

BULLETIN

OF THE INTERNATIONAL SOCIETY
OF SOIL SCIENCE

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BULLETIN

DE L'ASSOCIATION INTERNATIONALE
DE LA SCIENCE DU SOL

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MITTEILUNGEN

DER INTERNATIONALEN BODENKUNDLICHEN
GESELLSCHAFT

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

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

COUNCIL/CONSEIL/BEIRAT:

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- Prof. Dr Emil Truog, University of Wisconsin, Madison 6, Wisc., U.S.A.
- Prof. Dr. E. C. J. Mohr, 38 Oude Engweg, Hilversum, Netherlands.
- Dr Firman E. Bear, Rutgers University, New Brunswick, N.J., U.S.A.
- Prof. J. A. Prescott, 82 Cross Road, Myrtle Bank, South Australia.

Commissions/Commissions/Kommissionen:

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

JOINT MEETING

of Commissions II and IV

Aberdeen, 5-10 September 1966

(see page 1 and 2 — Bulletin 26)

The organizers would be grateful if members of the International Society of Soil Science who are interested in this meeting would complete and return this form as soon as possible. It does not commit them but will ensure that they receive further information.

Notice of intent

Please complete and return to Dr. J. Tinsley, Department of Soil Science, University of Aberdeen, Meston Walk, Old Aberdeen.

Name

Address

Please tick those which apply

I am interested to receive further details of the Aberdeen meeting . . .

I expect to be able to attend the Conference

I expect to be able to attend the post-Conference Tour

I expect to be accompanied by non-participants

I propose to submit a paper on the following subject

.....

.....

.....

Date

Signed

Block letters please

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No. 26

1965

NEWS OF THE SOCIETY

8th International Congress of Soil Science

The Transactions of the 8th International Congress of Soil Science, held at Bucharest, Rumania, will be available as a complete set of six volumes in the course of the second half of 1965.

Orders are to be placed directly with the Foreign Trade Office.

Cartimex
P.O. Box 134 - 135
Bucharest, Rumania

Price for Members 25 US-Dollars per set.

Price for Non-Members, Libraries and Institutions 30 US-Dollars per set.

Joint Meeting of Commission II (Chemistry) and Commission IV *)
(Fertility) in Aberdeen, 5—10 September 1966

Notice is given that arrangements are being made in co-operation with the British Society of Soil Science to hold a joint meeting in Aberdeen, Scotland.

Subjects for discussion

The following subjects are proposed for discussion:

1. Soil organic matter and fertility, especially in relation to organomineral complexes and chelation.
2. Experimental design in soil nutrient — crop production investigations, with reference to the value of field, glasshouse and laboratory studies.
3. Major nutrient availability and uptake by plants, including the role of sulphur in relation to other elements.
4. Trace element availability and uptake by plants.
5. Physico-chemical aspects of nutrient supply, especially base status and exchange capacity in relation to the productivity of different soils.

The number of papers will be limited to about 35-40 altogether and will be selected from those offered. Authors wishing to present a paper must provide an abstract of about 250 words (in English, French or German) by 31st January, 1966, and notification of selection will be given by 1st May 1966. Twenty minutes will be allotted to the delivery of each paper; sessions will not take place concurrently. It is regretted that it has been found impracticable to arrange simultaneous translation; papers may be read in English, French or German.

*) In order to be able to include this important notice in the present number of the Bulletin the translation into French and German had to be discarded.

Conference arrangements

Meetings will be held in the University of Aberdeen, and during the Conference visits will be arranged to the Macaulay Institute for Soil Research, and to areas of scientific interest in north-east Scotland. A programme for ladies will be provided. A post-Conference tour by coach is being organised in the week following the conference and will provide an opportunity to examine soils and land use in some of the most attractive areas of Scotland. This tour will terminate in the neighbourhood of Glasgow where good air and rail connections are available.

Accommodation for about 200 will be available in University Halls of Residence and student hostels. A registration fee of £10 is envisaged, to include the cost of local excursions during the Conference, and will entitle delegates to a copy of the Transactions when they are subsequently published.

Further information

Further information, registration forms, etc., will be sent when available to those who complete the accompanying Notice of Intent and return it to the Local Secretary, Dr. J. Tinsley, Department of Soil Science, University of Aberdeen, Meston Walk, Old Aberdeen.

Conference on Mediterranean Soils (Commission V)

First Announcement

The Conference on Mediterranean Soils, to be organized in Spain, is scheduled to take place in Madrid from 12-17 September 1966. Inscription fee \$20.

Two post-conference tours are planned, one covering parts of both Spain and Portugal (I) and one in Spain proper (II).

