

BULLETIN

OF THE INTERNATIONAL SOCIETY
OF SOIL SCIENCE

•

BULLETIN

DE L' ASSOCIATION INTERNATIONALE
DE LA SCIENCE DU SOL

•

MITTEILUNGEN

DER INTERNATIONALEN BODENKUNDLICHEN
GESELLSCHAFT

•

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

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

COUNCIL/CONSEIL/BEIRAT:

Executive Committee/Comité exécutif/Verwaltungsausschuss:

President: A. Oudin, 14 Rue Girardet, Nancy, France.
 Vice-President: S. Henin, C.N.R.A., Route St Cyr, Versailles, France.
 Past President: R. Tavernier, Rozier 6, Gand, Belgium.
 Secretary General: F. A. van Baren, Royal Tropical Institute, 63 Mauritskade, Amsterdam, Netherlands.

Honorary Members/Membres Honoraires/Ehrenmitglieder:

Sir E. John Russell, Campsfield Wood, Woodstock, Oxon, England.
 Prof. Dr W. P. Kelley, University of California, 120 Hilgard Hall, Berkeley 4, California, U.S.A.
 Prof. Dr E. A. Mitscherlich, Paulinenaue, Westhavelland, Germany.
 Dr D. J. Hissink, Huize Avondlicht, Haren, Netherlands.
 Prof. Dr Sante Mattson, Båstad, Sweden.
 Prof. Dr Emil Truog, University of Wisconsin, Madison 6, Wisc., U.S.A.

Commissions/Commissions/Kommissionen:

- I. SOIL PHYSICS:
 President: Dr M. B. Russel, University of Illinois, Urbana, Ill., U.S.A.
- II. SOIL CHEMISTRY:
 President: Prof. Dr A. C. Schuffelen, Agricultural University, Wageningen, Netherlands.
- III. SOIL BIOLOGY:
 President: Prof. Dr P. Simonart, Institut Agronomique, Heverlee-Louvain, Belgium.
- IV. SOIL FERTILITY AND PLANT NUTRITION:
 President: Dr E. W. Russell, Department of Agriculture, Parks Road, Oxford, England.
- V. SOIL GENESIS, CLASSIFICATION AND CARTOGRAPHY:
 President: Dr A. Muir, Rothamsted Experimental Station, Harpenden, Herts., England.
- VI. SOIL TECHNOLOGY:
 President: Prof. Dr J. V. Botelho da Costa, Instituto Superior de Agronomia, Lisboa, Portugal.

Representatives	Représentants	Vertreter der Gesellschaften
of National Societies:	des Sociétés Nationales:	der einzelnen Länder:

- Austria/Autriche/Österreich:**
 Dr Ing. B. Ramsauer, Bundesministerium für Land- und Forstwissenschaft, Stubering 1, Wien I.
- Belgium/Belgique/Belgien:**
 Prof. Dr L. De Leenheer, Landbouwkundig Instituut, Gent.
- Canada/Canada/Kanada:**
 Prof. Dr J. D. Newton, University of Alberta, Edmonton, Alberta.
- France/France/Frankreich:**
 Dr S. Henin, Centre National de Recherches Agronomiques, Route de St Cyr, Versailles.
- Germany/Allemagne/Deutschland:**
 Prof. Dr F. Scheffer, Nikoläusberger Weg 7, Göttingen.
- India/Inde/Indien:**
 Dr J. N. Mukherjee, 10 Puran Chand Nahar Avenue, Calcutta 13.
- Israel/Israel/Israel:**
 Dr M. Rim, Soil Science Department, Hebrew University, Jerusalem.
- Italy/Italie/Italien:**
 Prof. Dr G. Passerini, Borgo Pinti 80, Firenze.
- Japan/Japon/Japan:**
 Prof. Dr Shingo Mitsui, University of Tokio, Bunkyo-ku, Tokyo.
- Netherlands/Pays Bas/Niederlande:**
 Prof. Dr A. J. Zuur, Bodemkundig Laboratorium, N. O. Polder, Kampen.
- New Zealand/Nouvelle Zélande/Neuseeland:**
 Mr N. H. Taylor, 54 Molesworth Street, Wellington N. 1.
- South Africa/Afrique du Sud/Südafrika:**
 Dr C. R. van der Merwe, Division of Chemical Services, Pretoria.
- Spain/Espagne/Spanien:**
 Prof. Dr J. M. Albareda Herrera, Serrano 117, Madrid.
- Sweden/Suède/Schweden:**
 Prof. Dr O. Tamm, Experimentalfältet, Stockholm.
- United Kingdom/Royaume Unie/Grossbritannien:**
 Dr. E. W. Russell, Department of Agriculture, Parks Road, Oxford.
- U.S.A./Etats Unies/Vereinigte Staaten:**
 Dr C. E. Kellogg, Soil Conservation Service, U.S.D.A., Washington 25, D.C.
- Yugoslavia/Yougoslavie/Yougoslavien:**
 Prof. Dr S. Nikolic, Faculté d'Agronomie de l'Université, Belgrade.

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

No. 9

1956

NEWS OF THE SOCIETY.

Membership has risen steadily and on April 1st was 1624. Gratifying as this figure may be compared with 1468 on August 1st, many members have to be reminded again of their obligation regarding payment of dues for 1955 and 1956. This is why the Treasurer has attached the red notice to the front of this bulletin.

The 6th International Congress of Soil Science.

The preparations for the congress proceed satisfactorily. Communications received so far are being printed. However the organising committee draws attention to the fact that up to March 1st only slightly over a third of the papers listed in the last circular letter, has actually been received. The Committee urgently requests all those who have not sent in their manuscripts to forward them without further delay to Mr. A. Daujat- 3 Rue de Penthièvre, Paris VIII.

The same holds for the registration forms. Participants are asked to return their registration forms immediately.

NOUVELLES DE LA SOCIÉTÉ.

Membres. — On peut mentionner un accroissement régulier du nombre des membres: au 1er avril 1956, les membres inscrits étaient au nombre de 1624, nombre très satisfaisant par rapport à celui de 1468 effectif au 1er août 1955.

Il faut toutefois rappeler à un certain nombre de membres leur obligation de payer leur cotisation 1955 — 1956. Ces retards ont obligé le trésorier à joindre un avis rouge à la première de ce bulletin.

VIe Congrès international de la Science du sol.

La préparation du Congrès se poursuit normalement. Les communications reçues sont déjà remises à l'imprimeur, elles s'élèvent à 400 environ et pourront être remises imprimées au début du Congrès. Celles parvenues au Secrétariat après le 15 avril ne seront imprimées qu'après Congrès. Afin de permettre une meilleure organisation des séances de travail et des réceptions, le Secrétariat serait heureux de recevoir au plus tôt les inscriptions définitives pour lesquelles des fiches ont été adressées. Il semble en effet que moins d'un tiers des futurs participants ait envoyé jusqu'à présent leur inscription.

NEUES AUS DER GESELLSCHAFT.

Midgliedschaft.

Über ein ständiges Anwachsen der Zahl der Mitglieder kann berichtet werden. Am 1. April 1956 war die Zahl von 1624 erreicht. So erfreulich diese Zahl im Vergleich zu 1468 am 1. August 1955 sein mag, gibt doch eine gewisse Nachlässigkeit bei der Zahlung der Mitgliedsbeiträge weniger Anlass zur Zufriedenheit.

Der 6. Internationale Bodenkundliche Kongress.

Die Vorbereitung des Kongresses verläuft normal. Die bisher empfangenen wissenschaftlichen Beiträge sind bereits dem Druck übergeben. Jedoch wurde bis zum 1. März nur wenig mehr als ein Drittel der zugesagten Manuskripte (nach dem Stand des letzten Rundschreibens) dem Organisationskomitee eingesandt.

Dieses Komitee bittet nachdrücklich die noch in Verzug befindlichen Verfasser ihre Beiträge baldigst Herrn A. Daujat, 3 Rue de Penthièvre, Paris VIII, zuzusenden.

Auch sind noch nicht alle offiziellen Einschreibungsformulare in Paris eingegangen. Jeder Kongressteilnehmer wird deshalb gebeten, den nötigen Formalitäten baldigst nachzukommen.

**NEWS OF THE NATIONAL SOCIETIES — NOUVELLES DES SOCIÉTÉS
NATIONALES — NEUES DER GESELLSCHAFTEN IN EINZELNEN LÄNDERN.**

British Society of Soil Science.

President: Dr A. M. Smith, Edinburgh and East of Scotland College of Agriculture, George Square, Edinburgh 8.

Hon. Secretary: Mr D. V. Crawford, University of Nottingham School of Agriculture, Sutton Bonington, Loughborough, Leics.

Hon. Treasurer: Dr W. E. Chambers, Royal Agricultural College, Cirencester, Glos.

Hon. Editor and Representative on Council ISSS: Mr G. V. Jacks, Commonwealth Bureau of Soil Science, Rothamsted Experimental Station, Harpenden, Herts.

Representative on International Nomenclature Committee: G. V. Jacks, Rothamsted Experimental Station, Harpenden, Herts.

The Secretary reports a steadily growing membership standing now at 396, about one third of them being overseas. The wide circulation and pressure on space in the "Journal of Soil Science" suggests that it is held in high regard. The Society has held at Easter a discussion on Soil Moisture and there is to be a Meeting at Reading from 21st-24th September 1956.

Canadian Society of Soil Science.

President: Professor N. N. Richards, Ontario Agricultural College, Guelph, Ontario.

President-elect: Dr C. F. Bently, University of Alberta, Edmonton, Alberta.

Secretary-Treasurer: Dr A. J. MacLean, Canada Department of Agriculture, Ottawa, Ontario.

Councillors: Dr J. D. Newton, University of Alberta, Edmonton, Alberta. Dr. J. L. Doughty, Canada Department of Agriculture, Swift Current, Saskatchewan.

Representative on Council ISSS: Professor N. R. Richards, Head, Department of Soils, Ontario Agricultural College, Guelph, Ontario.

Representative on International Nomenclature Committee: Dr J. R. Wright, Soil Chemistry Unit, Chemistry Division, Science Service Canada Department of Agriculture, Ottawa, Ontario.

The Society will hold its second Annual Meeting in conjunction with the 1956 Convention of the Agricultural Institute of Canada at the University of Toronto, Ontario, on June 25th to 28th, 1956.

Deutsche Bodenkundliche Gesellschaft.

Die Deutsche Bodenkundliche Gesellschaft wird in Jahre 1956 keine Hauptversammlung abhalten, um ihren Mitgliedern die Teilnahme an der Tagung der Internationalen Bodenkundlichen Gesellschaft in Paris zu ermöglichen. Ihre nächste Tagung findet im September 1957 in Bremen statt; der Tagung schliessen sich 3-4 Tage Exkursionen zur Besichtigung der Heide-, Marsch- und Moorboden Nordwestdeutschlands an.

Association Française de la Science du Sol.

Représentant au Comité International de Nomenclature: Dr S. Hénin, Laboratoire des Sols, Institut National de la Recherche Agronomique, Versailles.

Indian Society of Soil Science.

President: Dr B. K. Mukerji.

Vice-Presidents: Dr T. J. Mirchandani

Dr R. V. Tamhane

Dr K. L. Khanna

Secretary & Editor: Dr S. P. Raychaudhuri, Indian Agricultural Research Institute, New Delhi-12.

Treasurer: Dr C. N. Acharya, Indian Agricultural Research Institute.

Representative on Council ISSS: Dr J. N. Mukherjee, 10 Pura Chand Nahar Avenue, Calcutta.

Representative on International Nomenclature Committee: Dr J. K. Basu, Director of Soil Conservation, Ministry of Food & Agriculture, Govt. of India, New Delhi.

Società Italiana della Scienza del Suolo.

Représentant au Conseil de la SISS: Professor G. Passerini, Borgo Pinti n.80, Firenze.

Représentant au Comité International de Nomenclature: Professor Fiorenzo Mancini, Piazzale Cascine 28, Firenze.

Japanese Society of the Science of Soil and Manure.

President: Prof. Dr Akio Fujiwara, Faculty of Agriculture, Tohoku University, Kita-6-Bancho, Sendai.

Vice-President: Dr Togoro Harada, National Institute of Agricultural Sciences, Nishigahara, Kita-ku, Tokyo.

Secretary: Mr Suetō Aso, Faculty of Agriculture, University of Tokyo, Bunkyo-ku, Tokyo.

Representative on Council SISS: Prof. Dr Keizo Hirai.

Representative on International Nomenclature Committee: Prof. Dr Keizo Hirai.

New Zealand Society of Soil Science.

Members of the Board see Bulletin Nr 5, 1954.

The Second Conference of the New Zealand Society of Soil Science will be held at Lincoln College, Canterbury, November 29 to December 1, 1956. Included in the programme will be symposia on Soils and Pasture Production in Canterbury, Pedological Problems in Canterbury and Soil Moisture in a sub-humid climate.

Nederlandsche Bodemkundige Vereeniging.

President: Prof. Dr A. J. Zuur, Soils Laboratory, Kampen.

Vice-President: Dr P. K. Peerlkamp, Lyricultural Experiment Station, Groningen.

Secretary-Treasurer: Dr A. J. Wiggers, Soils Laboratory, Kampen.

Councillor: Dr G. J. Vervelde.

Representative on International Nomenclature Committee: Dr F. W. Pyls, Institute for Soil Survey, Bennekom.

Sociedad Espanole de Ciencia del Suelo.

Presidente honorario: D. Jose Maria Albareda Herrera.

Presidente: D. Gayetano Tames Alarcon.

