praha symposium report on *Water stress*. Only 25 % of the publications referred to in Slatyer's bibliography are of a date later than 1961. Therefore it would have been useful to present a discussion of these related contributions, e.g. in a historical introduction.

The bibliography is very extensive; it covers about 800 references, in which Anglo-American works are predominant. The subject index is very useful in its completeness and its logical subdivisions.

The book is very well-printed. Only a few misprints could be found and none of them were serious.

Given the character of this journal and the specialism of the reviewer only some pedological and general ecological remarks can be made on the contents: In the paragraphs on soil water potential the common symbol pF is not mentioned. Also some current determination methods of the pF -characteristic of soils are missed here.

The relation between soil water and soil air and its significance for plant growth could have been treated. The general importance of the free ground water and its seasonal fluctuations are another point of interest not treated in the book. Further it would have been interesting to discuss the ecological classification of *hydrotypes* by J. Iversen from the modern point-of-view as exposed by Slatyer. *These remarks have something to do with the agricultural background of the author which is appreciable throughout the book, despite its theoretical foundation.*

But these are all only minor comments. They do not detract from the outstanding value of this monograph.

E. VAN DER MAAREL.
Groningen.

SÜDWESTDEUTSCHE WALDBÖDEN IM FARBBILD nach Aufnahmen von K. Glatzel, R. Jahn u.a. erläutert von S. Müller, unter Mitarbeit von G. Sch'enker und J. Werner. Mit einem Geleitwort von Professor Dr. Dr. E. Mückenhausen.

Schriftenreihe der Landesforstverwaltung Baden-Württemberg Bd. 23. Stuttgart 1967. 120 Farbtafeln mit Einzelerläuterungen auf der gegenüberstehenden Seite, 71 Seiten allgemeiner Text mit 11 Abbildungen. Preis DM 32.—. Zu beziehen durch die Baden-Württembergische Forstliche Versuchs- und Forschungsanstalt Freiburg i.Br., Sternwaldstr. 16.

Als Teilergebnis der seit 1948 im Gang befindlichen Forstlichen Standortskartierung wird an Hand ausgezeichneter Farbphotographien eine Übersicht über die südwestdeutschen Waldböden gegeben.

Die Tafeln sind zunächst nach ihrer Zugehörigkeit zu Wuchsgebieten (Schwarzwald, Schwäbische Alb, Südwestdeutsches Alpenvorland, Oberrheinisches Tiefland) bzw. Teilwuchsgebieten (Gäulandschaften, Keuperbergland, Albvorland) geordnet. Für jedes dieser 7 Gebiete wird in einem einleitenden Abschnitt in allgemeinverständlicher Weise die Abhängigkeit der Bodenbildung von Ausgangsgestein und Klima, von der Geländeform, von der Landschaftsgeschichte und von der natürlichen und künstlichen Bestockung aufgezeigt. Schematische Darstellungen erleichtern das Verständnis der Zusammenhänge.

Innerhalb des Wuchsgebiets oder Teilwuchsgebiets werden die Böden dann je nach den regionalen Gegebenheiten in verschiedener Weise weiter gegliedert, meist in erster Linie nach dem Ausgangsgestein der Bodenbildung.

Neben einer Bilderläuterung enthalten die den Farbtafeln gegenüberstehenden Einzelerläuterungen Angaben über den landschaftlichen Zusammenhang, Hinweise auf Horizontfolge, Bodentyp, Standortseinheit usw. und eine Standortsbeurteilung.

GAUCHER, G.: Traité de Pédologie Agricole. Le Sol et ses Caractéristiques Agronomiques.

Préface de M. Barbut, membre de l'Académie d'Agriculture. 592 pages, 140 fig., 34 tabl. Editeur: Dunod, 92 rue Bonaparte, Paris 6ème. 1968. Prix: F 96.—

Aussi bien en France que dans les pays étrangers, le développement actuel des études pédologiques destinées à préparer les opérations de mise en valeur, impose la nécessité de donner une idée générale de la pédologie, de son histoire, de sa doctrine, de ses bases philosophiques, et de formuler des directives à l'intention des futurs pédologues c'est-à-dire d'expliquer la pédologie aux débutants et de les conseiller pour leurs premiers contacts avec le terrain.

Un traité de pédologie agricole qui vient de paraître aux Editions DUNOD (I) consacre à la doctrine de la pédologie et aux questions de portée générale une place importante et montre comment la pédologie agricole permet de résoudre les problèmes agronomiques restés sans solution avant elle.

