

BULLETIN

OF THE INTERNATIONAL SOCIETY
OF SOIL SCIENCE

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BULLETIN

DE L'ASSOCIATION INTERNATIONALE
DE LA SCIENCE DU SOL

•

MITTEILUNGEN

DER INTERNATIONALEN BODENKUNDLICHEN
GESELLSCHAFT

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

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- VI. SOIL TECHNOLOGY. President: R. M. Hagan, University of California, Davis, Cal., U.S.A.
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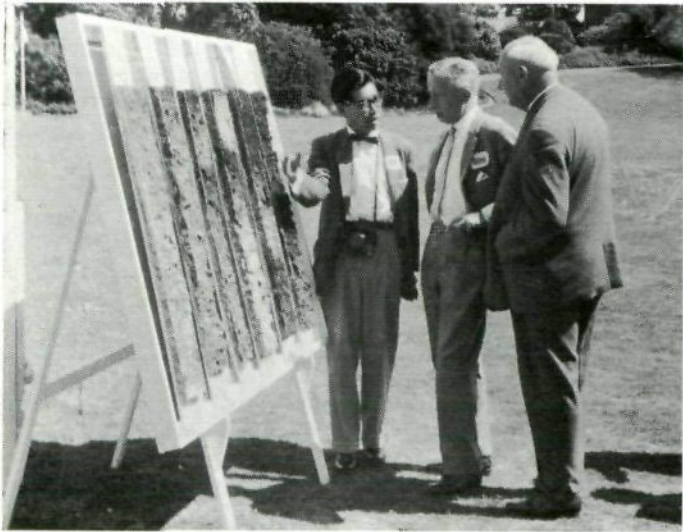
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U.S.A.: Dr. M. B. Russell, University of Illinois, Urbana, Illinois.
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Yugoslavia: Prof. Dr S. Nikolić, Faculté d'agronomie de l'Université, Belgrade.



The perfect show of New Zealand soils as related to landscape and land use on Massey College Campus.



Dr. Kanno (Japan) explains an Andosol monolith at Massey College.



Small countries sometimes have a dominating influence! Tour leader Dr. Harry Gibbs (N.Z.) and Atomic Energy in Agriculture Specialist Professor Schuffelen (Neth.) are the coffee break professionals.



Keen interest is shown at one of the many well-chosen sites for profile studies during the Northern Tour.

TRANSACTIONS
VIIth INTERNATIONAL CONGRESS OF SOIL SCIENCE
Volume II, Paper III. 5.

ERRATA

- Page 494, line 8: Wijler for Wyler
Page 494, line 17: Wijler for Wyler
Page 494, line 26: the for het
Page 498, line 22: Manganous for manganeous
Page 499, line 39: There for Here
Page 500, line 11: oxidizing for oxidig
Page 500, line 12: manganese for mongonese
Page 500, line 12: At for at.

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No. 22

1963

NEWS OF THE NATIONAL SOCIETIES

NOUVELLES DES SOCIÉTÉS NATIONALES

NEUES DER GESELLSCHAFTEN IN EINZELNEN LÄNDERN

Asociacion Argentina de la Ciencia del Suelo

The Argentine Society of Soil Science displays a most heartening activity which in no mean degree will be the cause of the noteworthy increase in membership, viz. 98 in 1960 to 152 in 1963. The projected program of activities in 1963 reads as follows:

- Commission I : meeting on "Phenomena related to the electric double layer of the exchange system of soils", April 1963.
- Commission II : symposium on "Chemistry of Saline Soils", October 1963.
- Commission III : meeting on "Soil Biology", August 1963.
- Commission IV : meeting on "Fertilizer Experiments in the Pampean Region", July 1963
- Commission V : Training seminar in Soil Genesis and Soil Surveying, May—July 1963
- Commission VI : "Round Table Conference" on the Technology of Soils with Aridity Problems, September 1963.
- Commission VII : Seminar on Soil Mineralogy, August 1963.

The Proceedings of the 2nd Argentine Meeting and the 1st Latin-American Congress of Soil Science, held at Mendoza, Argentine, in April 1962, are shortly available for distribution among members of the Congress and of the Argentine Association.

Australian Society of Soil Science

The Federal Council of the A.S.S.S. endorsed the President, Mr. B. E. Butler, as the representative on the I.S.S.S. Council.

Bulgarische Bodenkundliche Gesellschaft

Vom 28 bis 30 Mai 1962 fand die Jubiläumstagung anlässlich der fünfzigjährigen erfolgreichen wissenschaftlichen Tätigkeit der Bulgarischen bodenkundlichen Wissenschaft statt. Auf der Eröffnungssitzung wurde ein Hauptvortrag gehalten, der ein zusammenfassendes Bild von den Ergebnissen und Fortschritten der bulgarischen bodenkundlichen Wissenschaft während der fünfzigjährigen Periode gab. Es wurden Berichte über Stand und zukünftige Aufgaben auf den verschiedenen Gebieten der Bodenkunde in Bulgarien vorgetragen. Das Programm der Tagung ist dem Buch "50 Years of Bulgarian Pedology", Sofia 1963, zu entnehmen.

Die Mitgliederzahl der Bulgarischen bodenkundlichen Gesellschaft ist inzwischen auf 90 gestiegen.

Sociedad Mexicana de la Ciencia del Suelo

The Mexican Society of Soil Science was formally established on the 24th of August 1962, when its bylaws were discussed and approved, and the first Executive Committee was elected. It was integrated as follows:

President	:	Dr. Nicolás Sánchez Durón
Vice-President	:	Prof. Nicolás Aguilera Herrera
Secretary	:	Ing. Roberto Nunez Escobar
Treasurer	:	Ing. Ricardo García Lagos
Advisers	:	Ing. Donaciano Ojeda Ortega Ing. Antonio Turrent

The Society has about 80 registered mexican members from different official and private institutions related to or interested in problems of Soil Science.

New Zealand Society of Soil Science

The Council elected at the Annual General Meeting at Palmerston North on November 20th, 1962, is:

President	:	Mr. H. S. Gibbs
Vice-President	:	Prof. T. W. Walker
Past President	:	Mr. N. H. Taylor
Secretary-Treasurer	:	Mr. L. C. Blakemore
Council Members	:	Dr. E. B. Davies Dr. R. B. Miller Mr. G. M. Will
Hon. Auditor	:	Mr. H. G. Lawrence
Representative I.S.S.S. Council:		Mr. N. H. Taylor, 605 High Street, Lower Hutt.

Allunion Society of Soviet Soil Scientists

The Allunion Society of Soil Scientists is a scientific public institution uniting private persons and organizations of the USSR working in the field of pedology and allied sciences. The Society has now 16 branches in various republics, 36 departments in different towns and 20 sub-departments in Moscow itself. The total personal membership is 3300 and 26 organizations are collective members.