Secretario: D. Tomas Alvira Alvira.

Tesorero: D. Antonio Nicolas Isasa.

Représentant au Conseil de la SISS: Professor José M. Albareda, Herrera. Directeur de l'Instituto de Edafología y Fisiología Vegetal, Serrano 113, Madrid.

Représentant au Comité International de Nomenclature: D. Antonio Nicolás Isasa.

L'Association espagnole a tenu une conférence scientifique le 2 mars 1956. A cette occasion MM Fernandez Galiana, Burriel Marti, Carpena, Pérez Mateos et Ramirez Munoz ont fait les discours suivants:

1. Intensa influencia zoogena en la sucesión de pastizales oligotrofos.
2. Sobre las determinaciones de sodio, potasio y calcio en extractos de suelos obtenidos con acetata barico.
3. La clorosis ferrica del limonero.
4. Aplicación del indice de los minerales básicos, para deducir la fertilidad de los suelos, en los tropicos.
5. Accesorio para fotometro de llama con atomizador de succion.

Swedish Society of Soil Science.

President: Professor Olof Tamm, Stockholm.

Vice-President: Professor Gunnar Torstensson, Uppsala.

Secretary: Professor Lambert Wiklander, Uppsala.

Representative on the International Nomenclature Committee: Professor Torstensson.

Soil Science Society of South Africa.

President: Dr C. R. van der Merwe.

Secretary: Mr G. Murray, Division of Chemical Services, Pretoria.

Members: Prof. Dr J. J. Theron; Prof. Dr I. de V. Malherbe (alternate: Dr J. van Garderen); Prof. Dr E. R. Otchard (alternate: Mr P. A. Louw).

Representative on Council SISS: Dr C. R. van der Merwe.

Representative on the International Nomenclature Committee: Dr. C. R. van der Merwe.

Soil Science Society of America.

President: D. W. Thorne, Utah State Agricultural College, Logan.

Vice-President: W. L. Nelson, American Potash Institute, Lafayette, Ind.

Past President: M. B. Russell, University of Illinois, Urbana.

Secretary-Treasurer: L. G. Monthly, 2702 Monroe Street, Madison, Wisc.

The Society meets in November 12-16 at Cincinnati, Ohio simultaneously with the American Society of Agronomy and the Crop Science Society of America.

THE MULTILINGUAL VOCABULARY OF SOIL SCIENCE

edited by G. V. Jacks — F.A.O. — Rome (1954).

A critical review by Dr M. Tschapek

Instituto de Suelos Y Agrotecnia, Buenos Aires, Argentine.

The main purpose of this vocabulary, according to the author, was to improve the exchange of knowledge on soil science, as well as to promote mutual comprehension between fellow scientists working in the above mentioned line, who live in different countries and speak different languages.

However, the lack in correct definitions on the part of authors in 8 languages, depreciates the value of this book in a very sensible way. In many cases, this or that soil property is dealt with differently in different languages. But there may be found even more disturbing facts, i.e. definitions which are not only inexact, but also erroneous as a principle. It may be asked, whether such a vocabulary was necessary at all; would it not be better, in fact, to fix notions in one of the various languages (in English, for instance), giving in the others only the equivalent terms? Only a very few words have been thoroughly and exactly explained; one is surprised at the extreme conciseness of the explanations; it would be quite possible to make them two or three times more complete, 50% of the paper being left unused.

When the physicists speak of the density of a body, in all languages that means g/cm^3 , but when the soil-scientists refer to the porosity of soil, they define it as follows: "Fraction of the total soil volume.....", "Art und Umfang der Porenverteilung.....", "Grado de presencia de los poros", etc. What is then the meaning of porosity? Does this soil property have a strict dimension?

The term "adsorption" is used in the vocabulary for all kind of phenomena: "adsorption", "absorption", "chemical sorption", "assimilation", etc. Why not use the term "adsorption" (as it is generally practised), at least when referring to the exchange of ions?

Being unable to fully mention all the remarks, I shall limit myself to those dealing with the first four languages: English, French, German and Spanish.

1) **Page 307** — "Chernozem". — The English definition for this is: "... with or without concentration of clay in the B horizon, and calcareous below". Actually, the essential and characteristic property of the chernozem, as type is the absence of transportation of the colloids along the profile, owing to the high saturation with Ca. Consequently, an illuvial horizon, regarding the colloids, has not to be present in a chernozem.

2) **Page 327** — "Solonetz". The English definition for this is: "Formerly saline soil from which the salts have been leached, with cloddy prismatic or columnar B horizon". As it is generally known, not any saline soil transforms

itself into a solonetz after leaching of its salts, and, "vice-versa", a solonetz is not necessarily formed out of a saline soil. In the absence of Na_2CO_3 , only with the relation

$$\frac{\text{Salts Na}}{\text{Salts Ca}} > 4$$

on hand, the forming of solonetz is possible after loss of salts. The process of the forming of solonetz is connected with peptization and transportation of soil colloids along the profile, which takes place in the presence of the adsorbed Na and the absence of high concentration of salts.

- 3) **Page 16** — "Cohesion". All the statements referring to cohesion correspond really to adhesion. Cohesion is generally known as a molecular force which acts within the volume of a certain phase (a solid, a liquid, a gas). On the contrary, adhesion is always considered as a molecular force acting at the phase limit (for instance between two solid particles in contact).
- 4) **Page 18** — "Plastic". — This definition is not complete. Rubber too is liable to deform itself without rupture; nevertheless, after removing of forces which occasioned this deformation, the latter disappears. Therefore, it is better to add, that after the forces which occasioned the deformation have ceased to act, the body keeps its new shape.
- 5) **Page 35** — "Silt and clay". — The English and Spanish definitions of this are: "Particles smaller than 0.02 mm that do not settle out of water and can be separated by decantation". The author certainly wanted to say that these particles are of a slow sedimentation; therefore, better separate them by decantation; but the definition given is not a form of explanation.
- 6) **Page 76** — "Soil moisture tension — Suction". — The definition given in Spanish is inexact: "Deficit de tension de vapor en el suelo no saturado". A soil fully saturated with water, has also a suction force and a diminished pressure of vapour.
- 7) **Page 81** — "Infiltration". — The definition given in Spanish is incorrect; "El movimiento del agua en el suelo". Infiltration does not mean any movement of water in the soil.
- 8) **Page 103** — "Degree of saturation". — The definition given in Spanish is incorrect: "El tanto por ciento de la capacidad total de intercambio del complot coloidal ocupado por cationes intercambiables". The author seems to take it for granted that H is non-exchangeable.
- 9) **Page 107** — "Mineral reserve". — The definition given in English is the following: "Plant-nutrient content of unweathered minerals in soil", whereas the Spanish translation says: "Contenido de minerales no meteorizadas en el suelo". There is surely a difference between "Plant nutrient content...." and "Contenido de minerales....".
- 10) **Page 73** — "Capillary potential". — The definition given in Spanish is incorrect and confused: "Un número que representa el poder de atracción del suelo por el agua".
- 11) **Page 240** — "Montmorillonite Series". — In Spanish it looks like this; "Minerales de arcilla y axígeno....". It is difficult to say what the author actually did mean.
- 12) **Pages 186—187** — "A — horizon; B — horizon". — The definition of A and B only as eluvial and illuvial horizons, is insufficient; besides, this meaning is not generally accepted.
- 13) **Page 245** — "Layer lattice structure". — The Spanish translation: "Estructura reticular" is incorrect. It should be: "Estructura cristalina laminar".
- 14) **Page 251** — "Pedalfer". — The English definition is the following: "Soil containing accumulation of iron and aluminium compounds"; the french one: "Sol renfermant du fer et de l'aluminium et ne présentant pas d'accumulation de calcaire"; the Spanish: "Suelo que no presenta una zona de acumulación de carbonato de calcio". An unprepared reader would not understand at all why a soil that has no carbonate accumulation, must belong to the pedalfer group (Marbut).

- 15) **Page 62** — "Hygroscopic coefficient". — The English definition is the following: "Amount of moisture held by soil after exposure to high humidity for 24 hours at 25°C". What is exactly meant by "high humidity"? And why 24 hours only, when it is a known fact, that the equilibrium does not take place after such a short period?
- 16) **Page 333** — "Lateritic soil". — The Spanish definition is incorrect: "Suelo con capas A₀ y A₁, delgado sobre un material rojizo o rojo profundamente meteorizado". In this definition the main characteristic of the lateritic process was omitted; namely, the transportation of the colloids along the profile and the enrichment of the upper horizon with iron and aluminium compounds.
- 17) **Page 55** — "Soil water". — The Spanish translation: "Aguas freáticas" is incorrect.
- 18) **Page 70** — "Filmwater". — "Haftwasser" is not an equivalent of "film-water", although the given definition is correct. Definitions in French and Spanish are lacking fullness ("Agua que se adhiere a las partículas del suelo").
- 19) **Page 58** — "Air dry". — The Spanish definition is inexact.
- 20) **Page 248** — "Soil classification, general" is incorrectly translated into Spanish.
- 21) **Page 160** — "Subsoil". — The definition "parte inferior del suelo" is evidently unsatisfactory. The definitions given in English and German can be partly agreed with. Why not accept that soil is A + B, and subsoil — C ?
- 22) **Page 98** — „Absorbing complex". — The definition given in Spanish is quite unacceptable: "Que retiene al go de la solución" (Retains something from the solution).

Unfortunately, the list of remarks could be extended.

In conclusion, some words must be said about the transcription of a number of terms of Russian origin, which unfortunately have not been mentioned by the author. — The problem of the transcription of words from languages using the Cyrillic alphabets, presents some difficulties. In fact, not only in this Vocabulary, but also in other publications on soil science, terms of Russian origin are written differently. The absence of a unique method of the transcription of terms in languages of Latin alphabet, creates confusion. In accordance with the Bull. Zool. Nomenclature 11,1 (1955), the following transcription of Russian origin could be proposed:
 chernozem, podzol, solonchak, soloneth, solot', serozem, glej, krotovina.

M. TSCHAPEK (Buenos Aires).

INTERNATIONAL CO-OPERATION IN FIELD EXPERIMENTS ON SOIL FERTILITY.

At the joint meeting of Commissions II and IV of the I.S.S.S. in Dublin in 1952, the following proposal tabled by the representatives of The Netherlands and Denmark was approved:

"The Fourth Commission of the International Society of Soil Science is asked to promote the setting up on an International basis of a series of field experiments in countries with temperate climates, on the basis of which chemical, physical and biological research may be done in teamwork".

This proposal was discussed in the Council of the I.S.S.S. during the 5th Congress at Leopoldville in 1954. The author of this communication was asked to draw up a draft plan covering this co-operation for discussion at the 6th International Congress to be held in Paris in 1956. It will then be possible to consider whether the plan can be put into effect under the auspices of the I.S.S.S.

The following summary of the various preparatory meetings and the provisional conclusions may serve as an introduction to the discussions on the plan.

A number of Danish and Dutch colleagues met in Copenhagen on the 25rd/25th May 1955 to work out the basic proposal. This meeting was followed by a discussion with German colleagues on the occasion of the annual meeting of the "Verband Deutscher Landwirtschaftlicher Untersuchungs- und Forschungsanstalten" at Bonn and Bad Neuenahr (Sept. 1955); representatives from

Paulinenaue, near Berlin, and Switzerland were also present at this meeting. "The Seminar on the improved organization and rationalization of soil analysis", held at Wageningen (The Netherlands) from the 3rd to the 14th October 1955 provided a new opportunity of discussing the possibilities with regard to international co-operation in field experiments with our colleagues from Denmark, Norway, Sweden, Austria, Belgium and The Netherlands. Meanwhile, our colleagues in Great Britain, Ireland and France have also been contacted.

The conclusions reached on these occasions may be summarized as follows. These points, incidentally, are actually intended as a basis for and an introduction to further deliberations.

1. It is recommended that the primary attention of research workers in this field be directed towards the solution of soil fertility problems by means of field experiments on a basis of international co-operation. These field experiments may be elaborated and substantiated by pot experiments and laboratory soil and crop analyses. Information will have to be exchanged on the methods employed in assessing the results.

2. The choice of problem will have to be determined by the following considerations:

- a) insight into the problem should be furthered by international co-operation, thus accelerating its solution;
- b) co-operation between the research workers of all the participant countries should be encouraged, and
- c) the problem selected for investigation should be of sufficient economic importance to the various countries concerned.

3. The influence of various factors (agricultural use and climate) on the nitrogen condition of the soil and its supply to the crop is particularly recommended as a problem for study. This will involve laying out series of experimental fields containing plots receiving increasing nitrogen dressings.

4. The study of the problem referred to under 3) above would appear to be important from the point of view of international cooperation, both within the framework of I.S.S.S. activities as a whole as well as for the work being done by the O.E.E.C. to promote crop production in the various member countries.

5. It should be established whether the expenditure incurred in these investigations can be borne by the countries individually.

The choice of the fertility problem referred to under 3) above was dictated by the following considerations:

1) Nitrogen plays an extremely important role in crop nutrition from the point of view of yield and quality.

2) The relationship between nitrogen nutrition and various soil and climatic factors renders the study of this problem a particularly suitable subject for international co-operation.

3) The differences in the approach to the nitrogen problem in the various countries will further the solution of the problem as project organized on the basis of international co-operation and should facilitate an exchange of results and views.

4) The variations occurring annually in the nitrogen requirements of plants are of major economic importance. A study of the factors occasioning these variations is important to obtaining a reliable basis for manuring recommendations.