La pédologie étant maintenant, en France, enseignée dans les Facultés des sciences, les applications agronomiques de la pédologie sont présentées dans ce livre de telle façon que leur importance relative soit comprise par les étudiants dépourvus de formation agronomique. Il ne pouvait être question de remplacer cette formation, mais l'auteur a signalé au passage les préoccupations fondamentales de l'agriculteur, et chaque fois que ce fut possible il a indiqué comment celui-ci envisage le problème auquel doit répondre le pédologue. Fréquemment, il est fait allusion à la psychologie de l'agriculteur et à sa façon d'apprécier ses terres, afin que le pédologue puisse entamer le dialogue avec lui.

Enfin, ce traité de pédologie donne aussi bien au pédologue débutant qu'à l'agronome, une méthode d'étude et d'expertise du terrain.

On montre également dans cet ouvrage comment la pédologie a orienté les emprunts qu'elle doit faire à de multiples disciplines (géologie, minéralogie, climatologie, géographie, physique, chimie, botanique, biologie, etc.) en tenant compte des impératifs imposés par son objet: l'étude du sol. A la fois didactique et explicatif, cet ouvrage apportera une aide appréciable aux étudiants en pédologie et en agronomie, aux pédologues, agronomes, techniciens de l'agriculture, aux forestiers, aux géographes, aux phytosociologues et aux géologues.

AUTEUR

GEUS, J. G. de: Fertilizer Guide for Tropical and Subtropical Farming.

Published by the Centre d'étude de l'Azote, Zurich, Switzerland, 1967.

This book is a practical guide to all those working in agriculture in the tropics and subtropics. After a general introduction on soil types and their characteristics, plant nutrition and fertilizer requirements, time and method of fertilization and methods of determining fertilizer requirements, it gives up to date information on fertilizer use in various countries for many crops, giving due attention to the advances in plant breeding and its influence on the response on fertilizer applications. The crops discussed are grouped as follows: Cereals, sugar crops, root crops, fibre crops, oil crops, stimulants, various crops (rubber, cinchona, pepper arecanut, pyrethrum, ginger, turmeric, cardamon), fruit crops, commercial vegetable growing, grasses and grassland.

It contains graphs and statistical tables, many of them related to the Freedom For Hunger Campaign fertilizer program experiments with photographs which are however not directly related to the text. After each chapter an extensive literature reference is presented up to date to 1965.

The volume (restricted edition) is available free of charge for those who are closely connected to the Agricultural Extension Services of their countries.

A. MULLER

SOIL ACIDITY AND LIMING. Edited by R. W. Pearson and Fred Adams.

Agronomy Monograph no. 12, 1967. pp. 288, ill., fig., tabl. Published by the American Society of Agronomy, 677 South Segoe Road, Madison, Wisconsin 53711, U.S.A. Price \$ 7.50.

The content of this book can be divided into two parts. In the first part a review is given of the evolution in the concepts of soil acidity. Especially in the last 15 years great advances have been made in the understanding of acid soils and in the first chapter of this book current concepts of the nature of soil acidity is presented and suggestions are made, which out of various alternative ideas, appear most reasonable to the authors. In concise but clear paragraphs materials and reactions responsible for soil acidity are discussed, stressing especially the importance of layer silicates and oxide minerals and their effect on cation- and anion exchange capacities, exchangeable ions, pH, exchange and titratable acidity etc. The literature references of this chapter cover 5 pages.

In the second chapter of the first part the physiological effects of soil acidity are discussed. In five paragraphs the authors give a picture of the extremely intricate nature of this subject which makes the study of the relation between soil infertility and acid soil conditions so difficult. The complexity of this subject is also illustrated by the literature references which cover more than 16 pages.

The second part of the book contains a chapter on liming materials and their use and 4 chapters on crop response to lime in the different parts of the U.S.A. (Southern U.S. and Puerto Rico, Midwestern U.S., Northeastern U.S. and Western U.S.)

This book is not only of value for readers in the U.S.A. but also for those working in the tropics and subtropics where soils containing layer silicates and oxide minerals are widely distributed. Especially the first two chapters form an incentive for and show the way to further investigations.

A. MULLER

SOIL TESTING AND PLANT ANALYSIS. Edited by Glenn W. Hardy,

A. R. Hálvorson, J. B. Jones, R. D. Munson, R. D. Rouse, T. W. Scott and Benjamin Wolf.

Coordinating Editor: Matthias Stelly. S.S.S.A. Special Publication No. 2, 1967.

Two volumes: Part I: Soil testing, 157 pages. Part II: Plant Analysis, 114 pages. Published by the Soil Science Society of America, 677 South Segoe Road, Madison, Wisconsin 53711, U.S.A. Price: \$ 2.— each.