The First delegate Congress of Soil Scientists was organized in Moscow, 1958. The Second delegate Congress was held at Kharkov, September 10—16, 1962. The meeting was attended by over 320 delegates. At the meeting the first results of soil large-scaled investigations in various republics and regions of the USSR were discussed. But along with scientific problems a number of questions on the organization of the Society was also read and new authorities of the Society elected, as follows:

President	:	Academician I. P. Gerasimov
Vice-Presidents	:	Prof. S. V. Zonn, Geography Institute of the Academy of Sciences, Moscow. Prof. S. N. Rhyzov, Dokuchaev Soil Institute, Moscow. Prof. A. V. Sokolov, NIUIV. Prof. K. P. Gorshenin, Omsk, Siberia. Prof. N. K. Krupski, Ukraine. Prof. V. A. Kovda, Unesco, Paris.
Secretary	:	S. A. Shuvalov.

Seven permanent commissions of the Society are now active:

I. Soil Physics	—	chairman Prof. A. A. Rode
II. Soil Chemistry	—	chairman Prof. I. N. Antipov-Karataev
III. Soil Biology	—	chairman Prof. E. N. Mishustin
IV. Soil Fertility	—	chairman Prof. A. V. Skolov
V. Soil Genesis and Classification	—	chairman Prof. S. V. Zonn
VI. Soil Amelioration	—	chairman Dr. P. A. Letunov
VII. Soil Mineralogy	—	chairman Prof. N. I. Gorbunov.

Academician I. P. Gerasimov, President of the Allunion Soil Science Society, will represent the National Committee of the U.S.S.R. on the I.S.S.S. Council. The address is: Geography Institute of the Academy of Sciences, Staromonetny per 29, Moscow.

NEWS OF THE COMMISSIONS
NOUVELLES DES COMMISSIONS
NEUES AUS DEN KOMMISSIONEN

Joint Meeting of Commissions IV and V, New Zealand, 1962 *

This first meeting of Commissions IV and V was held in New Zealand last November. It was aimed to provide an opportunity for soil scientists of these (and other) Commissions to jointly review the recent advances in each field in the light of those in the other. It was hoped that thereby greater unity would be stimulated in the work of the two Commissions so that advances in each may be applied more effectively.

The meeting attracted 127 Members from 32 countries and 164 from New Zealand. There were representatives from all continents — Europe, Asia, Africa, North and South America and Australia, and from many island territories. Prof. Dr F. Scheffer, Past President, represented Commission IV and Prof. Dr G. Aubert, President, represented Commission V. The President of the Conference was Mr Norman H. Taylor, President of the New Zealand Society of Soil Science and a Past President of Commission V.

The conference included tours of both Islands of New Zealand, both before and after the Meetings in Palmerston North. These were well organised and enabled members to study examples of most of the main soil groups of New Zealand and see how they were used. The tour groups were small (20 to 25) and were together for 9 or 10 days so that members got to know one another well. Intensive discussions took place on all aspects of soils and soil use and these proved very profitable. The tours included visits to research stations, farms and forests and passed through some of New Zealand's finest scenic areas.

After the Pre-Conference Tours Members assembled at Massey College, Palmerston North, for the formal meetings. The meetings were opened by the Prime Minister in the presence of Ministers of the Crown, the Mayor of the city and other civic representatives, diplomats, leaders in science, agriculture, industry, commerce and education, and many citizens. During the Conference there were receptions to Members given by the New Zealand Government, the City of Palmerston North and the New Zealand Society of Soil Science in collaboration with a number of contributing firms and organisations.

Most Members lived on the Massey College campus and this made possible the many informal meetings and discussions that took place by day and night and which are often the most rewarding part of a Conference.

The formal meetings were designed to allow a maximum of discussion. The papers were all printed beforehand and "taken as read". Each Session of 1½ hours was introduced by the author of the main paper with short contributions from other authors and then there was an hour for general discussion led carefully into productive channels by the various chairmen.

The meetings proved most beneficial. Members of Commissions IV and V met together in a group that was not too large and discussed fundamental matters like weathering, the active fraction of soils, humus formation, the influence of soil structure on plant growth, and so on., In these discussions everyone was impressed with the strong connection between the problems of pedogenesis and soil classification and those of soil fertility and the availability of plant nutrients. Also of great benefit were the descriptions of soil classification from all over the world and of the ways soil information is used in the various countries. Those present could not fail to have been stimulated by the sessions on soil fertility and land use which so clearly drew attention to the necessity of a more integrated scientific approach in this field of study. Finally in Section D this theme was carried on in a discussion on town and country planning and the Conference concluded with papers on soils and human health which will undoubtedly lead to further work.

* This manuscript has been received during the printing of the Bulletin and could therefore not be translated in time into the two other official languages: french and german.

Transactions

The Transactions, which are due from the Printer in May, will be a bound volume of about 900 pages. It will include the 112 papers accepted for the Conference, the discussions, and an account of the opening and closing sessions.

The main papers of 5,000 to 8,000 words offer authoritative up-to-date reviews of fifteen of the most active "growing points" of soil science. Together with the 52 shorter contributions, and the discussions, they make a particularly valuable source of reference.

The 36 Section B papers from 24 countries provide a comprehensive review of how soils are surveyed and classified in various parts of the world and, perhaps of even more value, how they are put to use. The papers were prepared by nominees of *National Societies of Soil Science* and make up a unique source of authoritative information.

The final session on "Soil Science and Society" contains 9 papers divided into 2 groups, "soil science and town and country planning" and "soil science and human health".

The whole volume is an important new contribution to soil literature that will be widely used.

The number printed is limited, and reprinting is not envisaged so orders by soil scientists or libraries should be placed immediately with the

Secretary General,
Soil Bureau,
Private Bag,
Lower Hutt, N.Z.

The cost is £N.Z. 4 or \$U.S. 11.00.

Public Lectures

During the Conference two outstanding Public Lectures were delivered. The first, "Man and the Soil: The Challenge of the Past" by Norman H. Taylor, traced the growth of soil science from the remote past up to the present day and drew from its history a philosophy which provides a sound basis for future development.

The second lecture was "Man and the Soil: The Challenge of the Future", by Charles E. Kellogg, in which a penetrating look was taken at the ways soil science might contribute to the problem of feeding the world's expanding population. Special emphasis was given to the needs of the newly emerging nations of the tropics.

These lectures are published in full in volume 5 of the Proceedings of the New Zealand Society of Soil Science which is available from the Secretary, N.Z.S.S.S., Soil Bureau, Private Bag, Lower Hutt, at a price of 5/- (75 c.).

Exhibition

One of the Conference centres was a magnificent 7,500 sq. ft (750 sq. m) Exhibition of New Zealand and its soils, soil uses and soil problems. Here, with the use of monoliths, photographs, graphs and tables of data, it was possible to study the main soil groups of the country and the relationships of one to another. Also shown were the relationship of the soils to various physical, chemical and biological factors of fertility and land use.