5) A comparison of optimal nitrogen manuring requirements with the amounts actually applied by farmers should provide an insight into the possibilities of crop improvement.

We intend to send a more detailed draft plan to our collaborating colleagues in the different countries before the congress.

P. BRUIN,
Director of the Agricultural Experiment Station
and Institute for Soil Research
Groningen
Netherlands.

**FORTHCOMING INTERNATIONAL CONGRESSES OF ALLIED SCIENCES.
PROCHAIN CONGRÈS INTERNATIONAUX DE SCIENCES CONNEXES.
ZUKÜNFTIGE INTERNATIONALE KONGRESSE VON VERWANDTEN
WISSENSCHAFTEN.**

Date: 1956, November 6—15.

Place: Palmerstone North, New Zealand.

Meeting sponsor and subject:

Seventh International Grassland Congress. Pasture plant breeding; pasture establishment and management in varying environments; pasture utilisation as it effects both plants and animals.

Queries to be addressed to:

Mr S. H. Saxby, Organising Secretary, Seventh International Grassland Congress, C.P.O.Box 1500, Wellington, C.1, New Zealand.

OBITUARY — NECROLOGIE — NEKROLOGIE.

Dr. D. J. Hissink †

Late Secretary-Treasurer and Deputy President of the
International Society of Soil Science.

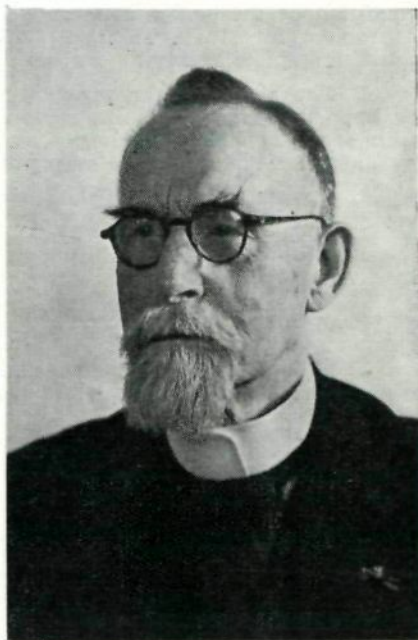
22nd Oct. 1874 — 17th Jan. 1956

It is only just over a year ago, on the 22nd October 1954 to be precise, that Hissink still in reasonable health celebrated his 80th birthday. A special number of the Bulletin of the International Society of Soil Science surveying his life and work was issued on the occasion of that jubilee; details of his career and achievements in the scientific field will therefore be found in that number.

Shortly after his 80th birthday, however, Hissink's health began to deteriorate. The decline continued and he died on the 17th January 1956 without having actually passed through what might be termed a crisis. This gradual retrogression, however, made this last year a particularly tragic one. He bore his lot with resignation, often interspersed even with his own characteristic humour.

With the passing of Hissink, a whole epoch in the history of international soil science came to a close — an epoch which many of the younger generation may already regard as an historical one, but which nevertheless remained a very tangible reality for Hissink right up to his very last day and which was also very positive for the younger elements in his immediate surroundings, as he never tired of describing it and countless photographs in his Institute and home provided a constant reminder of those "good old days".

This epoch began in 1909 with the First Agro-Geological Conference (soil science, as an independent sector of human endeavour, scarcely existed as such at the time!) in Budapest. A great many beards, frock-coats, top hats and bowlers; one woman whose skirts brushed her shoes (see Soil Research 1934, No. 2). Hissink did not actually attend this conference himself, but a number of others did who were to play a vital role in the years that followed: de 'Sigmund, Ramann, Schucht, Glinka and Murgoci.



Dr. D. J. Hissink †

The following international contact was in 1910 in Stockholm, where the Second International Agro-Geological Conference was held; Hissink was present on this occasion for the first time. Great plans for the future of international soil science were drawn up there in Stockholm. Several Commissions were established to concentrate their attention on various special aspects of the work of soil scientists; an international soil science journal was initiated (the "Internationale Mitteilungen für Bodenkunde") to which Hissink contributed enthusiastically; he was subsequently even appointed editor.

Shortly afterwards, however, the First World war broke out and severed all existing contact. It was Hissink who took the initiative again in 1921 in attempting to re-establish the old ties. His endeavours proved so successful that an international soil science meeting was held in Prague the following year. The International Society of Soil Science was established in its present form in Rome in 1924 and held its first International Soil Science Congress in Washington in 1927.

The world had obviously changed. Frock-coats and bowlers had disappeared completely; only the women with their low waists, short skirts and felt hats remind us that this, too, all took place some considerable time ago (Proceedings and Papers, First Intern. Congr. Soil Sci. 1928).

But this was also the beginning of the modern era and also of the period in which Hissink was to prove the driving force behind the International Society of Soil Science and its manifold activities. He devoted a very great deal of time — and private funds too! — to smoothing the path of the young society. Hissink sought and established contact everywhere, consolidated the organizations which had been created improvisatorially in many instances, and made detailed preparations for conferences and meetings at which his methodical mind invariably guided the discussions.

All this resulted in a steadily growing correspondence. Two mornings were reserved each week for the International Society of Soil Science: on one of these a Frenchman assisted him with the French correspondence, while an Englishman likewise assisted him on the other; his German was adequate to permit him to correspond in this language without outside help.

Then there was the financial administration, the preparations for the three International Congresses held between 1924 and 1939, and the eleven conferences at which the Commissions of the Society met together to discuss various aspects of their working programmes.

Furthermore, there were the two journals published by the Society. It is true that they were not edited by Hissink (this work was done by his great friend Schucht), but their publication meant a great deal of additional work for the Secretary-Treasurer.

And finally there was the vast amount of work which fell to the lot the Secretary-Treasurer, who was also Deputy President at the same time, during the Society's Congresses and Conferences.

This first phase of the International Society of Soil Science lasted until 1939. It was an extremely important period for soil science, as it was during these years that this particular branch of human knowledge and learning was recognized as an independent science. The International Society of Soil Science was at one and the same time the symbol and interpreter of this evolution.

During these years, too, modern soil science continued to be built up on the foundations laid previously. In this respect also, the International Society of Soil Science has done a great deal. Modern soil classification, a synthesis of the American and Russian systems, was initiated at the Soil Science Congress in Washington, where the Americans and the Russians established their first mutual contact in this field; the standardization of clay content determinations, permitting analyses from different countries to be compared, is also due to the work of the International Society of Soil Science; the rapid introduction of the quinhydrone method for measuring pH — now regarded as too cumbersome and too unreliable and discarded quite some time ago, but nevertheless a boon compared with much slower and even more unreliable hydrogen electrode method — was likewise due to the Society's activities. The influence of the numerous personal contacts, established at conferences and congresses, is more difficult to demonstrate, but no one will deny the vitally important part which these contacts have played in the evolution of soil science during all those years.

Hissink was undoubtedly the focal point and soul of all this work and the Society's great expansion is unquestionably due to him first and foremost. This was realized too, throughout those years, witness the special number of Soil

Research, dedicated to him in 1934 on the occasion of his 60th birthday and devoted to him in part.

The Second World War likewise put an end to all this fruitful work, but it was Hissink once again who took the initiative immediately after hostilities ceased in re-establishing contact with his colleagues throughout the world. Meanwhile, he had become too old to continue playing an active role; at the Fourth International Soil Science Congress — held in The Netherlands in his honour — his role was limited to that of Honorary Chairman.

Hissink's farewell to the International Society of Soil Science was commemorated by him being appointed an honorary member; he continued to take an active interest in the weal and woe of the International Society of Soil Science right up to his death and he rejoiced at the great expansion which the Society, now under younger leadership, was undergoing. A. J. ZUUR, Kampen, Netherlands.

Eilhard Alfred MITSCHERLICH †

Am 3. Februar verstarb im 82. Lebensjahr in Paulinenaue bei Berlin der emeritierte ordentliche Professor Dr. phil. Dr. agr. h.c. Eilhard Alfred MITSCHERLICH. Der begnadete und so erfolgreiche Lebensweg dieser grossen Forscherpersönlichkeit hat nun ein Ende gefunden. Der Name Mitscherlich ist für die moderne Landbauwissenschaft der Welt im Laufe der letzten Jahrzehnte zu einem Begriff geworden. Dieser ist verbunden mit dem Begriff vom „Pflanzenertrag“. Unbeirrbar hat der Verstorbene in einer 57-jährigen Lebensarbeit die quantitativen Zusammenhänge zwischen den im „Klima“ und im „Boden“ wirkenden zahlreichen von ihm genannten „äusseren Wachstumsfaktoren“ und die in der Pflanze wirkenden „inneren Wachstumsfaktoren“ und damit die Ertragsbildung erforscht. Er wurde zum Begründer der pflanzen-physiologischen Bewertung von Boden und Klima. Allein diese Erkenntnis hat Mitscherlich's Namen für alle Zeiten bekannt gemacht. Er kam auf diesem Wege zu einer funktionellen Betrachtung im Sinne der Synthese, d.h. des Zusammenwirkens der Wachstumsfaktoren auf die Ertragsbildung, die ihren Ausdruck in der Formulierung des Ertragsgesetzes fand, nämlich des „Wirkungsgesetzes der Wachstumsfaktoren“. Aufbauend auf Justus von Liebig brachte er in letzterem den Ertragszuwachs in Abhängigkeit von allen Wachstumsfaktoren zum Ausdruck. Oft missverstanden und viel umstritten hat sich das Wirkungsgesetz ganz allgemein als eine brauchbare Arbeitssypothese erwiesen und der einschlägigen Forschung einen enormen Aufschwung gegeben.



Prof. Dr. Dr. h.c. E. A. Mitscherlich †

Der grosse Fortschritt in der Behandlung des Ertragsgesetzes lag bei Mitscherlich in der Tatsache, dass er auch bei Steigerung eines einzelnen Wachstumsfaktors das gleichzeitige Mitwirken aller im System wirkenden Wachstumsfaktoren in der sogenannten „Konstellation der übrigen Wachstumsfaktoren“ in der Grösse „A“ zum Ausdruck brachte. Die von Mitscherlich gefundene Exponentialfunktion war eine logarithmische Funktion, wie wir sie bei vielen, vor allem an Oberflächen sich abspielenden und physiologischen Reaktionen anwenden können. Zunächst um den Charakter des Gesetzes mathematisch zu begründen, dann aber auch um das Gesetz auf Fragestellungen des praktischen Ackerbaues anwenden zu können, kam Mitscherlich zu der These, dass der im Gesetz enthaltene Wirkungsfaktor „c“ den Charakter einer Naturkonstante hat. In den letzten Jahrzehnten seiner experimentellen Arbeit hat Mitscherlich mit seinen Mitarbeitern die vor allem von A. RIPPEL gemachte Feststellung bestätigt, dass „c“ eines Wachstumsfaktors in Abhängigkeit vom Vorhandensein anderer Wachstumsfaktoren Schwankungen

unterworfen ist. Unter vergleichbaren Verhältnissen der Gefässversuchsanstellung aber auch des Feldversuches hat Mitscherlich an der Konstanz des Wirkungsfaktors festgehalten und diese unter den gegebenen Voraussetzungen nachweisen können.

Das Wirkungsgesetz wurde von E. A. Mitscherlich und der grossen Zahl seiner Schüler — aber auch von zahlreichen anderen Autoren des In- und Auslandes — nicht nur auf alle chemischen Wachstumsfaktoren des Bodens bzw. der Minereraldüngung, sondern auch auf die organischen Wachstumsfaktoren des Bodens und auf fast alle Wachstumsfaktoren des Klimas (Wasser bzw. Niederschlag und Beregnung, Licht, Temperatur, CO_2 , 0) angewendet. Zu den ersten Anwendungsbereichen des Wirkungsgesetzes zählten in Mitscherlich's Arbeiten auf Grund der Anregungen seines Lehrers E. WOLLNY die bodenphysikalischen Wachstumsfaktoren der Krumentiefe, der Bodenbearbeitung und der Hygroskopizität. Gerade bezüglich der letztgenannten Faktoren warten die Arbeiten Mitscherlich's noch auf eine Vertiefung der Untersuchungen, zumal diese sehr im Interesse des praktischen Ackerbaues liegen würden.

In 27 000 Feld-Düngungsversuchen fand Mitscherlich sein Gesetz bestätigt. Im Laufe seiner Arbeiten hat der Verstorbene das Zusammenwirken verschiedener Wachstumsfaktoren und die unmittelbare Beeinflussung ihrer Wirkung u.a. bei den Faktorengruppen Ca-P, Na-K, K-Mg, Licht- CO_2 , Wasser-Düngung, sowie Stickstoff-Anionen untersucht und anerkannt. Insbesondere die Arbeiten über den Faktor Stickstoff führten Mitscherlich in seinen Streben, die Düngung zur Steigerung der Erträge möglichst hoch zu gestalten, zu der Erkenntnis, dass bei Überdüngung Ertragsdepressionen auftreten können. So kam er zu dem Ausbau seines Ertragsgesetzes in Richtung der von ihm sogenannten 2. Annäherung an die Wirklichkeit, wobei die depressive Wirkung bereits im Anstiegsteil der Ertragskurve mitwirkt. Grossen Wert legte Mitscherlich auf die Feststellung, dass auch die genetische Aufspaltung der vererbaren "inneren Wachstumsfaktoren" in einer Kreuzungspopulation dem Wirkungsgesetz folgt.