These two volumes contain the proceedings of two symposia held during the annual meetings of the Soil Science Society of America, Crop Science Society of America and the American Society of Agronomy at Kansas City, Mo., Nov. 15-19, 1964 and Columbus, Ohio, Oct. 31-Nov. 5. 1965.

The papers presented at these symposia can be divided into two groups. Those of a more "philosophic" nature (The philosophy of Soil Testing, The changing philosophy of Soil Test Interpretations, Plant Analyses: Problems and Opportunities etc.) and those dealing with the practical aspects of soil testing and plant analysis.

This publication gives a picture of the actual state of soil testing and plant analysis and their interpretation in terms of fertilizer recommendations in the U.S.A. It gives due attention to the improvements of instrumentation including automation and te computer, but it also contains a warning that even in an advanced country as the USA still much has to be done in the field of correlation and calibration of soil test and plant analysis data.

A. MULLER

**CHANGING PATTERNS IN FERTILIZER USE. Editors: L. B. Nelson,
M. H. McVickar, R. D. Munson, L. F. Seatz, S. L. Tisdale, W. C. White.**

Published by the Soil Science Society of America, 677 South Segoe Road, Madison, Wisconsin 53711, U.S.A. 1968, pp. 480, fig., tabl. ref. Price: \$ 7.50.

This book contains the proceedings of a symposium sponsored by the Soil Science Society of America, held at the Palmer House in Chicago, Illinois, February 14 and 15, 1968.

It gives a vivid picture of the rapid evolution of fertilizer use in the USA not only due to extensive fundamental and applied research in the field of soil science, crop husbandry and fertilizer technology but especially due to mechanisation and other technological developments effecting farming and farm management and last but not least the advances made in plantbreeding.

The book will not only be of value to those who have interest in fertilizers and their efficient use under the advance conditions of the USA but also to those in less advanced countries. In the first place as an example what can be achieved, but the more so because in the second part of the book the fertilizer use is discussed for crops which are most important in tropical and subtropical countries: corn, grain sorghum and other small grains, cotton, soybeans, forage crops, sugar cane and sugar beets, rice, vegetable crops and orchards.

A. MULLER

**IRRIGATION OF AGRICULTURAL LANDS. Edited by Robert M. Hagan, Howard
R. Haise and Talcott W. Edminster. Managing Editor: R. C. Dinauer.**

Agronomy Monograph no. 11, 1967. pp. 1180, including lit., ref., index, fig., tables. Published by the American Society of Agronomy, 677 South Segoe Road, Madison, Wisconsin 53711, U.S.A. Price: \$ 20.—

This book can be regarded as one of the most outstanding publications in the Agronomy Series. It is hardly possible to give full credit to the contributions of 120 distinguished authors not only from the U.S.A. but also from Australia, India, Japan, Rhodesia, Israël, Germany and The Netherlands, in a short review.

It may therefore be sufficient to state that the book will be of great value to all those who are interested in irrigated agriculture because it covers all the disciplines concerned. Not only the engineering aspects but also those of water- soil- and plant relations, plant physiology, crop husbandry, human aspects, economics, policy and planning.

It is an excellent example of the multidisciplinary approach so needed to tackle the problems in this vast developing world.

A. MULLER

MAJOR SOIL GROUPS OF NEW GUINEA AND THEIR DISTRIBUTION.

H. A. Haantjens, J. J. Reynders, W. L. P. J. Mouthaan and F. A. van Baren.
pp. 87, photographs, coloured map, litt. Comm. 55. Dept. Agr. Res. Royal Tropical Institute, Amsterdam. Price Dfl. 15.—

New Guinea is one of the parts of the world of which pedological data were rather scarce. The few soil maps of this very large island showed just one or two soil types. In this publication all information existing at present is brought together. A detailed description is given of the physiography and geology, the climate (illustrated by a climatological map), the vegetation, the human settlements and land use. On the accompanying coloured soil map 1 : 2.500.000, 19 soil associations are delineated. They are grouped on a physiographic basis viz: the high mountains, lower mountains and hills, plains and valleys. Many representative soil profiles and their chemical data are recorded, whereas the booklet is illustrated with 30 characteristic landscape pictures. A list of published and unpublished reports completes this interesting pedological account.

CLAYS AND CLAY MINERALS. Proceedings of the 15th Conference of the Clay Minerals Society. Editor: S.W. Bailey. pp. 490. tables, fig., fotogr., lit. Pergamon Press Ltd. Oxford 1967. Price £ 8.2.0.