Included in the Exhibition was a display of soil maps of the great regions of the world and a collection of monoliths, with full analytical data, of many of the important world soil groups. These created a great deal of interest and discussion.

In the closing Session of the Conference Professor Scheffer said that New Zealand had proved an ideal place for studying problems of soil fertility and plant nutrition. The team work shown by New Zealand soil scientists had pointed the way to future collaboration between Commissions IV and V that could not fail to be of great value.

Professor Aubert said that although the present discussions were ended, they were in fact only the beginnings of more and better work. The Conference had achieved, in its technical discussions, an excellent foundation for the future.

Soil Map of the World

During the Conference a special meeting was devoted to the FAO/UNESCO Soil Map of the World Project, FAO being officially represented by Dr. Dudal and UNESCO by the Secretary-General of the I.S.S.S., Professor van Baren.

Accounts of the stages of development of the Project in the various continents were presented by Professor Aubert, France (Africa); Academician Gerasimov, U.S.S.R. (Eastern Europe and Asia); Dr. Kellogg, U.S.A. (North America and Mexico); Professor Tavernier, Belgium (Western Europe); Mr. N. H. Taylor, New Zealand (Australia and Oceania, on behalf of Dr. Stephens of Australia) and Mr. Ch. Wright, Chile (South America). Maps in an initial or, the case being, all but final approximation were shown.

Soil Physics Terminology.

A terminology committee was established at the 7th congress at Madison 1960. The request to the committee was:

"The committee is requested to assume responsibility to develop a limited number of generally acceptable terms, as well as their definitions, for the most commonly and widely used concepts that pertain to physical processes in the soil. In consultation with the officers of Commission I, the general feeling seems to be that the total number of terms should not be much larger than 10 so that sufficient time and attention can be given to a small number of important terms and that a reasonably successful effort can be made to come to internationally acceptable definitions. Primary emphasis is to be placed upon terms that are not only used in soil science and in soil physics but also in other sciences such as plant physiology and micrometeorology."

A preliminary report was printed in I.S.S.S. Bulletin No 20, May 1962 and comments were received from

C. H. M. van Bavel (Tempe),
J. L. Farrar (Toronto),
E. C. Childs (Cambridge),
T. J. Marshall (Adelaide),
A. J. Peck & A. A. Poulouvasilis (Cambridge).
A. W. Taylor & D. R. Bouldin (Wilson Dam) and
S. A. Taylor & R. O. Slatyer (Logan & Canberra).

The comments have been considered and the following final report is submitted.

A. Terms relating to the state of water in soil.

Water in soil is subject to several force fields originating from the presence of the soil solid phase and dissolved salts and from the action of external gas pressure and the gravitational field. These effects may be quantitatively expressed by assigning potentials to the soil water.

The sum of these potentials is designated the total potential of soil water and may be identified with the partial specific Gibb's free energy of the soil water relative to free pure water at the same temperature.

1. Total potential of soil water:

The amount of work that must be done per unit quantity of purge water in order to transport reversibly and isothermally an infinitesimal quantity of water from a pool of pure water at a specified elevation at atmospheric pressure to the soil water (at the point under consideration).

It may be convenient to shorten the term to total potential or soil water potential and to divide it into parts, the division to be such that the sum of the parts equals the total potential.

The following division is suggested:

1.1 Osmotic potential:

The amount of work that must be done per unit quantity of pure water in order to transport reversibly and isothermally an infinitesimal quantity of water from a pool of pure water at a specified elevation at atmospheric

pressure, to a pool containing a solution identical in composition with the soil water (at the point under consideration) but in all other respects identical to the reference pool.

1.2 *Gravitational potential:*

The amount of work that must be done per unit quantity of pure water in order to transport reversibly and isothermally an infinitesimal quantity of water from a pool containing a solution identical in composition to the soil water at a specified elevation at atmospheric pressure, to a similar pool at the elevation of the point under consideration.

1.3 *Matric or capillary potential:*

The amount of work that must be done per unit quantity of pure water in order to transport reversibly and isothermally an infinitesimal quantity of water from a pool containing a solution identical in composition to the soil water at the elevation and the external gas pressure of the point under consideration to the soil water.

1.4 *Potential due to external gas pressure:*

This potential component is to be considered only when external gas pressure differs from atmospheric pressure as e.g. in a pressure membrane apparatus. A specific term and definition is not given.

2. **Matric or soil water suction:**

The negative gauge pressure relative to the external gas pressure on the soil water, to which a solution identical in composition with the soil water must be subjected in order to be in equilibrium through a porous permeable wall with the soil water.

It should be noted that this quantity may be identified with the matric or capillary potential defined above.

3. **Osmotic suction:**

The negative gauge pressure to which a pool of pure water must be subjected in order to be in equilibrium through a semipermeable (i.e. permeable to water molecules only) membrane with a pool containing a solution identical in composition with the soil water.

It should be noted that this quantity may be identified with the osmotic potential defined above.

4. **Total suction:**

The negative gauge pressure, relative to the external gas pressure on the soil water to which a pool of pure water must be subjected in order to be in equilibrium through a semi-permeable membrane with the soil water. Total suction is thus equal to the sum of matric or soil water suction and osmotic suction. Total suction may also be derived from the measurement of the partial pressure of the water vapour in equilibrium with the soil water.

It should be noted that this quantity may be identified with the total potential defined above when gravitational and external gas pressure potentials can be neglected.

5. **Hydraulic head:**

The elevation with respect to a specified reference level at which water stands in a piezometer connected to the point in question in the soil. Its definition can be extended to soil above the water table if the piezometer is replaced by a tensiometer.

It should be noted that the hydraulic head in systems under atmospheric pressure may be identified with a potential expressed in terms of the height of a water column. More specifically it can be identified with the sum of gravitational and matric or capillary potentials, and may be termed the hydraulic potential.

6. **Water content:**

The amount of water lost from the soil upon drying at 105° C, expressed either as the weight of water per unit weight of dry soil or as the volume of water per unit volume of soil in bulk.

The relationships between water content and matric or soil water suction can be referred to as the soil moisture characteristic curve. Depending upon whether the curve is determined with decreasing or increasing water content one may designate it as a desorption and adsorption curve, respectively.

7. Differential water capacity:

The absolute value of the rate of change of the water content with matric or soil water suction.

The water capacity at a given water content will depend on the particular desorption or adsorption curve employed. Distinction should be made between volumetric and specific water capacity.

B. Terms relating to the movement of water in soil.

Experimentally it has been established that generally the flow of a fluid in a porous medium can be described by Darcy's law which states that the flux of fluid is proportional to the driving force. In viscous flow of water in soils, the driving force equals the negative gradient of the hydraulic potential.