Bemerkenswert an der Lebensarbeit Mitscherlich's ist die Tatsache, dass er seine entscheidenden Entdeckungen schon im jugendlichen Alter machte. Mit 24 Jahren wurde er 1898 mit seiner Dissertation über die "Benetzungswärme" des Bodens und ebenso 1901 mit der Habilitationsschrift über die "Hygroskopizität" des Bodens bekannt. Letztere wird international zur Bestimmung der Bodenoberfläche als einer wesentlichen Eigenschaft der Bodenfruchtbarkeit benutzt. Schon 1905 erschien sein originelles Buch über die pflanzenphysiologische Bodenkunde, die dann als "Bodenkunde für Land-, Forstwirte und Gärtner" in aller Welt Verbreitung fand und im 80. Lebensjahre des Autors in 7. Auflage erschien. 1909 erschien seine 1. Arbeit über das Wirkungsgesetz auf Grund einer umfangreichen Versuchsreihe über die Wirkung von Phosphorsäuredüngung in Gefässen. 1916, 1924 und 1928 sind die weiteren entscheidenden Etappen in der Entwicklung seines Ertragsgesetzes gewesen. Eine infolge der Entwicklung der Zeitemstände leider nicht genau feststellbare grosse Zahl von Veröffentlichungen hat Mitscherlich gemeinsam mit seinen Schülern der Oeffentlichkeit übergeben. Diese sind grösstenteils in den "Landwirtschaftlichen Jahrbüchern", in der "Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde" und zuletzt in der "Zeitschrift für Acker- und Pflanzenbau" ebenso wie in der von ihm selbst redigierten Veröffentlichungsreihe der Königsberger-Gelehrten-Gesellschaft erschienen.

Auch die methodischen Voraussetzungen zur Erforschung des Ertragsgesetzes hat Mitscherlich in dieser Hinsicht gefördert und zum Teil neu geschaffen. Aufbauend auf den Erfahrungen von H. Hellriegel und P. Wagner hat er das nach ihm benannte und weitverbreitete Mitscherlich-Gefäss zur Durchführung von Gefässkulturversuchen geschaffen. 1905 konstruierte er einen Verdunstungsmesser, um einen der wesentlichsten Vegetationsfaktoren unserer Pflanzen messen zu können. Angeregt durch seinen hervorragenden Lehrer H. Rodewald setzte sich Mitscherlich frühzeitig für die Anwendung der Wahrscheinlichkeitsrechnung bzw. der Fehlerrechnung im landwirtschaftlichen Versuchswesen ein. Er eilte damit seiner Zeit voraus, so dass seine Zeitgenossen ihn oft wegen seiner sogenannten "mathematischen Einstellung" ablehnten. Mitscherlich konnte es erleben, dass die Biostatistik, für die er sich so eingesetzt hatte, einen Riesenaufschwung nahm. Er vertrat jedoch den Standpunkt, dass man in Anbetracht der Verallgemeinerung gewisser statistischer Methoden nie mehr "rechnen" dürfte als das biologische Experiment und die Genauigkeit der Versuchsanstellung dieses gestatten. Von ihm stammt das Wort: "Man soll nicht mit Kanonen nach Spatzen schiessen". Zur Aussehaltung der systematischen Fehler im Feldversuch entwickelte er die

sogenannte "Gleitmethode", welche das Prinzip der Gleitmittelwerte zum Ausgleich der systematischen Fehler benutzt.

Stets war der Verstorbene bemüht, seine Erkenntnisse der Praxis und damit der Allgemeinheit nutzbar zu machen. Am eindrucksvollsten geschah dies in der Anwendung des Ertragsgesetzes zur pflanzenphysiologischen Bestimmung des Nährstoffvorrates im Boden, der sogenannten "b"-Bestimmung. Hieraus entwickelte er 1923 in seinem in 1. Auflage erschienenen Buch "Die Bestimmung des Düngerbedürfnisses des Bodens". Nachdem fortschrittliche ostpreussische Landwirte die Bedeutung seines Bestrebens erkannt hatten, gründeten sie 1924 die "Mitscherlich-Gesellschaft", die vor dem Kriege zuletzt in 24000 Gefässen für die Praxis wirksam gewesen ist. Im Interesse der Nutzbarmachung dieses Verfahrens hat der Verstorbene mehrfach Berufungen wie die nach Dresden und nach Java abgelehnt. E.A. Mitscherlich kam erstmalig durch Mithilfe seiner Methode zu der Aufstellung einer Nährstoffbilanz unserer Böden in der Form der von ihm entwickelten "Nährstoffstatik". Gerade heute erkennen wir, dass der Ausbau dieser Betrachtungsweise in Anbetracht der intensiven Bewirtschaftung unserer Böden dringend notwendig ist. Der Verstorbene hat gleichzeitig den entscheidenden Hinweis für die Anwendung des Wirkungsgesetzes auf betriebswirtschaftliche Betrachtungen über den Roh- und Reinertrag gegeben und damit auch den ökonomischen Disziplinen, welche sich mit dem Gesetz vom abnehmenden Ertragszuwachs befassen, eine Methode zur Verfügung gestellt.

Zahlreiche akademische Ämter wurden Prof. Mitscherlich im Laufe seines Wirkens anvertraut und ebenso zahlreiche hohe Ehrungen zuteil. Zweimal war er Rektor magnificus der Albertina zu Königsberg, einmal Dekan der Philosophischen Fakultät. 26 Jahre hatte er das Amt des geschäftsführenden Sekretärs der Königsberger Gelehrten-Gesellschaft inne, mit der er sich ebenso wie mit der Kant-Gesellschaft bis an sein Ende engstens verbunden fühlte. Von 1922 an war er mit geringen Unterbrechungen Präsident der IV. Kommission der Internationalen Bodenkundlichen Gesellschaft, deren Ehrenmitglied er 1936 wurde. Ferner war er Ehrenmitglied der Deutschen Bodenkundlichen Gesellschaft und Mitherausgeber der amerikanischen Zeitschrift "Soil Science" und der russischen Zeitschrift "Pedologie". 1925 wurde E. A. Mitscherlich als Mitglied der "Kaiserlich — Leopoldinisch-Karolinisch-Deutschen Akademie" zu Halle berufen. Ferner war er Mitglied zahlreicher ausländischer Akademien. Die landwirtschaftlichen Fakultäten der Universitäten Kiel und Giessen verliehen E. A. Mitscherlich die Würde eines Dr.h.c. Die Justus Liebig-Hochschule zu Giessen verlieh Mitscherlich den „Liebig-Preis“, nachdem er schon 1901 durch die Königl. Bayer. Akademie mit dem Preis der Liebig-Stiftung seine erste akademische Ehrung erfuhr.

Für uns alle, insbesondere für den wissenschaftlichen Nachwuchs, ist es interessant, dass E. A. Mitscherlich bei seiner grossen wissenschaftlichen Leistung eine Tradition seiner Familie fortsetzte. Sein Grossvater Eilhard Mitscherlich war der in der Weltliteratur bekannt gewordene grosse Chemiker und Zeitgenosse Liebig's und sein Vater Alfred Mitscherlich war Chirurg in Berlin.

Sein Lebenswerk hat Mitscherlich während seines 35-jährigen Wirkens als Lehrer des Lehrstuhles für Pflanzenbau an der Albertus-Universität zu Königsberg vollbracht. Nach seiner 1941 erfolgten Emeritierung übernahm er die Bewirtschaftung seines Gutes in Kutschlau bei Schwiebus. Ein ruhiger Lebensabend verbunden mit der von ihm geplanten Anwendung seiner Erkenntnisse in der Praxis blieb E. A. Mitscherlich versagt. Nach dem Zusammenbruch stellte er sich in der Not und als Flüchtling der Wissenschaft in Berlin von neuem zur Verfügung und lehrte zunächst noch jahrelang an der Humboldt-Universität. Als Mitglied der Akademie der Wissenschaften zu Berlin und Nationalpreisträger schaffte sich E. A. Mitscherlich eine neue Wirkungsstätte als Leiter des „Institutes zur Steigerung der Pflanzenenerträge" in Paulinenaue. Bis vor kurzem war ihm körperliche und geistige Frische in einem seltenen Mass beschieden. Neben seiner experimentellen Arbeit war er bis zuletzt schriftstellerisch tätig und so auch in der Lage, die an vielen Orten infolge der Zeitumstände verlorengegangene Literatur über seine Forschungsergebnisse und seine Ideen neu herauszubringen.

In einmaliger Kombination vereinigte E. A. Mitscherlich grosse Begabung, erstaunliche Arbeitskraft und wissenschaftliches Kämpfertum mit ebenso grosser menschlicher Güte und einem feinen Humor. Die vielen Generationen von Studenten, welche ihm zuhören durften, sein die Zahl 100 übersteigender Schülerkreis, seine nächsten Mitarbeiter und Kollegen werden das Erlebnis seiner Persönlichkeit nicht vergessen. Sein wissenschaftliches Vermächtnis wird in Forschung und Praxis weiter wirken!

E. v. BOGUSLAWSKI, GIESSEN.

JOHN MITCHELL †
1897—1955



Prof. Dr J. Mitchell †

John Mitchell, Professor and Head of the Department of Soil Science, University of Saskatchewan, Canada, and Director of the Saskatchewan Soil Survey, passed away very suddenly from a heart attack on November 21, 1955. An Honorary Life Member of the Saskatchewan Agricultural Graduates' Association, Fellow of the Agricultural Institute of Canada, Honorary Fellow of the Appraisal Institute of Canada, and a Fellow of the American Society of Agronomy, John Mitchell was an outstanding man of exceptional personality and ability. He applied these gifts unselfishly to every phase of a full, productive and well rounded academic career in teaching, research, extension, administration and public service.

He was born at Bradwardine, Manitoba, Canada, on March 7, 1897, and later moved to Marsden, Saskatchewan, where he engaged in farming in a pioneer district. He interrupted his University studies to enlist with the Canadian Expeditionary Force in 1916, was wounded at Passchendaele in 1917 and returned to civilian life in 1918. He also served with the University of Saskatchewan, Officer's Training Corp during the Second World War.

He completed his B.S.A. degree at the University of Saskatchewan in 1924 and joined the staff of the Department of Soil Science as an instructor in 1925. He commenced his graduate studies at the University of Wisconsin in 1927, where he was awarded the M.Sc. degree in 1929 and the Ph.D. degree in 1931. On completion of his graduate training he returned to Saskatchewan as an Assistant Professor of Soil Science and subsequently advanced to become Professor and Head of the Department in 1934.

As a teacher he was unexcelled. His stimulating and colorful lectures, coupled with an intense interest in every phase of student activities, earned him the respect and affection of all. His standards were high, but with great understanding, he gave equal encouragement to students of every calibre. His success in this field is amply demonstrated by the attainment of his students.

He was the first student of the Saskatchewan Agricultural College to elect a career in Soil Science. He established and developed the soil science option and allied graduate studies, and during his leadership within the Department, 101 students were attracted to specialized study. Fifty-one of these students proceeded to graduate training, and 26 have attained the Ph.D. degree.

His research career was stimulated by his love and appreciation of the land, its people and their problems. He was actively engaged in the classification and mapping of the soil resources of Saskatchewan from 1924, three years after the institution of the Saskatchewan Soil Survey. Under his guidance as Director from 1934, the Saskatchewan Soil Survey continued and completed the preliminary study and mapping of the soils within and beyond the present limits of Agricultural Settlement. The reconnaissance maps and reports of this large area, which comprises almost forty percent of the cultivated agricultural land in Canada, will remain as a permanent tribute to him. They have also earned international recognition for himself and his colleagues.

He was co-author of nine major soil survey reports, published more than thirty scientific papers and contributed numerous articles to non-technical publications. His publications cover many phases of soil chemistry with a particular interest in problems relating to soil fertility. He also developed and established a system of soil productivity index rating which was the first of its kind to be extensively applied in Canada. This work was recognized by his appointment as

Chairman of the Section on Land Classification and Evaluation for the Fourth International Congress of Soil Science in 1950.

With characteristic foresight and wisdom, sharpened by an unselfish desire for better understanding and appreciation of the land, he was continually aware of the problems of the future. He forcefully promoted the application of research knowledge to the betterment of agriculture, both from the technical and practical viewpoints. He undertook the responsibilities of conducting and participating in innumerable meetings, committees, short courses and private discussions on behalf of individuals, and of farm, government, technical and private organizations at the local, provincial and national levels. At the same time he had a great respect for the sagacity of the individual farmer and knitted their experiences and observations into the whole pattern of agricultural progress. No problem was too great, or too small, to receive his undivided attention. John Mitchell was a fountain to which students, friends, acquaintances and institutions frequently returned to drink and never failed to leave refreshed and stimulated.

It is with deep regret that Canadian Soil Scientists record the passing of a true friend and brilliant colleague. Our regrets are tempered by the knowledge that he enjoyed life and people; and by the fact that his personality, ideals and accomplishments will have a permanent and continuing influence on social, scientific and academic attainment.

W. L. HUTCHEON, Saskatoon, Canada.

Paul Ehrenberg †.

Am 18. Januari 1956 verstarb Professor Dr. Dr. h.c. Paul Ehrenberg, Ehrenmitglied der Deutschen Bodenkundlichen Gesellschaft, in Alter von 80 Jahren. In ihm verlor die deutsche Landwirtschaftswissenschaft einen ihrer führenden und zugleich vielseitigsten Vertreter. Innerhalb von fünfzig Jahren bereicherte er die Gebiete Pflanzenernährung, Tierernährung und Bodenkunde durch eine grosse Zahl bedeutsamer Arbeiten.