This volume contains the papers presented at the 15th Clay Minerals Conference, held at the Mellon Institute in Pittsburgh, Pennsylvania, October 10-13, 1966. The book, very well edited and according to the best standard produced by Pergamon Press Ltd., offers the reader a choice of subjects on the advances in clay mineralogy. Subdivided in 8 symposia: Electron- optical Study of Smectites; X-ray Diffraction Analysis; Mixed Layer Minerals; High-temperature Reactions; Spectroscopic Techniques; Vermiculite Studies; Zeolites and a section on General subjects, the text is an immense source of information for anyone interested in clay mineralogy. It is a volume which indeed merits a place in any clay mineral research institute.

DIE ERHÖHUNG DER FRUCHTBARKEIT DER SANDBÖDEN. Vorträge der Internationalen Koördinierenden Arbeitstagung in Budapest, 1965, pp. 446, tabl., graphs., photos, lit. Akadémiai Kiadó, Budapest 1967.

In Polen, der D.D.R., im europäischen Teil der Sowjetunion, in den südlichen Gebieten der C.S.S.R., in einzelnen Regionen Rumäniens, sowie auch in Ungarn nehmen die Sandböden beträchtliche Fläche ein.

Von 9-14 August 1965 kamen die Osteuropäischen Fachleute zusammen um sich über das Produktionspotentiell dieser Sandböden zu beraten und Untersuchungsergebnisse auszutauschen. Die 36 Referate waren fast alle irgendeiner Weise konzentriert auf der Problematik der Erhöhung der Ertragsfähigkeit der Sandböden, sowohl mit mechanischen agrotechnischen Bearbeitungsmethoden als mit Hilfe von Beregnung und Gründüngung.

Eine erfolgreiche Tagung mit vielen interessanten Beiträgen, welche einen guten Eindruck geben über die heutige relevante Problematik.

R. GANSEN und F. HÄDRICH: Atlas zur Bodenkunde.

Bibliographisches Institut, Mannheim, 1965.

The "Atlas zur Bodenkunde" which is a part of Meyers Grosser Physischer Weltatlas contains a detailed exposition of the soil distribution the world over. Of course there is quite some discrepancy between available knowledge of advanced countries with well equipped soil surveys or soil institutes, and the information on soils as they occur in vast but hardly known continents. The authors succeeded in combining the reference material on a 1:25.000.000 scale, although "par force" definitions and regional soil denominations do not always cover the same range of soils. A useful addition is the section of 15 pages (in German) dealing with the characteristics of the various soil types. The legend presents 50 zonal soil types, 17 intrazonal and azonal types, whereas separately the shallow and stony soils (11) and mountain soils (22) are indicated. This legend is in German, English, French, Spanish and Russian. A number of diagrams illustrate soil genesis in relation to soil humidity and radiation energy.

Some clear examples of soil formation as related to richer and poorer parent material, as well as some important cross-sections showing zonality and toposequences are presented. A few larger scale maps. e.g. of Germany, Benelux, Iran have been included.

The atlas is a worthwhile contribution to pedology and can be recommended particularly to students in soil geography.

From a lithographical point of view the atlas, published for world wide use, might have been better. The legend and symbols could have been printed clearer and in a larger type of letters. The symbols used for mountain soils (legend page 39) are e.g. hardly decipherable; the extensively used depth contours and colour hue differences in seas and oceans, which have no relation to the soils, have a

distracting effect. Finally the settings and passings of tracing could be better, while some combinations of hatching and tracing show a "moiré"-effect, as e.g. in the map of Central China (p. 64-65), which is an example of rather poor lithography.

J. J. Reynders.

MANUAL OF LARGE SCALE AGRICULTURAL SOIL MAPPING IN CZECHOSLOVAKIA. Editor: Dr. Jan Nemecek Csc., 3 volumes with map. Published by Ministerstvo Zemedelstvi a Vyzivy, Prague 1967.

This Czechoslovakian Manual is composed of three volumes. Part 1: The technique of field investigation, establishment of soil maps on the scales 1 : 10.000 and 1 : 50.000, classification and diagnostics of soils; Part. 2: Agricultural interpretation of results of soil surveys; Part 3: Laboratory analyses for the purpose of soil mapping and their evaluation. A separate sheet shows 10 coloured maps. Two 1 : 2.000.000 maps present soil types and soil textures. Eight 1 : 4.000.000 maps give information on parent material, depth, content in minerals, humus, exchange reaction, need of lime, available potassium and available phosphate respectively.

The great soil groups denominations include the synonyms of the American Soil Survey system (7th Approximation).