8. Hydraulic conductivity:

The proportionality factor in Darcy's law as applied to the viscous flow of water in soil, i.e. the flux of water per unit gradient of hydraulic potential.

If conditions require that the viscosity of the fluid be divorced from the conductivity of the medium, it is convenient to define the permeability (intrinsic permeability has been used in some publications) of the soil as the conductivity, expressed in $\text{gm}^{-1} \text{cm}^3 \text{sec}$ multiplied by the viscosity in poise. For the purpose of solving the partial differential equation of the non-steady state flow in unsaturated soil it is often convenient to introduce a variable termed the soil water diffusivity defined as follows:

9. Soil water diffusivity:

The hydraulic conductivity divided by the differential water capacity (care being taken to be consistent with units), or the flux of water per unit gradient of moisture content in the absence of other force fields.

C. Symbol, dimension and unit for the above given terms when one gram mass is used as unit quantity of water.

Term	Symbol*	Dimension	Unit
1 Total potential	Ψ	$L^2 T^{-2}$	erg gm^{-1} , joule kg^{-1}
1.1 Osmotic potential	O	$L^2 T^{-2}$	erg gm^{-1} , joule kg^{-1}
1.2 Gravitational potential	Z	$L^2 T^{-2}$	erg gm^{-1} , joule kg^{-1}
1.3 Matric potential	M	$L^2 T^{-2}$	erg gm^{-1} , joule kg^{-1}
2. Matric suction		$M L^{-1} T^{-2}$	dyne cm^{-2} , bar, cm water, cm Hg
3 Osmotic suction		$M L^{-1} T^{-2}$	dyne cm^{-2} , bar, cm water, cm Hg
4 Total suction		$M L^{-1} T^{-2}$	dyne cm^{-2} , bar, cm water, cm Hg
5 Hydraulic head	H	L	cm, m
5.1 Hydraulic potential	Φ	$L^2 T^{-2}$	erg gm^{-1} , joule kg^{-1}
6 Water content	w		$\text{cm}^3 \text{cm}^{-3}$, gm gm^{-1}
7 Differential water capacity	C	$M^{-1} L T^2$	$\text{cm}^2 \text{dyne}^{-1}$, bar^{-1}
8 Hydraulic conductivity	K	**)	**)
8.1 Permeability	k	L^2	cm^2 , Darcy
9 Soil water diffusivity	D	$L^2 T^{-1}$	$\text{cm}^2 \text{sec}^{-1}$

*) Symbols as C, K and D may have w or h as a subscript if they in the same paper are used for water as well as for heat.

***) The dimension would depend on the units used to describe the driving force as shown in the table below:

Driving force	Hydraulic conductivity		
	Dimension	Dimension	Unit
Hydraulic potential gradient	$L T^{-2}$	T	sec
Hydraulic head gradient	$L L^{-1}$	$L T^{-1}$	cm sec ⁻¹
Pressure gradient	$M L^{-2} T^{-2}$	$M^{-1} L^3 T$	gm ⁻¹ cm ³ sec

D. Other terms.

The terms considered above are capable of precise physical definition. There have grown up over the years several other terms concerning the moisture condition of soils e.g. "field capacity".

Although useful in a qualitative way, they have no precise physical definition, depending on various variable physical factors. The committee recommends that, if these terms are used, a full description of the boundary conditions and method should be given.

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Dr. J. W. Holmes,
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Adelaide,
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U.K.

Dr. H. C. Aslyng, (Chairman)
Hydrotechnical Laboratory,
Røllighedsvej 26,
Copenhagen, Denmark.

FORTHCOMING CONFERENCES

West-European Working Group on Soil Structure.

At the last meeting in Wageningen, Netherlands, on 13—14 February 1962, it was decided that the next symposium of the working group should be held in Versailles, France, during the springtime 1963.

Later on it was however found preferable to postpone the meeting until September 1963, this giving the Secretary-General of the Group, Prof. Dr M. De Boodt of the State University, Ghent, Belgium, the opportunity to complete the "West-European Method Book on Soil Structure" with less time-pressure.

The suggested program is as follows:

Monday, September 9:

9 o'clock: opening of the meeting at the "Centre National de Recherches Agronomiques" in Versailles;
discussion on the "West-European Method Book on Soil Structure".

Tuesday, September 10: idem

Wednesday, September 11: idem

Thursday, September 12:

comparison of and discussion on the results of the soil samples taken in Braunschweig in April 1959 by different colleagues, members of the working group.

Friday, September 13:

visit to the "Centre National de Recherches Agronomiques" in Versailles.

Saturday, September 14:

time reserved for the discussion of problems of personal interest.

Those who intend to be present at the September meeting of the working group in Versailles, are kindly requested to inform the Secretary-General, as soon as possible of their intention.

PROF. DR. M. DE BOODT
Rijkslandbouwhogeschool
Coupure, 235 Ghent (Belgium)

Committee on Saline Soils
Symposium on Sodic-Soils to be held from
August 9—16, 1964, in Budapest, Hungary.

It has been decided to benefit from the presence in Europe of a number of overseas members to organize a symposium on saline soils, preceding the 8th International Congress of Soil Science which will be held in Bucarest, Rumania, 1964. The following considerations are at the base of this decision.

Wide spreading of sodic-salinization all over the world in countries of different climate and in countries economically differently constructed and developed, motivates that we examine the formation of sodio-alkalization and promote their amelioration. This is notably the case as sodic-alkalization disturbs agricultural production or even makes it impossible on otherwise fertile areas and on areas being important from the point of view of farming. Soda formation and accumulation often leads to destruction of agricultural production and to great economic damages especially on irrigated land.

Sodic soils occur on comparatively large areas in Hungary. Not only their formation has been studied for one and a half century but also their improvement, and a large area has actually been improved. Characteristics of several types of sodic-alkalizations are to be observed in Hungary. Their possibility of improvement may be used to advantage under other natural conditions as well.

The Hungarian Academy of Sciences and the UNESCO plan to organize a Symposium in Budapest from 9 tot 16 Augustus, 1964 — just before the 8th Congress of the I.S.S.S., in Bucarest — to discuss the formation of sodic soils and their improvement. The aim of the Symposium is to exchange the experiences on formation and utilization of sodic soils under dry and irrigated conditions with experts of countries concerned, and to adopt resolutions and make propositions which may be considered to be useful to all the participants for further steps to be taken in connection with the salinization-problem.

Within the scope of the meeting a General Report will be presented on the genetics, the importance and geochemistry of sodic soils, whereas special reports on specific questions may be read by participants of various countries. A report on alkali and saline soils of Hungary and on their reclamation and improvement is projected as well.

The participants of the Symposium will visit the major Hungarian Institutes of Soil Science, Soil Testing and Soil Reclamation and Irrigation. Two excursions will be organized to the wellknown alkaline and saline areas of the Hungarian Plain. One to the Hortobágy area and the other between the Rivers Danube and Tisza.