Seine ersten Arbeiten waren Fragen der Mikrobiologie und der Biochemie des Bodens gewidmet. Als grösseres Werk auf diesem Gebiet erschien im Jahre 1907 die "Bewegung des Ammoniakstickstoffs in der Natur". Bald wandte er sich dann vor allem der Erforschung der Bodenkolloide und ihrer Eigenschaften zu. Das ergebnis seiner umfassenden Studien war im Jahre 1915 das Werk "Die Bodenkolloide", das seinerzeit bahnbrechend war und bis zum Jahre 1922 drei Auflagen erlebte. Aus der Grundlagenforschung über die Bodenkolloide ging Ehrenberg alsbald über zur Behandlung der praktisch so überaus wichtigen Frage der Bodenstruktur bzw. Bodengare, einer Frage, ihn bis zuletzt beschäftigte und zu deren Bearbeitung er eine Reihe von Mitarbeitern anregte. Seit 1938 wandte er dann, besonders für Ostdeutschland, seine Aufmerksamkeit der Bodenerosion zu. In einer Reihe von Aufsätzen teilte er wertvolle

Beobachtungen und praktische Vorschläge zur Verhütung von Schäden mit.

Neben diesen rein bodenkundlichen Arbeiten erstreckten sich gleichzeitig umfangreiche Untersuchungen auf agrikulturchemische Probleme, vor allem der Düngung. Aus zahlreichen bedeutsamen Veröffentlichungen sei hier das "Kalk-Kali-Gesetz" (1919) genannt. In der 7. Auflage des Lehrbuches der Agrikulturchemie von Adolf Mayer bearbeitete Ehrenberg den Band "Düngerlehre".

Weit hinausgehend über den Bereich der Bodenkunde und der Pflanzenernährung widmete dann Ehrenberg, insbesondere in seinen späteren Jahren, seine Aufmerksamkeit den Fragen der Tierernährung, über die er bis in seine letzten



Prof. Dr Dr h.c. P. Ehrenberg †

Tage arbeitete. Bei der engen Verbindung, die er stets mit der Praxis unterhielt, ergab es sich, dass er sich stets auch wieder mit betriebswirtschaftlichen Fragen befasste. Endlich war das letzte Jahrzehnt seines Lebens erfüllt von sorgfältigen und mühevollen Untersuchungen zur Vorgeschichte unserer Landwirtschaft.

Grosse Verdienste hatte Ehrenberg um die Herausgabe und den Ausbau der "Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde" (zusammen mit O. Lemmermann von 1922 bis 1936).

So bietet sich uns das Bild eines Forschers, der alle Gebiete der Landwirtschaftswissenschaft in vollendeter Weise übersah und sie durch wesentliche Beiträge förderte. Dieses Bild wird ergänzt durch seine vortrefflichen Eigenschaften als Lehrer und als ein stets teilnehmender und gütiger Förderer des akademischen Nachwuchses während seiner Tätigkeit an den Universitäten Jena, Berlin, Göttingen und Breslau.

H. KURON, Giessen, Deutschland.

SUPPLEMENTARY DATA FOR LIST OF MEMBERS
DONNEES SUPPLEMENTAIRES DE LA LISTE DE MEMBRES
ERGÄNZENDE ANGABEN FÜR DAS MITGLIEDER VERZEICHNIS

1-4-1956

- (1) Titre (2) Fonction (3) Spécialité (4) Adresse de l'Institution ou de l'Organisation (5) Adresse privée.
(1) Title (2) Function (3) Speciality (4) Address of Institution or Organisation (5) Private address.
(1) Titel (2) Funktion (3) Spezialität (4) Adresse des Institutes oder der Organisation (5) Privatadresse.

AUSTRALIA

- BREWER, Roy (1) B.Sc. (2) Senior Research Officer Division of Soils (3) Soil Genesis, Classification and Cartography (4) C.S.I.R.O., P.O.Box 109, Canberra City, A.C.T. (5) 14 Hart Street, O'Connor, A.C.T.
- MACKIE, W. B. C., Commonwealth Fertilizers & Chemicals Ltd., 65 Williamstreet, Melbourne.
- NORTHCOTE, K.H. (1) B.Sc. (2) Senior Research Officer (3) Soil Genesis, Classification and Cartography; Soil Technology (4) Division of Soils C.S.I.R.O., Waite Institute, Adelaide (5) 4 Eucla Avenue, Warradale Park, South Australia.

AUSTRIA

- BUNDESMINISTERIUM FÜR LAND- UND FORSTWIRTSCHAFT, Stubenring 1, Wien I.
- DIETZ, Dr Ing. Rudolf, Trunnerstrasse 1, Wien II.
- DONNER, Josef (1) Kaplan (2) Privatforscher (3) Soil Biology (5) Wichtelgasse 74, Wien XVII.
- FISCHER, Dr Heinrich, Untere Weissgärberstr. 37/20, Wien III.
- GAMS, Prof. Dr Helmut, Hötting, Innsbrück.
- GEOGRAPHISCHES INSTITUT DER UNIVERSITÄT WIEN, Luegerring 1, Wien I.
- GRUBINGER, Dr Ing. Herbert, Brigittaplatz 9/7/7, Wien XX.
- HARTMANN, Prof. Dr Ing. Franz, Johannesgasse 2, Wien.
- HÖFFLER, Prof. Dr Karl, Universität, Wien I.
- HUBL, Erich, Perchtoldsdorf, Reichergasse 13.
- KAMMER FÜR LAND- UND FORSTWIRTSCHAFT SALZBURG, Schwartzstrasse 19, Salzburg.
- KRABLICHER, Ing. Anton, Hietzinger Hauptstrasse 126a, Wien VIII.
- MUKSCH, Hofrat Prof. Dr Ing. Leopold, Gregor Mendelstr. 33, Wien XVIII.
- PAWELKA, Direktor Dipl. Ing. Karl, Kirchengasse 32, Wien VII.
- SCHREIBER, Prof. Dr Ing. Max, Gregor Mendelstr. 33, Wien XVIII.
- SPELAEOLOGISCHES INSTITUT, Wien I, Hofburg, Bettlerstiege.
- WAGNER, Dozent Dr Heinrich, Zeltgasse 1, Wien VIII.
- WEIDSCHACHER, Dipl. Ing. Karl, Hollabrunn, Schörnböckgasse 14, Niederösterreich.

BRAZIL

- PAVAGEAU, M. (1) Engenheiro Agrônomo (2) Químico Agrícola do Serviço Nacional de Pesquisas Agronomicas (3) Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) SNPA, Ministerio da Agricultura, Largo da Misericórdia, Rio de Janeiro (5) c/o Dr Naves da Rocha, 36 ap. 302, Jardim Botânico, Rio de Janeiro.

CANADA

- BELL, D. J. Alberta, Edmonton, Alberta.
- BRYDON, J. E., Chemistry Division Science Service, Ottawa.
- DOYLE, J., Experimental Station, Fredericton, N.B.
- EAGLE, D. J., Department of Soils, O.A.C., Guelph, Ontario.

- HALSTEAD, R. L., Chemistry Division, Science Service, Ottawa.
 JEYASEELAN, K., Department of Soils, O.A.C., Guelph, Ontario.
 LANE, T. H., Department of Soils, Guelph, Ontario.
 LINDSAY, J. D., Alberta, Edmonton, Alberta.
 MATTHEWS, B. C. Department of Soils, O.A.C., Guelph, Ontario.
 RICE, H. M., Chemistry Division, Science Service, Ottawa.
 WYNNYK, A., Alberta, Edmonton, Alberta.

DENMARK

- JENSEN, Vagn. (1) M.Sc. (2) Scientific Assistant (3) Soil Biology; Soil Fertility and Plant Nutrition (4) Mikrobiologisk Laboratorium, Rolighedsvej 23, København (5) Gl.Køgevej 253A, Valby.
 LAMM, C. G. (2) Research Chemist (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) State Laboratory for Soil and Crop Research, Lyngby (5) Bredevej 17, Virum.

FRANCE

- BONIFAS, Mme, Service de la Carte Géologique, 1 Rue Blessig, Strasbourg.
 CAMEZ, Mme, Service de la Carte Géologique, 1 Rue Blessig, Strasbourg.
 MONITON, M., Chef du Service Régional de Rabat, Centre des Etudes Hydrogéologiques, B.P.509, Rabat-Résidence, Maroc.
 SIEFFERMANN, Gaston, Pédologue en service à l'Institut Français d'Amérique Tropicale, Cayenne (Guyane française) B.P. 207 (5) Durstel No 41 (Bas-Rhin).

GERMANY

- FIEDLER, H. J. (1) Dr (2) Wissensch. Assistent (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Physics (4) Institut f. Agrikulturchemie, Jena (5) von Hase-Weg 14, Jena.
 GROHSE, B. (1) Dr (2) Wissenschaftlicher Sachbearbeiter (3) Soil Genesis, Classification and Cartography; Soil Physics; Soil Technology (4) Amt für Bodenforschung, Hannover (5) Schleswigerstrasse 15, Hannover.
 KOEFF, H. (1) Dr (2) Wissenschaftl. Assistent (4) Institut für Geologie und Bodenlehre, Hohenheim, Stuttgart-Hohenheim, Schloss.
 MÜLLER, Georg (1) Dr (2) Stellv. Direktor und Abt. Leiter (3) Soil Biology (4) Institut für Acker- und Pflanzenbau der Deutschen Akademie der Landwirtschaftswissenschaft, Berlin (5) Institut, Münchenberg/Mark.
 RATHSACK, K. (1) Prof. Dr (2) Direktor des Institutes für Pflanzenernährung (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition (4) Institut für Pflanzenernährung, Herrenhausstr. 2, Hannover-Herrenhausen (5) Edenstrasse 31/III, Hannover.
 SCHLICHTING, E. (1) Dr (2) Dozent (4) Institut für Pflanzenernährung und Bodenkunde der Universität Kiel, Olshausenstr. 40—60, Kiel (5) Ludwigstr. 8, Heikendorf b. Kiel.
 SCHÖNNAMSGRUBER, H. (1) Dr (2) Wissenschaftlicher Assistent (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Forstliche Versuchsanstalt, Fasanengarten, Stuttgart-Weilimdorf (5) Zeppelinstr. 98, Stuttgart W.
 SCHMALFUSS, K. (1) Prof. Dr (2) Professor und Direktor des Instituts für Pflanzenernährung und Bodenkunde der Universität Halle (4) Sophienstr. 17 b, Halle (5) Julius Kühn-Str. 31, Halle.
 SPRINGER, U. (1) Prof. Dr (2) Stellvertretender Direktor (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) B. Landesanstalt f. Pflanzenschutz, Königenstr. 36, München 23 (5) Herzogstr. 11/III, München 23.
 WEHRMANN, J. (1) Dr (2) Wissenschaftl. Assistent (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics (4) Institut für Bodenkunde und Standortslehre der Forstlichen Forschungsanstalt, Amalienstr. 52, München 13 (5) Göresstr. 24/3, München 23.

GREAT BRITAIN

- AHMAD, Nazeer (1) M.Sc. (2) Research Student (3) Soil Chemistry; Soil Physics (4) University of Nottingham (5) School of Agriculture, Sutton Bonington, Loughborough.
- ANDERSON, G. (1) Dr (2) Research Chemist (3) Soil Chemistry (4) Macaulay Institute for Soil Research, Aberdeen (5) Trustach, 5 Caion Road, Bieldside, Aberdeenshire.
- ANU, S. V. ((2) Student of Geography and Soil Science (4) University of Aberdeen (5) c/o Students Union, Marischal College, Aberdeen.
- ARNOLD, P. W. (1) Dr (2) Chemist (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Rothamsted Experimental Station, Harpenden, Herts.
- ASKEW, G. P. (1) B.Sc. (2) University Lecturer (3) Soil Genesis, Classification and Cartography (4) WYE College, University of London, Ashford, Kent.
- BARKER, A. Neville (1) Dr (2) Lecturer in Agr. Bacteriology (3) Soil Biology (4) The University of Leeds, Leeds 2 (5) 562 Halifax Road, Bradford 6.
- BOULD, C. (1) Dr (2) Research Chemist and Lecturer (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Long Ashton Res. Station, University of Bristol (5) 3 East Priory Close, Westbury-on-Tryn, Bristol.
- BROWN, Miss J. C. (1) B.Sc. (2) Scientist (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Physics; Saline Soils; Soil Technology (4) The Nature Conservancy, Merlewood Research Station, Grange-over-Sands, Lancs. (5) Highbarn Eaves, Effingham, Surrey.
- BURGES, Alan (1) Professor (2) Professor of Botany (3) Soil Biology; (4) Botany Department, University, Liverpool.
- COOKE, I. J. (1) Dr (2) Soil Research Chemist (4) Fisons Ltd., Felixstowe, Suffolk (5) 9 Church Avenue, Hyde, Cheshire.
- CHEMISTRY BRANCH, Federal Ministry of Agriculture, P.O.Box 8100, Causeway, Salisbury, Southern Rhodesia.
- CLEMENT, C. R., Grassland Research Station, Hurley, Maidenhead, Berks.
- CROMPTON, A. (2) Soil Surveyor (3) Soil Genesis, Classification and Cartography (4) Soil Survey of England & Wales, Rothamsted Experimental Station, Harpenden, Herts. (5) 3 Summerfield Gardens, Leeds 13.
- CROMPTON, E. (2) Lecturer in Pedology (4) School of Agriculture, King's College, Newcastle-upon-Tyne (5) Highfield, Oakwood, Hexham.
- CURTIS, L. F. (1) B.Sc. (2) Soil Surveyor (3) Soil Genesis, Classification and Cartography; Saline Soils; Soil Technology (4) Rothamsted Experimental Station, Harpenden, Herts. (5) 7 Wood Road, Spondon, Derbyshire.
- FINDLAY, D. C. (1) M.A. (2) Soil Surveyor (3) Soil Genesis, Classification and Cartography (4) Soil Survey of England & Wales, Rothamsted Experimental Station, Harpenden, Herts. (5) Stock Farm, Langford, Nr Bristol.
- GLENTWORTH, R. (1) Dr (2) Head of Soil Survey (Scotland) (4) The Macaulay Institute for Soil Research, Aberdeen (5) 19 Viewfield Gardens, Aberdeen.
- HALLSWORTH, E. G. (1) Prof. (2) Professor of Agricultural Chemistry, Head of Department of Agricultural Sciences (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) University of Nottingham, School of Agriculture, Sutton Bonington, Leics. (5) Eviton House, Sutton Bonington.
- HAWORTH, F. (1) Dr (2) Head of Chemistry Section (4) National Vegetable Res. Station, Wellesbourne, Warwick (5) Lillibrook House, Butlers Marston, Warwick.
- HEINTZE, Miss S. G. (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Rothamsted Expt.Station, Harpenden, Herts.
- HEMINGWAY, R. G. (1) Lecturer in Agricultural Chemistry (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) The University, Glasgow W.2, Scotland (5) 402 Carmunnock Road, Glasgow S.4.
- HO, Robert (2) Lecturer (3) Soil Genesis, Classification and Cartography (4) University of Malaya, Singapore (5) 69 Kheam Hock Road, Singapore II.