Dr. Hermann Gisin †

(1917—1967)



Am 16. August 1967 ist Dr. Hermann Gisin, der 2. Präsident der bodenzoologischen Arbeitsgruppe der Internationalen Bodenkundlichen Gesellschaft, plötzlich in Genf gestorben. Er war seit dem Jahre 1943 am Muséum d'histoire naturelle in Genf tätig und war dort seit dem Jahre 1958 erster Konservator. Schon während seines Studiums an der Universität Basel hat sich der Verstorbene dem Studium der Bodenfauna, besonders der Collembolen, gewidmet. Als Spezialist für Collembolen erlangte er bald internationalen Ruf und hat die Entwicklung dieses Forschungszweiges weltweit massgebend beeinflusst. Er hat auch als Ökologe bedeutende Veröffentlichungen herausgebracht und auch durch diese einen namhaften Beitrag zur Entwicklung der Bodenzologie geleistet.

Als die bodenzoologische Arbeitsgruppe im Rahmen der Internationalen Bodenkundlichen Gesellschaft gegründet wurde, war er eines der gründenden und später eines der aktivsten Mitglieder und hat zeit-

weilig als deren Vorsitzender massgebend zur Entwicklung derselben beigetragen. Sein plötzlicher Tod bedeutet nicht bloss für die bodenzoologische Forschung sondern auch für die bodenzoologische Arbeitsgruppe der Internationalen Bodenkundlichen Gesellschaft einen schweren Verlust.

H. FRANZ

Emanoil Protopopescu-Pake †

(1882—1967)



Professor Emanoil Protopopescu-Pake, a pioneer of Romanian Pedology and one of the oldest members of the International Society of Soil Science, former representative of the Romanian soil scientists with the ISSS, as well as its collaborator in various activities sponsored by this organization, died November 3rd, 1967.

He was born in Ploiesti on 30th November 1882. He graduated at the University of Bucharest in Physics and Chemistry.

Since the very foundation of the Geological Institute of Romania, in 1906, Prof. Protopopescu-Pake worked continuously in the Pedology Department, acting in various positions, and finally being appointed Head of this department. He was one of the closest and most remarkable collaborators of G. M. Murgoci. In 1919 he became lecturer at the Polytechnical Institute of Bucharest, and later, in 1925, lecturer on "Soils" at the Faculty of Silviculture, and in 1942 lecturer on "Geology, Pedology

and Petrography" also at the Polytechnical Institute.

For postgraduate studies, Em. Protopopescu-Pake was sent to Russia (1909—1910). There he assimilated the new genetical method for soil research, applicable both in the field and the laboratory.

During his whole life Prof. Protopopescu-Pake was a passionate and hard-working researcher who until his very last days displayed uninterrupted activity, contributing to the development of Soil Science, of Hydrogeology, of Quaternary geology and Geotechnics in Romania.

In the field of Soil Science he carried out pedological mapping throughout the territory of Romania, thus collaborating to the plotting of the first synthetic maps at the scales: 1:2.500.000 (1909), and 1:1.500.000 (1927), based on genetical principles. He also produced more detailed soil maps.

He was one of the authors of the first complex chemical study of soils in Romania presented at the International Congress of Agriculture in 1929. In collaboration with T. Saidel, were worked out the first tests on soil fertility in Romania, and the necessity of fertilizing the soils was proven.

At the IIIrd Conference of the International Quaternary Association held in Vienna (1936), he presented the map of the Quaternary in Romania, a synthesis of his research work carried out over several decades. Likewise in the field of Hydrogeology and Hydrotechnics he made numerous studies throughout the country, giving the most efficient technical solutions of many problems connected with water supply, locating industrial buildings, etc.

He took part in various international conferences and congresses, acting in certain working commissions. Thus he participated in the XIIth Congress of Russian naturalists held in Moscow, 1910, in the meeting organized by the International Commission for chemical analysis of soils, held in München, 1914, in the Conference on Agrogeology in Rome, 1924, in the IInd International Congress of Soil Science in England, 1933, in the meeting held at Helsinki on the problem of genetics, morphology and classification of soils. He also collaborated in the construction of the Soil Map of Europe, in his quality as secretary of the commission for drawing up this map, having been elected to this function at the Agrogeological Conference held in Rome in 1924.

During the last years of his life he was Honorary Member of the Romanian National Society of Soil Science, and participated at the VIIIth International Congress of Soil Science, held in Bucharest in 1964.

After retirement he continued to work either carrying out studies, or acting in his quality as a counselor in the field of Geotechnics, Hydrogeology and Hydromelioration. He was always able to solve in a practical and efficient way the various problems submitted to discussion, a proof of his vast erudition and experience, as well as of his profound knowledge regarding the territory of his country, to which he devoted his entire life.