During the excursions not only the genetical soil types and landscape will be shown but also the reclamation, improvement, management and irrigation of the saline and alkali areas will be amply studied.

All correspondence in connection with the Symposium should be addressed to the President of the Organizing Committee:

DR. I. SZABOLCS

*Director of the Research Institute of Soil Science
and Agricultural Chemistry of the Hungarian
Academy of Sciences
Budapest II
Herman Ottó-ut 15, Hungary.*

Second Micromorphological Working-meeting 1964 at Wageningen

First announcement

Promoted by Prof. Kubiena in 1958 a first micromorphological working-meeting was organized at Braunschweig-Völkenrode by Prof. Frese and Dr. Altemüller. On this meeting it was apparent that many are very much interested in this field of research, and that especially personal contacts and exchange of views are very helpful and stimulating for the individual research.

At the time it was decided to organize a new conference at a conventional time. As since 1958 many new micromorphological studies have been carried out in different fields of soil science, and many requests have been received for a new meeting, Prof. Frese and Dr. Altemüller have asked me to organize a second conference at Wageningen.

This will happen from September 22—26, 1964. Colleagues from outside Europe, getting back from the International Congress of Soil Science at Bucarest have in this way the opportunity to attend this second meeting.

For the conference (Sept. 22—25) the following subjects are chosen preliminary:

- a. Relations between micromorphology and soil biology, decomposition of organic matter and humus formation
- b. Soil formation:
 1. especially in parent materials rich in clay
 2. in other parent materials
- c. Methods for preparation, description and interpretation of thin sections; micromorphometrical methods
- d. *Applications connected with practical agricultural problems, amongst others tillage, hydrology, root development etc.*
- e. Micromorphological methods in paleopedological studies.

It is evident from the character of the meeting that suggestions for other subjects are welcome.

An excursion to the peat- and Anmoor-areas in the western part of the Netherlands is planned on September 26.

Hotel prices are estimated at 25 to 35 guilders a person per day full board. The subscription fee will be fixed at a later date.

In connection with the organization of the meeting those who are interested are requested to send as soon as possible a provisional subscription and provisional title(s) of paper(s) to be read to:

A. JONGERIUS

Chief of the Section Micropedology
Stichting voor Bodemkartering
Postbus 10

Bennekom/the Netherlands.

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

International Clay Conference
Stockholm, Sweden, August 12—16, 1963

The 1963 International Clay Conference is arranged by *Comité International Pour l'Etude des Argiles* (CIPEA) and the *Swedish Society for Clay Research*. The clay conference will be a forum for discussions among scientists from all parts of the world, and its aim is to promote interchange of ideas and information between scientists working in clay research and technology.

The following sections are planned for the conference

1. Clay mineral structures and compositions.
2. Clay mineral genesis.
3. Ion exchange on clay minerals.
4. Clay-electrolyte-water systems.
5. Clay-organic complexes.
6. Clay minerals in industrial applications.

Papers for the Proceeding of the Conference have been received. The Proceedings will be published by Pergamon Press, Ltd., and will be mailed before the meeting to the members of the conference. In this way, papers will not be read at the conference, but on the basis of the published papers and the knowledge of recent progress, the sections will consist of *group discussions* of the present day status and the research that seems most urgent for further advance in clay studies.

Outstanding scientists among members of the conference will serve as chairmen of the sections and will lead the discussions. At the end of the conference a *general session* will be held in which, among other items, the chairmen will summarize the work of the different sections.

The discussions will be published after the conference as a second volume of the Proceedings. Papers will possibly be accepted for this volume of the Proceedings.

During the conference the CIPEA Nomenclature Sub-Committee will meet and so will executive officers of the national clay mineral groups. Reports from these meetings will be given at the general session.

Three field trips to important clay localities in Scandinavia are planned. One field trip will be held during the conference and two field trips will follow the conference.

Special programs for ladies accompanying members of the conference will be arranged.

For further details apply to:

International Clay Conference
Box 16365
Stockholm 16
Sweden

(Cable address: Conclay, Stockholm, Sweden).

Technical Meeting on the Use of Isotopes in Soil Organic Matter Studies
organized by the
Food and Agriculture Organization of the United Nations
and the
International Atomic Energy Agency
in cooperation with
Commission II (Soil Chemistry) of the
International Society of Soil Science.

The Symposium will be held in the Forschungsanstalt für Landwirtschaft, Braunschweig-Völkenrode (Germany), Bundesallee 50, from 9 to 14 September, 1963. The draft programme is as follows:

1. The role of organic matter in soil productivity, with special reference to tropical and arid regions — general introduction.
2. The balance between synthesis and breakdown — rates of turnover of organic matter in soils — processes in humus formation.
3. Distribution of labelling in soil organic matter — the active and inert fractions.
4. The chemistry of humic substances.
5. a) The decomposition of specific compounds in soil in relation to humus formation.
b) Nitrogen transformation in soil organic matter.
6. Priming action — green manuring.
7. The role of micro-organisms in the formation and decomposition of organic compounds in soil.
8. Cultivation practices in relation to soil organic matter levels.
9. The physiological effect of soil organic matter constituents on plant metabolism, plant growth and yield.
10. Physical-chemical properties of humus and its constituents, and their importance for soil dynamics.
11. Experimental techniques with isotopes, including the production of labelled materials, apparatus required and costs involved.
 - a) C 14
 - b) H 3
 - c) N 15
 - d) Other isotopes (e.g. P 32, S 35)
12. The future role of isotopes in soil organic matter research.

Further details can be obtained from:

DR. R. A. SILOW
Chief, Atomic Energy Branch
FAO
Viale delle Terme di Caracalla
Rome, Italy.

or: PROF. DR. W. FLAIG
Institut für Biochemie des Bodens der
Forschungsanstalt für Landwirtschaft
Bundesallee 50
(206) Braunschweig-Völkenrode, Germany.

**International Symposium on Factors Determining the Behavior
of Plant Pathogens in Soil.**

Berkeley, California, April 7—13, 1963.

The National Academy of Sciences — National Research Council Committee on Biological Control of Soil-borne Plant Pathogens organized an International Symposium on "Factors Determining the Behavior of Plant Pathogens in Soil" on the Berkeley campus of the University of California on April 7—13, 1963. Dr. F. E. Clark of Ft. Collins, Colorado, represented the I.S.S.S. at that occasion.

The formal papers and a condensation of the discussions will be published by the National Academy of Sciences — National Research Council, 2101 Constitution Avenue, Washington 25, D.C., and will be sold by them.