- HUGHES, R. Elyn (1) Dr (2) Ecologist (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) The Nature Conservancy, c/o School of Agriculture, University College, N. Wales (5) The Wern, Graig-y-Don Road, Bangor, N.Wales.
- JENKINS, W. L. (1) M.Sc. (2) Lecturer in Agricultural Chemistry (4) Institute of Rural Science, University College of Wales, Penglais, Aberystwyth (5) 2 Albert Mansions, North Parade, Aberystwyth, Wales.
- JENKINSON, D. S. (1) Dr (2) Department of Agricultural Chemistry (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) University of Reading, Reading, Berks. (5) —.
- KNIGHT, A. H. (1) B.Sc. (2) Chemist Radioactive Section, Plant Physiology Department (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Macaulay Institute, Craigiebuckler, Aberdeen.
- Mc ALEESE, D. M. (1) Dr (2) University Demonstrator (3) Soil Chemistry (4) School of Agriculture, Cambridge University (5) 8 Bateman Street, Cambridge.
- MACKNEY, D. (1) B.Sc. (2) Soil mapper or surveyor (4) Ministry of Agriculture, "Woodthorne", Wolverhampton (5) 50 Prices Gardens, Codsall, nr Wolverhampton.
- MADGWICK, H. A. I. (1) B.Sc. (2) Scientist (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics; Soil Technology (4) Nature Conservancy, Merlewood Research Station, Grange-over-Sands (5) "Meadowbank", Fernleigh Road, Grange-over-Sands, Lancashire.
- MATTINGLY, G. E. G. (1) Dr (2) Research Soil Chemist (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition (4) Rothamsted Experimental Station, Harpenden, Herts. (5) 14 Lea Road, Harpenden, Herts.
- MITCHELL, R. L. (1) Dr (2) Deputy Director and Head of Department of Spectrochemistry (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) The Macaulay Institute for Soil Research, Craigiebuckler, Aberdeen.
- MITCHELL, W. A. (2) Pedologist; Clay Mineralogist (3) Soil Chemistry; Soil Genesis, Classification and Cartography; Soil Physics (4) Macaulay Institute for Soil Research, Aberdeen, Scotland (5) Ardgay, Milltimber, Aberdeenshire.
- MUIR, J. W. (2) Senior Scientific Officer (3) Soil Chemistry; Soil Genesis, Classification and Cartography; Soil Physics (4) The Macaulay Institute for Soil Research, Craigiebuckler, Aberdeen.
- NETHSINGHE, D. A. (1) Dr (2) Research Assistant in Soil Chemistry (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Coconut Research Institute of Ceylon, Lunuwita, Ceylon (5) University Department of Agriculture, Parks Road, Oxford.
- OSMOND, D. A. (1) Dr (2) Deputy Chief of the Soil Survey of England and Wales (4) Rothamsted Experimental Station, Harpenden, Herts. (5) 24 Longcroft Avenue, Harpenden, Herts.
- PARK, D. (1) Dr (2) Lecturer in Mycology (3) Soil Biology (4) Department of Cryptogamic Botany, University of Manchester, Manchester 13 (5) 20 Kingston Road, Manchester 20.
- PRINGLE, J. (1) Dr (2) Research Fellow (3) Soil Chemistry; Soil Fertility; Soil Physics (4) 4 University of Aberdeen (5) 5 Orchard Road, Aberdeen.
- RAGG, J. M. (2) Pedologist (4) Macaulay Institute for Soil Research, Craigiebuckler, Aberdeen.
- ROMANS, J. C. C. (1) B.Sc. (2) Soil Surveyor (3) Soil Genesis, Classification and Cartography (4) Macaulay Institute, Craigiebuckler, Aberdeen (5) 12 Crown Crescent, Peterculter, Aberdeen.
- SCHOFIELD—PALMER, E. K. (1) B.Sc. (2) Research Chemist (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Physics; Saline Soils (4) West of Scotland Agricultural College, 6 Blythewood Square, Glasgow, Scotland (5) "Alderley", "Alloway", Ayr, Scotland.

- SMITH, J. (2) Pedologist Soil Survey of Scotland (3) Soil Genesis, Classification and Cartography (4) Macaulay Institute, Aberdeen (5) 139 Great Western Road, Aberdeen.
- SMITH, Robert (1) Dr (2) Soils Consultant to Hunting Technical Services LTD. (3) Soil Genesis, Classification and Cartography; Saline Soils (4) 6 Elstree Way, Boreham Wood, Herts. (5) 70 Onslow Gardens, London S.W.7.
- WESTON, V. J. (1) B.Sc. (2) Officer i/c Chemistry and Soils Division (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) Department of Agriculture, Ibadan, Nigeria.
- YOUNGS, Edward G. (1) B.Sc. (2) Scientific Officer (3) Soil Physics (4) A.R.C. Unit of Soil Physics, Huntingdon Road, Cambridge (5) 45 New Square, Cambridge.

GREECE

- BERKOE, C. C., 40 Ekklesion, Hez Klioss 5, Saloniki.

INDIA

- BALI, Y. P., Research Assistant, Division of Chemistry, Indian Agricultural Research Institute, New-Delhi 12.
- BHATTACHARAYA, A. K. (1) Dr (2) Professor and Head of the Department of Chemistry (4) Agra College, Agra, U.P.
- BISWAS, T. D. (1) Dr (2) Ass. Soil Survey Officer (4) Division of Chemistry, Indian Agricultural Research Institute, New-Delhi 12.
- CHANDNANI-JETHANAND, J. (2) Agronomist Indian Agricultural Research Institute (3) Soil Fertility and Plant Nutrition; Saline Soils (4) New-Delhi 12.
- DEY, S. K. (1) B.Sc. (2) Assistant Soil Chemist (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) Tocklai Experimental Station, Indian Tea Association, Cinnamara, Assam.
- GOVINDA RAJAN, S. V. (1) Dr (2) Soil Correlator (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) Soil Correlator, Bangalore.
- GUPTA, R. N. (1) M.Sc. (4) Regional Soil Laboratory, Banaras Cantt. U.P.
- JOSHI, R. H. (1) Dr (2) Agricultural Chemist (4) Agr. Research Institute, Nagpur, Madhya Pradesh.
- KAMAT, B. D. (2) Senior Agr. Officer (4) Soil Physicists' Section, Sholapur, Bombay.
- KANWAR, J. S. (1) Asst. Prof. of Agricultural Chemistry (4) Government Agricultural College, Ludhiana, Punjab (1).
- MONDAL, S. C., Professor of Agr. Chemistry, Kanka, Ranchi Agr. College, Bihar.
- MOTIRAMANI Jr, D. P., Professor of Agr. Chemistry, Government Agr. College, Gwalior.
- MUKHERJEE, M. K. (1) Dr (2) Chemist Jute Agr. Research Institute (4) Barrackpore, W. Bengal.
- MURTHY, R. S. (1) M.Sc. (2) Assistant Soil Survey Officer (3) Soil Chemistry; Soil Genesis, Classification and Cartography (4) Division of Chemistry, Indian Agricultural Research Institute, New-Delhi 12 (5) Bungalow c-38, Ind. Agr. Res. Inst. New Delhi-12.
- NAGAR, B. R. (1) M.Sc. (2) Lecturer (4) Agra College, Agra, U.P.
- PATIL, S. K. (1) Dr (2) Soil Survey Officer (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics; Saline Soils (4) Sugarcane Research Station, Padegaon P.O.Nira, Distr. Poona.
- PRASAD, Sheonath (1) Professor (2) Professor of Agr. Chemistry (3); Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics; Saline Soils (4) Bihar Agr. College, P.O. Sabour, Distr. Bhagalpur, Bihar (5) Chapra, Bihar.

- RAM, Newton (1) M.Sc. (2) Lecturer in Chemistry (4) Agra College, U.P.
- SATYANARAYANA, K. V. S. (1) Dr (2) Soil Survey Officer (3) Soil Genesis, Classification and Cartography; Soil Physics; Saline Soils (4) Indian Agricultural Research Institute, New-Delhi 12.
- SHANKARANARAYANA, H. S. (1) B.Sc. (2) Scientific Assistant (3) Soil Chemistry; Soil Genesis, Classification and Cartography; Soil Physics; Saline Soils; Soil Technology (4) Agricultural Chemists' Laboratories, Kora, Rajasthan.
- SINHA, P. (1) Dr (2) Agricultural Chemist (4) Agricultural Research Institute, Sabour, Bihar.
- SINHA, S. B. (1) Dr (2) Agricultural Chemist (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Saline Soils (4) Agricultural Research Institute, Gwalior (5) c/o Shri D. B. Sinha, Director of Education, Gwalior, Madhya Bharat.
- TAMBOLI, P. M. (2) Chief Chemist to Government of M.B. (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Physics; Soil Technology (4) Agr. Research Laboratory, Gwalior (5) Balabai-Ka-Bajar, Gwalior.
- THOMAS, P. K. (1) B.Sc. (2) Research Assistant (3) Soil Chemistry; Soil Genesis, Classification and Cartography (4) Central Coconut Research Station, Kasaragad, S.K. (5) Pulimoottil House, Kayangulaw, Travancore.

ITALY

- BALLATORE, G. P. (2) Libero Docente di Agronomia nelle Università; Vice Direttore Istituto di Agronomia dell'Università di Palermo (3) Fertilité du Sol et Nutrition des Plantes; Physique du Sol; Technologie du Sol (4) Corso Calatafimi 260 (5) id.
- CASINI—ROPA, G. (1) Dr (2) Assistente straordinario (3) Physique du Sol; Technologie du Sol (4) Ist. Meccanica Agraria, Università Bologna, Via Filippo Re 4, Bologna (5) Via Bengasi 55, Bologna.
- MANFREDI, E. (1) Dr Ing. (2) Assistente Università di Bologna (3) Genèse du Sol, Classification et Cartographie; Physique du Sol; Technologie du Sol (4) Istituto di Meccanica Agraria, via Filippo Re 4, Bologna (5) via Marconi 18, Bologna.
- MORELLI, C. (1) Prof. (2) Direttore Osservatorio Geofisico (3) Soil Physics (4) Viale R. Gessi 4, Trieste.
- ROSSINI, Renato (1) Prof. Ing. (2) Aiuto presso l'Istituto di Meccanica Agraria dell'Università di Bologna (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics; Soil Technology (4) Via Filippo Re 4, Bologna (5) Viale Oriani 31, Bologna.

JAPAN

- KEI AKATSUKA (2) Chief of the Division of Soil and Fertilizer at the National Institute of Agr. Sciences (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Nishigahara, Kita-Ku, Tokyo (5) National Institute of Agr. Sciences, Yahagi, Chiba-City.
- SAKANOUÉ, Y. (2) Chief Soil Seminar (3) Soil Chemistry; Soil Genesis (4) Yamaguchi Agricultural Experiment Station, Ouchi Kyoku-Nai, Yoshikigan, Yamaguchi-Ken.
- YATAZAWA, M. (2) Assistant Professor of Plant Nutrition (4) Nagoya University, Agr.Chem.Dept., Anjo City, Aichi Pref.

MEXICO

- AGUILLERA HERRERA, N. (1) Dr (2) Professor, Head of Pedology Laboratory (3) Soil Chemistry; Soil Genesis, Classification and Cartography (4) Escuela Nacional de Agricultura, Chapingo, Mexico (5) Rep. Argentina 75.2A, Mexico City.