Those who have known Emanoil Protopopescu-Pake will forever remember his image, that of outstanding man of exceptionally delicate feelings, a man of remarkable generosity and unlimited kindness always ready to help his fellow-workers in a modest and disinterested way.

N. FLOREA

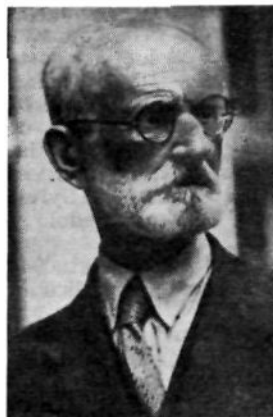
Théodore Saidel †

(1874—1967)

A la fin de l'année 1967, à l'âge de 93 ans, la science du sol a perdu dans la personne du Professeur Dr. Théodore Saidel, l'un des membres fondateurs de la Société de la Science du Sol, du conseil de fertilité et en même temps l'un des plus éminents représentants de la première moitié du siècle, dont les réalisations dans le domaine de l'étude du sol et de la recherche scientifique du pH sont connues dans le monde entier.

Théodore Saidel est né à Braila (Roumanie) en 1874. Après des études moyennes dans sa ville natale il a suivi les cours de la faculté de chimie de l'Université de Bucarest, qu'il a achevée en 1900. Après une activité de plusieurs années dans l'Enseignement Supérieur il est parti parfaire ses études à Koenigsberg, en Allemagne où il a obtenu en 1909 le titre de docteur ès sciences chimiques avec le qualificatif „summa cum laude”.

De retour en Roumanie, il fut nommé à l'Institut Géologique de Roumanie où il a travaillé sans



interruption jusqu'à la fin de sa carrière, en 1941. Pendant cette période (les années 1910—1941) Théodore Saidel a déployé une importante activité tant dans le cadre de l'Institut Géologique de Roumanie que dans celui de l'Enseignement Supérieur Agricole où il a fonctionné en qualité de professeur de chimie générale et de chimie du sol depuis 1920.

Le premier ouvrage important élaboré par le Professeur Dr. Théodore Saidel a été commencé en 1911 et publié dans le Bulletin Scientifique de l'Académie roumaine de 1913 sous le titre "*Recherches quantitatives sur la réaction des solutions aqueuses de sol*". Cet ouvrage, présenté ensuite à la conférence internationale de pédologie de München en 1914, a immédiatement attiré l'attention de tous les centres et les écoles de recherche du sol du monde entier. A base de la conception du Professeur Saidel et de la méthode de détermination électrométrique de la réaction des solutions de sol élaborée par lui, de nombreux chercheurs ont développé ultérieurement l'étude de la réaction du sol et des propriétés d'échange.

De ce point de vue, l'ouvrage du Professeur Saidel marque une expérience cruciale dans le domaine de la science du sol. Les ouvrages suivants, concernant la recherche de la réaction du sol, et la solubilisation des substances du sol, communiqués à la IV-ème Conférence Internationale de Pédologie de Rome en 1924, ainsi qu'au I-er Congrès International de la Science du Sol de Washington en 1927 ont suscités aussi le plus grand intérêt.

D'autres études de chimie du sol et surtout l'établissement des relations "s" à l'aide desquelles on a éclairci de nombreux aspects du mécanisme de l'échange de bases dans le sol ont définitivement consacré le Professeur Dr. T. Saidel parmi les pionniers de la Science du sol et sur plan local, comme l'un des fondateurs de l'agrochimie roumaine. L'activité multiple du Professeur Dr. T. Saidel ainsi que les rapports scientifiques et les liens d'amitié qu'il a entretenus durant sa longue vie avec quelques uns des plus importants savants du monde font que sa disparition soit ressentie non seulement par l'école de recherche roumaine de la science du sol, mais par tous les centres de recherche pédologique du monde entier et par tous ceux pour lesquels sa vie a constitué un exemple de probité et de véritable dévouement de l'homme de science à son activité.

PROF. DR. D. DAVIDESCU

Gh. Ionescu-Sisesti †

(1885—1967)



Le 4 Juin 1967, est décédé, à l'âge de 82 ans, le prof. dr. dt. Gh. Ionescu-Sisesti, membre de l'Académie de la République Socialiste de Roumanie et président de la Société Nationale roumaine de la Science du Sol.