MISCELLANEOUS NEWS — INFORMATIONS DIVERSES
VERMISCHTE MITTEILUNGEN

Center of Tropical Soil Research

The "Centre d'études des sols tropicaux" of the University of Louvain, Belgium, organizes a summer course on "Tropical Soils" of about 150 hours of lecture. Excursions and practical courses will be included in the programme.

As of January 1st, 1963, Dr. J. D'Hoore, former director of the Service Pédologique de l'Afrique, acts as director of the Center, further inquiries re the course should be addressed to this authority: Avenue Cardinal Mercier 92, Héverlé, Louvain, Belgique.

Société Française de Microbiologie

The section of soil microbiology of the French Association of Microbiologists held a colloquy in Paris on February 7th, 1963 in the Pasteur Institute. The following official reports were presented:

- | | | |
|---------------------------------|---|--|
| Prof. A. Burges (Liverpool) | — | Importance de l'écologie en mycologie du Sol. |
| Prof. P. Manil (Gembloux) | — | Les Rhizobium et la Symbiose fixatrice d'azote; aspects récents. |
| Prof. E. G. Mulder (Wageningen) | — | Morphologie, Ecologie et Physiologie des <i>Arthrobacter</i> . |
| Prof. O. Verona (Pisa) | — | Interaction entre la graine en germination et les microorganismes telluriques. |

Also 32 communications were submitted for consideration and discussion.

The proceedings of the colloquy will be published in a special edition of the *Annales de l'Institut Pasteur*. Copies can be ordered with Mr. J. Pochon, Chef du Service de Microbiologie du Sol, Institut Pasteur, Paris XV^e, France, at the approximate price of 10 francs.

Cours de Microbiologie du Sol organisé par l'Institut Pasteur, Paris.

Sous la direction de J. Pochon et P. Tardieux.

9 septembre — 4 octobre 1963

Cet enseignement comprend 45 leçons, ainsi que des séances journalières de Travaux Pratiques, qui commenceront le 9 septembre, à 9 heures 30, dans le laboratoire de Monsieur J. Pochon et se poursuivront chaque jour jusqu'au 4 octobre. Il est sanctionné par le certificat de Microbiologie du Sol de l'Institut Pasteur.

Le nombre de places est limité et les demandes d'inscription devront parvenir à **J. Pochon, Institut Pasteur, Paris-XV^e**, le plus tôt possible.

Les droits d'inscription et les frais de travaux pratiques sont de 150 F. à verser au début du cours.

ADVANCE NOTICE

The 11th University of Nottingham Easter School in Agricultural Science will be on

"Experimental Pedology"

The School will take place between 23rd and 26th March, 1964.

Those interested are invited to write to the Conference Secretary, Dr. D. V. Crawford, at the School of Agriculture, Sutton Bonington, Loughborough, Leics., England.

NEW EDITIONS — NOUVELLES EDITIONS — NEUE AUSGABEN

Australian Journal of Soil Research

In response to representations from the Australian Society of Soil Science, the Australian Academy of Science and C.S.I.R.O. have now agreed to establish a new journal to be known as the "Australian Journal of Soil Research".

The Journal will be one of the group published by C.S.I.R.O. under the general jurisdiction of the Board of Standards appointed by the Academy and C.S.I.R.O. and the Board has appointed the following Advisory Committee which will be responsible for details of policy and maintenance of standards in the new journal:

Dr. N. S. Noble (Chairman and Editor), Associate Professor N. Collis-George, Mr. R. G. Downes, Associate Professor G. W. Leeper, Dr. A. E. Martin, Emeritus Professor J. A. Prescott, Dr. R. O. Slatyer, Mr. G. A. Stewart, Mr. J. K. Taylor and Professor J. S. Turner.

It is hoped that the Journal will attract contributions beneficial to the development of soil knowledge from many sciences. The Journal is open for contributions advancing the knowledge of soil or soil phenomena, namely —

- (I) Pure and applied studies of soil as a material or of soil phenomena by the methods of the natural sciences.
- (II) Interpretative studies of soils, including their description, origin, distribution and classification.
- (III) Studies of soil-plant relationships.
- (IV) Studies arising from related disciplines, provided that these advance the knowledge of soils or their use.

The usual refereeing system will be applicable to papers for the new Journal. However, during the first year or two, while journal policy is being established, each paper submitted will be read by appropriate members of the Advisory Committee before refereeing.

The Journal will be published intermittently whenever sufficient papers are available and it is expected that the first number will be issued early in 1963.

Manuscripts (in duplicate) together with original illustrations and copies should be forwarded to the Editor, Dr. N. S. Noble, C.S.I.R.O., 314 Albert Street, East Melbourne, C.2.

English editions of Russian textbooks on soil science

Attention is drawn to the important fact that thanks to the efforts of the Israel Program for Scientific Translations, in some instances pursuant to an agreement with the National Science Foundation, Washington, D.C., U.S.A. and the Department of Agriculture, a number of textbooks published in the U.S.S.R. have been translated into English and are therefore now available for non-Russian students in pedology.

The nursery of soil cartography and classification is undoubtedly the U.S.S.R. with Dokuchaiev as the scientist who laid the foundation of scientific pedology. Since 1882, the year of Dokuchaiev's first publication, soil science developed strongly in Russia and kept having its impact all over the world.

Next to Dokuchaiev the names of Glinka, Gedroiz etc. are of world renown. But there are many many more, whose work, because of the language barrier, did not reach the rest of the world. The books translated thus far now give a large scale opportunity to get acquainted with the development of soil science in the U.S.S.R.

A. A. RODE: The soil forming process and soil evolution. Translated from Russian by Professor J. S. Joffe, 2nd impr., 1962, pp. 143, litt. Published by Israel Program for Scientific Translations, Postbox 7145, Jerusalem, \$ 6.50.

This book presents a complete account of the Russian school of soil science. The first chapter gives a historical review starting with Dokuchaiev's basic notion (1882) and terminating with Sukachev's recent conception of biogeocenose (1945),

this being a homogeneous natural body made up of a number of individual components as native rock, soil, vegetation, etc.

In a special chapter the applicability of the biogeocenotic concept to soil evolution as it is observed in nature is discussed.

The volume concludes with a chapter on the reversibility and irreversibility of the soil forming processes, considering in some detail the water relationships involved.

Indeed a most interesting account of Russian pedological philosophy and its basic implications.

A. A. RODE: Soil Science. Translated from Russian by Professor A. Gourevitch, 1962, pp. 528, ill. tables, litt., subject index, map. Published by Israel Program for Scientific Translations, Postbox 7145, Jerusalem, \$ 12.50.

This textbook has two parts. The first part consists of 13 chapters dealing with basic information on soil properties and characteristics as are to be found in any other textbook. For a non-Russian reader the second part, composed of 9 chapters (pp. 300—511), will be the most interesting. The main soil types are treated according to the following zones: tundra; forest; forest-steppe; steppe; saline soils, solonets and solod; semi-desert and desert. A special chapter is devoted to soils of mountain regions, whereas a general review and a discussion on problems of classification is given in a final chapter.