NETHERLANDS

- BENNEMA, J.** (1) Dr Ir (2) Soil Surveyor (3) Soil Chemistry; Soil Genesis, Classification and Cartography; Soil Physics (4) Postbus 37, Bennekom (5) Kamperfoelielaan 15, Wageningen.
- BOLT, G. H.** (1) Dr (2) Research Chemist E.I. du Pont de Nemours & Company (3) Soil Chemistry; Soil Physics (4) Building 324, du Pont Exp.Sta., Wilmington, Delaware (5) 38B Court Drive, Wilmington 5, Delaware.
- BROEK, J. M. M. van den** (1) Ir (2) Pedologist (3) Soil Genesis, Classification and Cartography (4) Stichting voor Bodemkartering, Bennekom (5) Beatrixlaan 51, Sittard.
- BUTLJN, J.** (1) Ir (2) Soil Scientist Research Station for Fruitculture (3) Soil Fertility and Plant Nutrition; Classification and Cartography; Soil Physics (4) Proefstation voor de Fruitteelt in de Volle Grond, Wilhelminadorp, post Goes (5) 'Het Klokhuis', Kerkstraat 45, Wilhelminadorp, post Goes.
- DELVER, P.** (1) Ir (2) Bodemkundige Proefstation v/d Groenteteelt i/d Volle Grond (3) Soil Fertility and Plant Nutrition (4) Hoeverweg 6, Alkmaar (5) Iepenlaan 9, Alkmaar.
- DIEPEN, D. van** (1) Dr Ir (2) Soil Scientist (3) Soil Genesis, Classification and Cartography (4) Stichting voor Bodemkartering, Bennekom (5) Deken Spierigstraat 10, Boxtel.
- ENDE, Joost van den** (1) Ir (2) Bodemkundige, Proefstation voor de Groenten- en Fruitteelt onder Glas (3) Soil Fertility and Plant Nutrition; Saline Soils (4) Zuidweg 36a, Naaldwijk (5) Fenacolijslaan 36, Maassluis.
- FERRARI, Th. J.** (1) Dr Ir (2) Landbouwkundige Landbouwproefstation & Bodemk. Instituut T.N.O. (3) Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) Prof. van Hallstraat 3, Groningen (5) P. Camper-singel 151a, Groningen.
- HAANS, J. C. F. M.** (1) Dr (2) Bodemkundige Stichting voor Bodemkartering (4) Bovenweg 7, Bennekom (5) Willemskade 20, Zwolle.
- HEININGEN, J. van** (1) Dr (4) Kon. Shell Laboratorium, Badhuisweg 3, Amsterdam-N.
- HELLINGA, F.** (1) Prof., Ir (2) Hoogleraar (3) Soil Technology (4) Afdeling Cultuur-techniek der Landbouwhogeschool, Duivendaal 7, Wageningen (5) Prof. Ritzema Bosweg 36, Wageningen.
- JONGERIUS, A.** (1) Ir (2) Pedologist (3) Soil Genesis, Classification and Cartography; Soil Physics (4) Inst. of Reg. Pedology, 2 Duivendaal, Wageningen (5) W. van Noortstraat 5, Arnhem.
- JONKER, J. J.** (1) Ir (2) Wetensch. Hoofdamtenaar b. d. Directie v. d. Wieringermeer (4) Dk6, Emmeloord (5) Espelerlaan 63, Emmeloord.
- MEER, H. van der** (1) Dr Ir (2) Soil Scientist of the Dutch Landreclamation Society (3) Soil Technology (4) Sicknessplein 1, Arnhem (5) Cattepoelseweg 309, Arnhem.
- PROEFSTATION VOOR DE GROENTEN- EN FRUITTEELT ONDER GLAS**, Zuidweg 36a, Naaldwijk.
- PIJLS, F. W. G.** (1) Dr Ir (2) Director of the Soil Survey Institute Wageningen (3) Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Technology (4) Bovenweg 7, Bennekom (5) Hamelakkerlaan 32, Wageningen.
- RAMEAU, J. Th. L. B.** (1) Dr (2) Head Central Laboratory for Soil Testing and Plant Analysis (3) Soil Chemistry; Soil Fertility and Plant Nutrition (4) Mariëndaal, Oosterbeek (5) van Rosenthalweg 3, Oosterbeek.
- ROSANOW, M.** (1) Ir (2) Advisory Officer Plant Nutrition Research Laboratory (3) Soil Fertility and Plant Nutrition (4) 20 Diedenweg, Wageningen (5) 17 Hamelakkerlaan, Wageningen.
- SCHANS, R. P. H. P. van der** (1) Ir (2) Bodemkundige bij de Stichting voor Bodemkartering (3) Soil Genesis, Classification and Cartography (4) Bovenweg 7, Bennekom (5) Diedenweg 16A, Bennekom.
- SMET, L. A. H. de** (1) Ir (2) Pedologist, Agriculturist (3) Soil Genesis, Classification and Cartography; Soil Physics; Saline Soils (4) Stichting voor Bodemkartering (5) Kastanjelaan 22, Winschoten.

- SONNEVELD, F. (1) Ir (2) Ingenieur Nederlandsche Heidemaatschappij (3) Soil Genesis, Classification and Cartography; Soil Physics; Saline Soils (4) Sicknessplein 1, Arnhem (5) Hertog van Gelrestraat 8, Rozendaal (Gld.).
- ZEEGERS, L. J. B. (1) Ir (2) Research Assistant (4) Laboratory of Agricultural Chemistry, Herenstraat 12, Wageningen.
- ZONNEVELD, I. S. (1) Ir (2) Scientific Cooperator Soil Survey Institute (3) Soil Genesis, Classification and Cartography; Ecology (4) Stichting voor Bodemkartering, Postbus 37, Wageningen (5) Vlietstraat 7, Sleswijk NBR.

NEW ZEALAND

- ANNETT, H. E. (1) Dr (2) Retired (5) 15 East Street, Claudelands, Hamilton.
- ARMSTRONG, A. G. (1) B.Sc. (2) Soil Chemist (4) Soil Bureau, 54 Molesworth Street, Wellington N. 1.
- BALLINGER, C. E. (1) B.Sc. (2) Agricultural Instructor (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition (4) Dept. Agriculture, Box 8, Whangarei.
- BARRER, P. R. (1) B.Sc. (2) Instructor in Agriculture (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Saline Soils (4) Department of Agriculture, Christchurch N. 1 (5) 55 Oxley Avenue, Christchurch.
- BUTLER, B. E. (1) B.Sc. (2) Officer in Charge, S. E. Region, C.S.I.R.O., Division of Soils (3) Soil Chemistry; Soil Genesis, Classification and Cartography; Soil Physics (4) P.O. Box 109, City, Canberra, A.C.T.
- COX, J. E. (1) B.Sc. (2) Pedologist (3) Soil Genesis, Classification and Cartography (4) Soil Bureau, Wellington (5) Claremont, Taita, Lower Hutt.
- DI MENNA, Margaret Elaine (1) Dr (2) Biologist (3) Soil Biology (4) Soil Bureau Experimental Station, Eastern Hutt Road, Taita, Wellington.
- DOUBLE, K. W. W. (1) M.Sc. (2) Pedologist (4) Soil Bureau, D.S.I.R., 54 Molesworth Street, Wellington N. 1.
- DRUCE, A. P. (1) B.Sc. (2) Biologist (3) Soil Biology (4) Soil Bureau, Eastern Hutt Road, Taita, Wellington.
- FERENS, P. S. (2) Field Research Officer (3) Soil Biology; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics; Soil Technology (4) Ivon Watkins LTD., Box 124, New Plymouth.
- GUNNING, B. A. (1) B.Sc. (2) Instructor in Agriculture (3) Soil Fertility and Plant Nutrition (4) Dept. of Agriculture, Matamata.
- HARRIS, A. J. (1) M.Sc. (2) Agrostologist (3) Soil Fertility and Plant Nutrition (4) Box 112, Gore.
- MACKIE, W. B. C. (1) B.Sc. (3) Agricultural Adviser (3) Soil Fertility and Plant Nutrition (4) Commonwealth Fertilizers and Chemicals, LTD., 65 William Street, Melbourne C.1.
- McKENZIE, D. W. (1) M.Sc. (2) Senior Lecturer Geography (3) Soil Genesis, Classification and Cartography (4) Victoria University College, Box 196, Wellington.
- MASON, G. W. (1) B.Sc. (2) Assist. Chemist (3) Soil Biology; Soil Fertility and Plant Nutrition (4) Ivon Watkins LTD., Box 124, New Plymouth.
- ROSE, E. G. (2) Instructor in Agriculture (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) Dept. of Agriculture, Palmerston North (5) 39 Ada Street, Palmerston North.
- SUTHERLAND, J. E. (2) Assistant Instructor in Agriculture (4) Dept. of Agriculture, Box 90, New Plymouth.
- TWYFORD, I. T. (1) B.Sc. (2) Soil Scientist (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics (4) Dept. of Agriculture, Suva, Fiji.
- WARREN, R. G. (1) B.Sc. (2) Instructor in Agriculture (4) Extension Division, Dept. of Agriculture, Box 4, Matamata.
- WRATISLAV, (1) Ing. (2) Chief Chemist (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography (4) Ivon Watkins LTD., Box 124, New Plymouth.

PORTUGAL

- ANDRADE CABRAL, J. A. de, (1) Engenheiro-agrónomo (3) Genèse du Sol, Classification et Cartographie (4) Estação Agrónomica Nacional, Sacavem (5) Rua B à Rua das Amoreiras 8 — 1° Esq., Lisboa.
- BRITO CANHAO, L. (1) Engenheiro-silvicultor (3) Genèse du Sol, Classification et Cartographie (4) D. G. S. Florestais e Aquícolas, Rua das Amoreiras 136, Lisboa (5) Av. C. Grande Guerra 61, Algés.
- BROCHADO DE MIRANDA, V. H. (1) Engenheiro Agrónomo (3) Chimie du Sol; Fertilité du Sol et Nutrition des Plantes (4) Instituto de Agronomia, Lisboa (5) Rua dos Lusíadas 11, 4° Esq., Lisboa.
- CAMARA FREITAS, F. da (1) Engenheiro Agrónomo (3) Chimie du Sol; Fertilité du Sol et Nutrition des Plantes (4) Estação Agronomica Nacional, Sacavem.
- CARDOSO FRANCO, E. P. (1) Engenheiro Agrónomo (3) Chimie du Sol; Genèse du Sol, Classification et Cartographie; Physique du Sol (4) Laboratorio de Pedologia do Instituto Superior de Agronomia, Lisboa (5) R. Joaquim Bonifácio 3, 4° Esq., Lisboa.
- CARVALHO VASCONCELLOS, F. (1) Engenheiro Agrónomo (3) Genèse du Sol, Classification et Cartographie (4) J. C. Interna, Rua Rodrigo da Fonseca 41, Lisboa (5) Praceta à Rua Candido de Figueiredo 7, 3° Esq., Lisboa.
- CASTRO NERY, M. M. de (1) Engenheiro-agrónomo (3) Soil Biology; Soil Physics (4) Laboratório Químico-Agrícola Rebelo da Silva, T. da Ajuda, Lisboa (5) Rua Ferreira Lapa 40, Lisboa.
- FERNANDES, J. F. (1) Engenheiro-agrónomo (3) Genèse du Sol, Classification et Cartographie (4) Es. Agrónomica Nacional, Sacavem (5) Rua Marechal Carmona 6, Santarém.
- FERRO MAYER, R. (1) Professeur (4) Instituto Superior de Agronomia, Tapada da Ajuda, Lisboa.
- FRANCO OLIVEIRA, A. L. (1) Engenheiro-silvicultor (3) Chimie du Sol; Genèse du Sol, Classification et Cartographie; Physique du Sol (4) Agronomy Department, Iowa State College, Ames, Iowa, U.S.A. (5) Avenida Conde, Valbom 102, 4° Esq., Lisboa.
- FREITAS DANTAS TEIXEIRA, C. A. de (1) Engenheiro Agrónomo (3) Soil Genesis, Classification and Cartography (4) D. G. Serviços Agrícolas, Praça do Comércio, Lisboa (5) Rua da Guiné 18, Lisboa.
- GODINHO, H. (1) Engenheiro Agrónomo (3) Fertilité du Sol et Nutrition des Plantes (4) Nitrato do Chile, Rua Rodrigues Sampaio 50, 2° Esq., Lisboa.
- LINCE DE OLIVEIRA, J. A. (1) Engenheiro Silvicultor (3) Soil Genesis, Classification and Cartography; Soil Physics (4) D. G. Serv. Florestais e Aquícolas, Av. Engenheiro Duarte Pacheco, Lisboa (5) Rua Marquez do Pombal 17, Parede.
- LOPES RODRIGUES, J. M. (1) Engenheiro Agrónomo (3) Soil Chemistry; Soil Physics (4) Estação Agrónomica Nacional, Sacavem.
- LUIS ALVES, F. (1) Engenheiro-agrónomo (3) Physique du Sol (4) Posto de Culturas Regadas de Alvalade, Alvalade (Sado).
- MARQUES GOMES, M. R. (1) Engenheiro Agrónomo (3) Biologie du Sol; Fertilité du Sol et Nutrition des Plantes; Technologie du Sol (4) Estação Agrónomica Nacional, Sacavem.
- MARTINS CURADO, A. A. (1) Engenheiro Agrónomo (3) Chimie du Sol; Fertilité du Sol et Nutrition des Plantes; Physique du Sol (4) Instituto Superior de Agronomia, Lisboa (5) Praça Pasteur 10, 2° Esq., Lisboa.
- MELO DE SAMPAIO, G. G. de (1) Engenheiro Agrónomo (3) Chimie du Sol (4) Instituto Superior de Agronomia, Tapada da Ajuda, Lisboa (5) Rua das Lusíades 106 r/c Esq. Lisboa.
- MENDES FRAZAO, E. (1) Professeur (4) Instituto Superior de Agronomia, Tapada da Ajuda, Lisboa.
- NUNES, M. (1) Engenheiro Agrónomo (3) Soil Technology (4) D. G. Serviços Agrícolas, Praça do Comercio, Lisboa (5) Avenida Joao XXI 23, Dt°, Lisboa.