Diplômé de la Landwirtschaftliche Hochschule Hohenheim-Stuttgart et docteur de l'Université de Iéna (1911), il s'est consacré à l'activité de recherche et à l'enseignement agricole, qu'il a servi avec dévouement comme professeur à l'Institut agronomique de Bucarest (1920—1958), fondateur et directeur (1928—1948) de l'Institut de recherches agronomiques de Roumanie. Outre cela, il a occupé aussi différentes fonctions de direction dans le cadre du Ministère de l'Agriculture. Il a été élu membre correspondant de l'Académie roumaine en 1925 et membre titulaire de la même Académie en 1936; il a été membre de la Commission d'écologie de l'Accademia Nazionale dei Lincei de Rome (1924), membre correspondant de l'Académie Tchécoslovaque d'Agriculture (1928) et

membre correspondant de l'Académie de sciences agricoles de Moscou (1957). Il a pris part à différents congrès internationaux d'agriculture.

Gh. Ionescu-Sisesti a déployé une importante activité dans le domaine de la recherche du sol. On peut citer parmi ses principaux ouvrages: „Etude des principaux types de sol de la Roumanie par la méthode physiologique végétale,

afin de déterminer leur contenu en azote, phosphore et potassium et leur besoin d'engrais" (1929), „Festlegung derjenigen Methoden, die geeignet sind, die Bedürfnisse des Bodens an Düngung zu bestimmen" (1933), (Etablissement des méthodes capables de déterminer les besoins en engrais du sol), „Lunca Dunarii si punerea ei in valoare" (La Basse Plaine du Danube et sa mise en valeur) (1933), „La fertilisation des terrains en climats arides (1934),” Contribution à l'étude de la fertilité des tchernosioms" (1935), „Asupra citorva particularitati ale legii actiunii factorilor de vegetatie (Considérations sur quelques particularités de la loi de l'action des facteurs de végétation (1936), „Die Hauptbodentypen Rumäniens" (Les types principaux de sol de Roumanie (1940), „Der Fertilitätszustand der schwarzen Steppenböden (Tschernosiomböden) Rumäniens (L'état de fertilité des sols noirs de steppe (sols de chernozems de Roumanie) (1940), „Contributiuni la cunoasterea si ameliorarea paminturilor saraturoase din România" (Contributions à l'amélioration des sols salins de Roumanie) (1947), „Les types principaux de sol de la R.P.R. et leur état de fertilité" (1959), „Conditions de l'efficacité optima des engrais chimiques (1961), „Utilisation des engrais potassiques dans l'agriculture de la R.P.R." (1962). „Les recherches agronomiques concernant la conservation du sol et la lutte contre l'érosion dans la R.P.R." (1963).

Les participants au VIII-ème Congrès international de la science du sol ont eu l'occasion de connaître Ch. Ionescu-Sisesti qui a prononcé l'allocution de bien venue de la part des hommes de science roumains.

La décès du prof. Gh. Ionescu-Sisesti est une perte non seulement pour la science roumaine mais aussi pour la science mondiale.

Prof. Dr. Gr. OBREJANU

Jan Tomaszewski †

(1884—1967)

Prof. Dr. Tech. Sc., Dr. h.c., Jan Tomaszewski died December 7, 1967. He was Professor Emeritus and late Head of the Department of Pedology, College of Agriculture, Wrocław, Poland, Member of the Committee for Soil Science and Agrochemistry of the Polish Academy of Sciences, Member of numerous Scientific Societies, Laureate of many State Rewards and Honours, Nestor of soil science, Educator of several generations of young scientists, Pedagogue and Friend of students.

Jadwiga Marszewska-Ziemiańska †

The Department of Soil Microbiology of the Institute of Soil Science and Plant Cultivation announces with deepest regret the passing away of Professor Dr. Jadwiga Marszewska-Ziemiańska's, Member of the Polish Academy of Science, Head of the Department at Pulawy, Member of several International and Polish scientific societies. She died on March 13, 1968, in Lublin, Poland.

Soil Classification

TABLE OF CONTENTS

Page

| | |
|---|-----|
| I. V. Tiurin (USSR) | |
| The system of soil classification in the USSR | |
| Main stages in the development of the soil classification problem in the USSR | 7 |
| G. Aubert (France) | |
| La classification pédologique utilisée en France | 25 |
| E. Mückenhausen (Germany) | |
| The soil classification system of the Federal Republic of Germany | 57 |
| B. W. Avery (U.K.) | |
| Soil classification in Britain | 75 |
| R. Tavernier & C. Sys (Belgium) | |
| Classification of the soils of the Republic of Congo (Kinshasa) | 91 |
| G. D. Smith (USA) | |
| La place de la pédogenèse dans le système compréhensif proposé de classification des sols | 137 |
| H. Lobova (URSS) | |
| Sur les principes de la subdivision des zones en faciès d'après le type d'altération, le type d'humus et le caractère de la salinité des sols | 165 |
| J. V. Botelho da Costa & E. P. Cardoso Franco (Portugal) | |
| Note on the concepts of Ferrallitic Soils and Oxisols | 181 |
| J. Pelisek (CSSR) | |
| Genetische Klassifikation und Charakteristik der Böden in der Tschechoslowakischen Sozialistischen Republik | 185 |