In each group of soils special attention is paid to those features that concern forest growth. Soils of the forest and forest-steppe zones receive a more detailed treatment, many data on derno-podzolic and podzolic soils as well as on chernozems and allied soils and their mode of formation being presented.

A most interesting volume for students in soil geography. It is only to be regretted that procedure of reproducing the graphs, photographs and the soil map did not result in more clearer pictures. Notably photographs and map lost substantially in legibility.

K. P. GORSHENIN: The soils of Southern Siberia. Translated from Russian by Professor A. Gourevitch, 1961, pp. 758, 257 tables, photos, litt., map. Published by Israel Program for Scientific Translations, Postbox 7145, Jerusalem, \$ 15.50.

This monograph is probably the most comprehensive recent study of this geographically extensive and pedologically complex area of Soviet Asia. It describes the soils of Siberia from the Urals to Lake Baikal, and from the southern borders of the territory to latitude 58° N. Cartographic data on Siberia brought out essential regularities in the distribution of the soils and complexes. The morphologic units distinguished are:

1. Low plains.
2. Higher, drained piedmont plains and dissected depressions between mountain ranges.
3. Flat, plateau-like uplands.
4. Mountains with rugged topography.

By using this grouping it is not suggested that surface forms play a leading or exclusive part in soil formations. Although, however, the importance of their role can hardly be denied various soil zones and sub-zones are formed in one and the same surface type.

In part I (131 pages) the conditions of soil formation and development in Southern Siberia are discussed in relation to the morphologic situation of the various geographic units. A classification of the soils concludes this part. Part II (586 pages) gives a detailed account of the soils as they occur in the various zones as: tundra, taiga (southern and mountain), forest-steppe, steppe and dry steppe. Each of the sections is concluded by a characterization of the zone as an agricultural area. Part IV (30 pages) finally records the soil zones and regions of the area in summarizing way.

On the soil map, compiled by A. M. Voronina, 64 main soils are represented, whereas frequently and less commonly occurring soils associated with the main soils are likewise listed.

Rather detailed separations into soil varieties are given. In the chernozem group e.g. 18 varieties are distinguished, depending on texture, humus-content, salt

content (solonetsous chernozem) or geographic occurrence (solonetsous chernozems in sub-taiga as separated from forest-steppe and steppe). That in some cases this splitting up goes into too great detail might assumedly be concluded from the types (4): leached chernozems, intermediate in humus content, medium thick, lumpy and (38): leached chernozems, intermediate in humus content, medium thick, lumpy-granular.

A special map depicts the soil zones as referred to sub. chapter III, the area being divided into 123 regions. These are defined essentially on the basis of their soil complexes and associations.

In fact, a tremendous amount of information is included in this monograph, which definitely merits a prominent place in the world literature on soil geography.

A. N. ROSANOV: The serozems of Central Asia. Translated from Russian by Professor A. Gourevitch, 1961, pp. 541, 119 tables, photos, litt. Published by Israel Program for Scientific Translations, Postbox 7145, Jerusalem, \$ 12.50.

The area on which detailed information is presented in this volume has been described by Gerasimov (to-day's President of the All Union Society of Soil Scientists of the U.S.S.R.) as the northern extra-tropical xerothermic belt. This belt accounts for 38,9% of the earth's dry land and as such more than merits the attention of all students of soil formation and soil geography.

The serozems (and not sierozems as used in current English literature) have long been a subject of study after the first description in Central Asia in 1908 by S.S. Neustreuv. However there is a distinct lack of clarity as to what actually a serozem is, due to the vagueness of the very concept of the serozem-type. Therefore no clear notion exists about the actual areas of this soil on a global or continental scale. The aim of this textbook is to clarify the essence of serozem soil formation on the basis of up-to-date material. A few conclusions may be given. Foothills and in part low-mountain regions of Central Asia and Southern Karakhstan should be singled out as a special serozem zone. This zone is in sharp contrast with desert steppe and dry steppe zones of boreal Eurasia. The serozem-process is very complex and leads to a fully autonomous widespread soil with no analogy to brown desert steppe or light chestnut soils.

These few points will not fail to rouse general interest in this unique textbook on this provoking soil group.

O. A. POLYNTSEVA: Soils of the Southwestern part of the Kola peninsula. Translated from Russian by Professor J. S. Joffe, 1962, pp. 135, 66 tables, litt. Published by Israel Program for Scientific Translations, Postbox 7145, Jerusalem, \$ 6.00.

This monograph contains data characterizing the soils of the most populated plains of the Murmansk Oblast'. These consist of podzolized, podzolized-marshy, marshy and bottom land soils. The genesis of the soils and the principles for their effective use in agriculture are outlined.

N. A. KRASIL'NIKOV: Soil microorganisms and higher plants. Translated from Russian by Dr. Y. Halperin, 2nd impr. 1962, pp. 480, 138 tables, ill., litt. Published by Israel Program for Scientific Translations, Postbox 7145, Jerusalem, \$ 11.00.

This book is devoted to the interaction between soil microorganisms and higher plants. Divided in four parts, the first includes basic information on the structure and development of microorganisms and their classification. Part II discusses the soil as an environment for microorganisms; III the biological factors of soil fertility whereas the final part IV is devoted to the subject as given in the title of the textbook.

The book is designed for amongst others microbiologists and soil specialists. The impressive list of 641 Russian references and about 800 foreign authors makes it a valuable contribution to the literature on this subject.

PROGRESS IN SOIL ZOOLOGY. Papers from a colloquium on Research Methods organized by the Soil Zoology Committee of the International Society of Soil Science, Harpenden, U.K., 1958, pp. 357, tables, graphs, photos, litt. Edited by Dr. P. W. Murphy, Rothamsted Experimental Station. Publishers: Butterworth & Co. Ltd., London. Price 70 Sh.net.

This volume contains the 47 papers read at the colloquium organized by the Soil Zoology Committee and held at Rothamsted Experimental Station, Hertfordshire, U.K. from July 10—14th 1958. The volume has three parts: statistical aspects of sampling, extraction methods and the relationship between animal and soil, and has 10, 28 and 9 papers respectively in each part.

The incorporation of a fairly comprehensive section on the application of statistical procedures of sampling in a work concerned with the investigation of the abundance of animals is an unusual arrangement but it has been felt to be a useful one as it stresses the complexities of this field of study, and the need for careful choice of sampling and analytical methods. These papers are placed at the beginning of the volume as this aspect should be the first consideration in studies of a quantitative nature. The second part provides details of a number of extraction methods, and every effort has been made to provide a coverage of techniques for a wide variety of soil animals. There are, however, obvious gaps particularly in the case of the Protozoa and certain lesser-known groups among the microfauna. This part has two divisions, the first being concerned with techniques — particularly those with a funnel or flotation basis — applicable to a wide range of animals, and the second dealing with methods for specific animal groups. Some of these techniques have had a very limited application outside particular animal groups so that, in addition to bringing together a number of techniques, this volume may provide the reader with ideas on new uses for old methods as well as pointers to possible modifications and improvements of existing methods. The third part of this volume is concerned with the relationship between animals, plants and soil, and outlines techniques and some results of recent studies especially those relating to the role of animals in the decomposition of organic matter.