- RICARDO CABRITA, C. F. (1) Engenheiro Silvicultor (3) Genèse du Sol; Classification et Cartographie (4) D. G. Serviços Florestais, Av. de Duarte Pacheco, Lisboa (5) Av. de Rovisco Pais 44, 3° Esq., Lisboa.
- RODRIGUES BALBINO, L. (1) Engenheiro Agrónomo (2) Investigation (3) Physique du Sol; Sols Salins (4) Instituto Superior Agronomia, Lisboa (5) Bairro da Serafina 124, Lisboa.
- RODRIGUES PEDRO, E. (1) Engenheiro Silvicultor (3) Fertilité du Sol et Nutrition des Plantes (4) D. G. G. Florestais e Aquícolas, Av. Eng. Duarte Fecheco, Lisboa (5) Av. do Aeroporto, Lote 101 EMC-Lisboa.
- ROSARIO NUNES, J. F. L. do (1) Engenheiro Agrónomo (3) Genèse du Sol, Classification et Cartographie (4) Direcção-Geral dos Serviços Agrícolas, Praça do Comércio, Lisboa (5) Rua Bireita, Monchique, Algarve.
- SALEMA VEIGUINHA, A. (1) Engenheiro Agrónomo (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Saline Soils (4) Estação Agronómica Nacional, Sacavem.
- SANTOS GALLO, M. A. dos (1) Engenheiro Silvicultor (4) Serviços Florestais, Leiria.
- SARDINHA DI OLIVEIRA, A. J. (1) Engenheiro Agrónomo (3) Genèse du Sol; Classification et Cartographie (4) Escola de Regentes Agrícolas de Evora, Herdade da Mitra, Alentejo (5) Alentejo-Monforte.
- SILVA VASCO DA GAMA, M. da (1) Engenheiro Agrónomo (3) Soil Genesis, Classification and Cartography (4) Junta de Colonização Interna, Rua Rodrigo da Fonseca 41, Lisboa (5) Avenida 5 de Outubro 15, Lisboa.
- SILVA WAHNON (1) Engenheiro Agrónomo (3) Chimie du Sol; Fertilité du Sol et Nutrition des Plantes; Physique du Sol; Sols-salins (4) Laboratório Químico Agrícola "Luis António Ribelo da Silva", Tapada da Ajuda, Lisboa (5) Calçada Marques de Abrantes 10, Lisboa.
- SOARES CHAVES, J. A. (1) Engenheiro Agrónomo (3) Soil Genesis, Classification and Cartography (4) D. G. Serviços Agrícolas, Praça do Comércio, Lisboa (5) Rua Brites de Almeida 33, Faro.
- TEIXEIRA BESSA, M. R. (1) Engenheiro Agrónomo (3) Soil Genesis, Classification and Cartography (4) D. G. Serviços Agrícolas, Praça do Comércio, Lisboa (5) Cadaval, Mura.
- TEIXEIRA CONSTANTINO, A. (1) Engenheiro Agrónomo (3) Genèse du Sol, Classification et Cartographie (4) J. Colonização Interna, Rua Rodrigo da Fonseca 41, Lisboa (5) Avenida Rovisco Pais 16, Lisboa.
- VASCO DE GARCIA, A. (1) Professeur de microbiologia agricola (4) Instituto Superior de Agronomia, Tapada da Ajuda, Lisboa (5) Bairro do Restêlo, Rua 12 No2, Lisboa.
- VASCONCELOS DE AZEVEDO, O. (1) Engenheiro Silvicultor (2) Soil Scientist (3) Soil Genesis, Classification and Cartography (4) Estação Agronómica Nacional, Sacavém.
- VIEIRA DE BRITO, F. M. (1) Engenheiro Agrónomo (3) Genèse du Sol, Classification et Cartographie (5) Rua Dr António José d'Almeida 20 r/c Barreiro.

ROUMANIA

- IONESCU-SISESTI, Prof. Ch., membre titulaire de l'Académie de la R.P.R.
- AMILCAR VASILIU, Prof., membre corresp. de l'Académie de la R.P.R.
- NICOLAE CERNESCU, Prof., membre corresp. de l'Académie de la R.P.R.
- RRIGORE OBREJAN, Prof., membre corresp. de l'Académie de la R.P.R.
- CONSTANTIN CHIRITA, Dr, membre corresp. de l'Académie de la R.P.R.
- POPOVAT, Dr M., chef secteur du collectif de Pédologie de l'Académie de la R.P.R.
- BUCUR, Prof. N., collaborateur de l'Académie de la R.P.R.
- OPREA, Prof. Chr., chef secteur.
- NENES, Prof. M., chef secteur.
- CSAPO, Prof. J., chef secteur.
- GUSTIUC, Prof. L. Institut de Hidroamélioration — Galati.

LUNGU, Prof. I., Institut de recherches agronomiques.

STAIUCU, Prof. I., chef secteur.

FLOREA, Conf. N., collaborateur de l'Académie de la R.P.R.

MOTOC, Ing. M., Directeur section à l'Institut de recherches agronomiques.

INSTITUT DE RECHERCHES AGRONOMIQUES

SPAIN

FERNANDEZ, E., Nunez de la Pena 8, La Laguna — Tenerife, Canary Islands.

GALLEGO ANDREU, Dr Rafael; Instituto de Edafologia y Fisiologia Vegetal, Serrano 113, Madrid.

KLINGE, Dr H., Instituto de Edafologia, Serrano 113, Madrid.

RECALDE MARTINEZ, Dr Luis; Instituto de Edafologia y Fisiologia Vegetal, Serrano 113, Madrid.

RIBA ARDERIU, Dr Orid; Instituto de Edafologia y Fisiologia Vegetal, Serrano 113, Madrid.

TEJERINA DOMINGUEZ, Dra Genoveva; Instituto de Edafologia y Fisiologia Vegetal, Serrano 13, Madrid.

SWITZERLAND

BOVAY, Ernest (1) Dr (2) Chimiste (3) Fertilité du Sol et Nutrition des Plantes (4) Stations fédérales d'essais agricoles, Lausanne (5) Av. Victor Ruffy 32, Lausanne.

RICHARD, Felix (1) Dr (2) Bodenkundler (3) Soil Physics; Soil Technology (4) Eidg. forstl. Versuchsanstalt, Tannenstr. 11, Zürich (5) Stallikerstr. 43, Uitikon a.A., Zürich.

TURKEY

CENGIZ, Yusuf (1) Ing. (2) Director of Soil and Fertilizer Research Institute (3) Soil Fertility and Plant Nutrition (4) Ankara (5) Incesu Dede efendi rokak 282/1, Ankara.

GARDNER, Robert (2) Soils Adviser (3) Soil Biology; Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Physics; Saline Soils; Soil Technology (4) I.C.A. c/o American Embassy, Ankara. (5) 4661 Beverly Court, Riverside, California.

UNION OF SOUTH AFRICA

BOTHA, A. D. P. (1) B.Sc. (2) Ass. Professional Officer Department of Agriculture (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Physics; Saline Soils (4) Sentrale Tabaknavorsingstasie, P.O. Box 213, Rustenburg, Transvaal (5) P.O. Box 392, Rustenburg, Transvaal.

DU TOIT BURGER, R. (1) Dr (2) Professional Officer Department of Agriculture (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Saline Soils (4) Winter Rainfall Region, Stellenbosch (5) 2A Alexander Court, Stellenbosch.

U.S.A.

SHAW, E., 3602 E. Flower, Tucson, Arizona.

HEMWALL, John B., Dow Chemical Company, P.O. Box 245, Seal Beach, California.

FISHER, Jack R., U.S. Forest Service, Californian Forest and Range Expt. Station, P.O. Box Berkeley 1, California.

LIND, J., Department of the Army, Camp San Luis Obispo, Cal.

ZINKE, Paul J., California Forest and Range Expt. Station, Box 245, Berkeley, Cal.

GULL, P. W., Manager of Agronomy, Spencer Chemical Company, 610 Dwright Building, Kansas City 5, Missouri.

DAVIS, Prof. Dr J. F., Soil Science Department, Michigan State University, East Lansing, Michigan.

BENTON, Th. H., Box 708, Seguin, Texas.

HAYCOCK, E. B., 2013 College Apartments, Logan, Utah.

HOLOBOFF, N. A., 53-A N. Fairway, Pullman, Washington.

KRASHEVSKY, S. H., Dept. of Agronomy, State College of Washington, Pullman, Washington.

STARR, W. A., 454 Holland Library, Pullman, Washington.

YUGOSLAVIA

ANIC JELKA, (1) Ing. (2) Lecturer (3) Soil Fertility and Plant Nutrition (4) University of Agriculture and Forestry, Zagreb (5) Solovleja ul.10, Zagreb.

GRACANIN, Zlatko (1) Ing. (2) Assistant (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics (4) Institute for experimental Forestry of the Yugoslav Academy of Science and Arts, Opaticka 18, Zagreb (5) Pavla Radica 33/I, Zagreb.

SKORIC, Arsenije (1) Ing. (2) Assistant of the University (3) Soil Chemistry; Soil Fertility and Plant Nutrition; Soil Genesis, Classification and Cartography; Soil Physics (4) Soil Science Institute Agric. Forestry Faculty, Zagreb, Maksimir b.b (5) Zelengorska p.7, Zagreb.

VITASOVIC, Ing. Zdenko, Institute for Crop Production, Kaciceva 2, Zagreb.

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

Only to be ordered with
the sole agent:

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

Seulement en vente chez:

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

Alleinverkauf:

MARTINUS NIJHOFF - DEN HAAG - NEDERLAND

PROCEEDING. 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 Proceeding. 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

P.T.O.

Second, Third and Fourth Commission.

Meeting in KÖNIGSBERG, July 1936. 1937. Erster Bericht. 183 pp. ill. roy. 8vo.
German text, with a summary in English and French. (8 guilders) 5.05 guilders
Zweiter Bericht über die Arbeiten und über die Tagung der Arbeitsgemein-
schaft zur Prüfung der Laboratoriumsmethoden für die Bestimmung des Kali-
und Phosphorsäurebedürfnisses der Böden, Stockholm, 5 Juli 1939. VII and
56 pp. roy. 8vo. 2.10 guilders

Third Commission.

Meeting in NEW BRUNSWICK, New Jersey, U.S.A., August 30-September 1,
1939, Vol. A. and B., together 248 pp. with ill. roy. 8vo. 6.30 guilders

Fourth Commission (for the study of Soil Fertility).

Meeting in KÖNIGSBERG, July 1929. 1930. 156 pp. with many fig. roy. 8vo.
German text, with a summary in English and French. (6 guilders) 3.80 guilders
Transactions of the fourth commission, Stockholm, 3-8 July 1939. 130 pp.
roy. 8vo. 3.15 guilders

Fifth Commission (for Soil Genesis, Morphology and Cartography).

Meeting in WIEN, August-September 1937. 56 pp. 8vo. German text.
2.10 guilders

Sixth Commission (for the Application of Soil Science to Land Amelioration).

Meeting in GRONINGEN, July 1932. Vol. A. 1932 and Vol. B. 1933. Together
758 pp. with numerous ill. roy. 8vo. (15 guilders) 12.60 guilders
Meeting in ZÜRICH, August 1937. Vol. A. 1937 and Vol. B. 1938. Together 644 pp.
with numerous ill. and tables. roy. 8vo. 11.55 guilders

SOVIET SECTION.

First Commission. Moscow. 1933 Vol. A, 1. The Problem of Soil Structure.
132 pp. 8vo. Text in English. (4 guilders) 2.95 guilders

First Commission. Moscow. 1934. Vol. A, 2. Problèmes de la physique du sol.
182 pp. with numerous ill. 8vo. Text in French. (7 guilders) 4.20 guilders

Second Commission. Moscow. 1934. Vol. A, 1. Bodenchemie in der UdSSR.
124 pp. 8vo. Text in German. (4 guilders) 2.95 guilders

Third Commission. Moscow. 1933. Vol. A. Soil Microbiology in the USSR.
116 pp. 8vo. (6 guilders) 3.80 guilders

Fourth Commission. Moscow. 1933. Vol. II. Bodenfruchtbarkeit und Anwendung
der Dünger in der UdSSR. 254 pp. 8vo. (7 guilders) 5.25 guilders

Fifth Commission. Moscow. 1935. Vol. A, 1. Classification, Geography and
Cartography of Soils in USSR. 192 pp. 8vo. (7 guilders) 4.40 guilders

Sixth Commission. Moscow. 1932. Vol. A. Russian Part of the Meeting in
Groningen. 112 pp. 8vo. (4 guilders) 2.95 guilders

Papers for the Third International Congress of Soil Science. Oxford. Moscow.
1935. Vol. A. Pedology in USSR. 224 pp. 8vo. (7 guilders) 5.05 guilders

ACTES de la IV^{me} Conférence Internationale de Pédologie. Rome, Mai 1924. 1926.

3 volumes et supplément. 1816 pp. avec nombreuses illustr. roy. 8vo. florins 23.10

CONTENTS: Organisation. Reports. General Conferences. — *Commissions*
I and II. Soil Mechanics, Physics and Chemistry. — *Commissions* III-VI. Soil
Bacteriology and Biochemistry. Soil Nomenclature, Classification and Car-
tography. Plant Physiology in connection with Soil Science. Appendix — *Sup-*
plément. Indexes. Text in French.