Special issue 3

1965

PEDOLOGIE

Price 250 FB (\$ 5.—)

Bulletin de la Société belge de pédologie

Belgian Soil Science Society

Rozier 6 — Ghent — Belgium

SPECIAL OFFER TO MEMBERS ONLY

Standard Soil Color Chart

published by
Fujihira Industry Co. Ltd.
Tokyo, Japan

The early edition is out of print and a new revised one, with strongly reinforced cover, is now available at the official price of \$ 8.— f.o.b. Tokyo.

SPECIAL PRICE FOR MEMBERS ONLY
7 US-DOLLARS, POST FREE

Send your order to:
Office of the Secretary-General of the I.S.S.S.
63 Mauritskade, Amsterdam, Netherlands
Advance payment is required

Soil Science Dictionary

(edited by the Organisation Committee of the 8th
International Congress of Soil Science, Bucharest)

IS OUT OF PRINT.

**PRE WAR EDITIONS
OF THE I.S.S.S.**

Only to be ordered with
the sole agent:

**EDITIONS
DE LA S.I.S.S.
D'AVANT GUERRE**

Seulement en vente chez:

**VORKRIEGS
VERÖFFENTLICHUNGEN
DER I.B.G.**

Alleinverkauf

MARTINUS NIJHOFF - DEN HAAG - NEDERLAND

PROCEEDINGS. New Series. Edited by the Executive Committee of the International Society of Soil Science. Editor in Chief: F. Schucht, Berlin. Assistant Editors: E. M. Crowther, Harpenden and A. J. Demolon, Versailles.

Vols. I and II of the Proceedings (1925 and 1926) contain chiefly original papers and further reports, literature, and communications regarding the Society.

Vol. I 1925. 306 pp. with numerous fig. and 8 coloured plates. In 4 parts. roy. 8vo. English or Spanish edition. Price 10.50 guilders

Vol. II. 1926. 376 pp. with 37 fig. and 3 plates. In 4 parts. roy. 8vo. English, French, Spanish or Italian edition. Price 8.40 guilders

From Vol. III onward no more separate editions were published and the Proceedings were divided into two Sections: I. Communications; II References to papers. Since then all communications and references have been written in either English, French or German.

Vols. III-XIII. 1927-1938. Each vol. contains from 200 to 400 pp. roy. 8vo. Price per vol. in 4 parts, instead of 11.50 guilders, now 8.40 guilders, with the exception of vol. IV, which costs 10.50 guilders.

SOIL RESEARCH. Supplements to the Proceedings. One vol. is published every two years. Contains original papers in either English, French or German.

Vols. I-VII 1928-1942. Each vol. contains from 250 to 450 pp. with numerous ill. and plates some of which are coloured. roy. 8vo.

Price per vol. in parts, (vol. VI and VII in 6 parts) instead of 11.50 guilders, now 8.40 guilders.

Back numbers of several issues of the Proceedings and of Soil Research are still available, at the price of 2.60 guilders per number.

OFFICIAL COMMUNICATIONS. Supplements to "Soil Research"

Vol. I-III, 1939-1943. Price per vol. in 4 parts 2.10 guilders

TRANSACTIONS of the different Commissions and Sections. The articles are in either English, French or German.

First Commission (for the study of Soil Physics).

Meeting in VERSAILLES, July 1934. 332 pp. with many ill. roy. 8vo. (9 guilders) 6.30 guilders

Meeting in BANGOR, Wales, 1939, Vol. A. 1938 60 pp. roy. 8vo. 2.60 guilders

Second Commission (for the Study of Soil Chemistry).

Meeting in Groningen, April 1926. Vol. A. 1926 and vol. B. 1927. Together 540 pp. with many ill. roy. 8vo. (11.50 guilders) 8.40 guilders

Meeting in BUDAPEST, July 1929. Vol. A., Vol. A. of the Alkali-Subcommission and vol. B. of both Commissions. 3 parts of together 488 pp. with many ill. roy. 8vo. (15 guilders) 10.50 guilders

Meeting in KØBENHAVN, August 1933. Vol. A. 1933 and vol. B. 1937 of the Second Commission and of the Alkali-Subcommission. 2 parts of together 264 pp. with many ill. roy. 8vo. 5.25 guilders