The equipment for many of the techniques described is not available commercially, but every effort has been made to provide the reader with illustrations and the necessary practical information for the construction of the apparatus. In this way the Proceedings have reached the ultimate goal; to serve as a handbook of methods. A handbook which merits a prominent place in the library of any one interested in this specialized field of Soil Biology.

JUAN A. BONNET: Edafologia de los suelos salinos y sodicos, pp. 337. Published by the Agricultural Experiment Station of the University of Puerto Rico, Río Piedras, 1960, \$ 6.00.

This textbook is designed for latinamerican students of Agricultural Colleges and, as such, also to be recommended for people with general interest in salinity problems.

The lucid way in which the subject has been treated, including a long chapter on analytical methods, contributes to have this textbook serve the useful purpose of making people of Spanish tongue acquainted with features, properties and problems of saline and alkaline soils.

ARBEITEN AUS DEM GEBIET DER MIKROMORPHOLOGIE DES BODENS. Edited by H. J. Altemüller and H. Frese, 1962, pp. 252, 104 pictures, 16 colored plates, litt. Published by Verlag Chemie G.M.B.H., Weinheim, Fed. Rep. of Germany.

This volume contains the papers read at the 1st international working meeting for soil micromorphology, held at Braunschweig-Völkenrode, November 11—14th, 1958. Since Kubierna laid the foundation for the microscopical study of soil morphological features, this specialized field of soil science has met with a world wide interest.

The papers read at the conference were originally published as a special edition of the wellknown German "Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde". The large demand for this volume made it necessary to print a new impression as a separate volume. It contains 27 technical papers of number of research workers of various nationalities. In an opening paper Kubierna records the fields of application of micromorphological research which range from research of soil structure in arable land, through soil mineralogy, — biology and — zoology to paleopedology and archeology. This statement finds prove in the material discussed. Both problematically and methodologically a range of subjects are treated, although interest is strongly focussed on the micromorphology of such soil groups as podzols (*Ponomaren*), sols bruns lessivés and acid brown forest

soils (*Manil, Delecour, Reuter*), parabraunerde, podsol-braunerde and humus-podzol (*Altemüller*), limestone soils from Croatia (*Gračanin*), serpentine soils from Greece (*Krause*), tropical soils (*Kubienna*) etc. 9 papers deal with technics as micromorphometry, microscopy, preparation of fluorescent thin sections, etc.

There is hardly any aspect of this new branch of soil science which has not been touched upon. The volume presents not only a most valuable account of to-day's stage of affairs but also points the way to future fruitful developments.

D. G. VILENSKII. Soil Science. Translated from third Russian edition, 1957. Published by Israel Program for Scientific Translations, Jerusalem, 1960. Pp. 488, 95 tables, 123 text figures, 3 colour plates, bibliography, index. \$ 12.00.

English language readers who want to become acquainted with the attitudes and concepts of soil science in the Soviet Union, will appreciate this translation of the leading university textbook in this field. Prof. Vilenskii (1892—1960) occupied the chair of soil science at the Moscow State University for over 30 years and his textbook reflects extremely well the teachings most Soviet soil scientists become imbued with during their studies. Published in 1957, it covers the literature up to 1956. Besides the basic and general data about the constitution and properties of soil materials it treats at length the history and development of the ideas of soil science in the USSR. (Ch. 2). Significantly it mentions certain faults in the agronomic teachings of Vil'yams (p.31), which until their 1954 'exposure as erroneous' by the Central Committee of the Communist Party were unassailable. The book itself continues to be permeated by Vil'yams doctrine of the universal biological soil forming process and its ramification.

Organisms, the biological soil processes and humus formation are treated in greatest detail in the first part of the book (Ch. 4 and 7). Soil formation is regarded as a biological process corollary to the evolution of vegetation (Ch. 5). Various classification systems are criticized for not being sufficiently based on the natural genetic development (Ch. 16). Soil formation leads to a progressive increase in fertility, which is promoted by the grassland crop rotation as the agrotechnical system. Liebig's law of minimum and the theory of diminishing fertility are considered false (Ch. 17). Some 200 pages deal with the soil zones of the USSR, giving an excellent review of the distribution, origin and properties of the major soil types. These chapters contain a wealth of data. Reference to original publications about the soils are given, but not always included in the bibliography.

The translation is commendable, though the difficulties arising from the different usage or meaning of certain terms (silt, dust, diluvium) and from translating Russian neologisms (structurality, gypsumizing, clayfication) are evident.

DAN H. YAALON

J. DI GLERIA, A. KLIMES-SZMIK UND M. DVORACSEK. Bodenphysik und Bodenkolloidik, pp. 795 mit 265 Abbildungen und 255 Tabellen im Text. Akademiai Kado, Budapest, 1962.

Dieses Buch ist eine deutschsprachige Ausgabe des in 1957 im Ungarischen herausgegebenen Werkes. Es umfasst fast alle Aspekte der bodenphysikalischen Problematik insbesondere nach den Gesichtspunkten der praktischen Landwirtschaft. Da bodenphysikalische Eigenschaften und kolloidchemische Erscheinungen untrennbar mit einander verbunden sind, und eben diese beiden Gegenstände im Lehrstoff des landwirtschaftlichen Unterrichts im allgemeinen nur sehr spärlich vertreten sind, ist das erste Teil dieses Lehrbuches (83 Seiten) den Grundsätzen der genannten Disziplinen gewidmet. In Teil II (34 Seiten) werden die Bodenbestandteile mineralischen und organischen Ursprungs und deren Eigenschaften ziemlich ausführlich behandelt, während im dritten Teil (94 Seiten) über die Eigenschaften der Böden von physikalisch-chemischem und kolloidchemischem Standpunkt aus eingehend berichtet wird. Theoretischen und praktischen Grundlagen der mechanischen Eigenschaften findet man in Teil IV (139 Seiten) und anschliessend wird in V. Teil (156 Seiten) die Struktur des Bodens betrachtet. Wasser, Luft und Wärme, als wichtige, die bodenphysikalischen Eigenschaften beeinflussende Faktoren sind in den Teilen VI, VII und VIII (200 Seiten) vertreten, während Teil IX (33 Seiten) das ausgezeichnete Lehrbuch mit einer *Bewertung der physikalischen Eigenschaften des Bodens für praktische Zwecke* abschliesst.

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