Tour I Soils developed under a continental mediterranean, a semiarid and a sub-humid climate will be studied, viz. rendzinas, xero-rendzinas, calcareous brown soils, non-calcic brown soils, red mediterranean soils, grumosols, pelosols, saline soils, planosols and podsols. The tour will have the following itinerary: Madrid-Granada-Sevilla-Jerez-Rosal de la Frontera-Beja (Portugal)-Monte Gordo-Sagres-Lisboa-Badajoz-Madrid. It will take 11 days; estimated costs are \$150. Maximum number of participants: 130.

Tour II Soils developed under a continental mediterranean, arid, semi-arid and sub-humid climate will be studied, viz.; mediterranean brown soils, soils with calcareous concretions and crusts, xero-rendzinas, sierozems, saline soils, non-calcic brown soils and alluvial soils. The tour will have the following itinerary: Madrid-Santa Cruz de Mudela-Bailen-Cazorla-Granada-Guadix-Almeria-Murcia-Alicante-Valencia-Madrid. It will take 8 days; estimated costs are \$100. Maximum number of participants: 130.

An extended excursion programme, including a Moroc pre-conference tour, is being studied. Letters of Intent will be circulated in due time.

The organisation of Conference and Tours is in hands of the Spanish Society of Soil Science.

NOUVELLES DE L'ASSOCIATION

8me Congrès International de la Science du Sol

Les Comptes-Rendus du 8me Congrès International de la Science du Sol, tenu à Bucarest, Roumanie, seront publiés, en six tomes, au cours de la seconde moitié de 1965.

Des commandes sur l'oeuvre complet sont à adresser directement au Foreign Trade Office

Cartimex
P.O. Box 134 - 135
Bucharest, Rumania

Le prix pour Membres est de 25 US-Dollars les six tomes;
Le prix pour Non-Membres, Librairies et Instituts est de 30 US-Dollars.

Conférence sur les sols méditerranéens (Commission V)

Première Communication

La Conférence sur les Sols Méditerranéens, prévue pour l'Espagne, sera tenue à Madrid du 12 au 17 septembre 1966. Le taux d'inscription est de \$20.

La Conférence sera suivie de deux excursions: une en Espagne et Portugal (I) et une seulement en Espagne (II)

Excursion I On étudiera les sols de la Meseta Espagnole et aussi les sols développés sous un climat méditerranéen continental, semi-aride et sub-humide. Les principaux types de sols sont: rendzines, rendzines xerophitiques, sols bruns calcaires méditerranéens, sols bruns non-calciques, sols rouges méditerranéens, sols à nodules et à croûtes calcaires, grumosols, pelosols, sols salins, planosols, sols bruns acides et podsols. L'itinéraire est comme suit: Madrid-Granada-Sevilla-Jerez-Rosal de la Frontera-Beja (Portugal)-Monte Gordo-Sagres-Lisboa-Badajoz-Madrid. Durée: 11 jours. Prix approximatif: \$150. Maximum d'assistants: 130.

Excursion II On étudiera les sols des régions méditerranéens développés sous un climat continental, aride, semi-aride et sub-humide. Les types principaux de sols seront: sols bruns méditerranéens sur matériel calcaire, sols à nodules et à croûtes calcaires, xero-rendzines, sierozems, sols salins, sols bruns non-calciques et sols alluviaux. L'itinéraire est comme suit: Madrid-Santa Cruz de Mudela-Bailen-Cazorla-Granada-Guadix-Almeria-Murcia-Alicante-Valencia-Madrid. Durée: 8 jours. Prix approximatif: \$100. Maximum d'assistants: 130.

Un programme d'excursions plus étendu, comprenant aussi une excursion au Maroc avant la Conférence, est étudié. Des formulaires intitulés „Intention de participer" seront distribués à bon temps.

L'organisation de la Conférence et des Excursions est en mains de la Société Espagnole de la Science du Sol.

NEUES AUS DER GESELLSCHAFT

8.er Internationaler Bodenkongress

Die Verhandlungen des 8.en Internationalen Bodenkundlichen Kongresses, abgehalten in Bukarest, Rumänien, werden, in einem Satz von 6 Teilen, im Laufe der zweiten Hälfte 1965 zur Verfügung kommen.

Aufträge sind direkt zu senden an das Foreign Trade Office

Cartimex
P.O. Box 134 - 135
Bucharest, Rumania

Der Preis des kompletten Satzes ist 25 US-Dollars für Mitglieder, und 30 US-Dollars für Nicht-Mitglieder, Bibliotheken und Institute.

Konferenz über Mediterrane Böden (Kommission V)

Erster Bericht

Die für Spanien geplante Konferenz über Mediterrane Böden wird abgehalten in Madrid vom 12. bis 17. September 1966. Mitgliedsgebühr \$20.

Zwei Exkursionen werden nach Ablauf der Konferenz stattfinden; eine betrifft sowohl Spanien wie Portugal (I) und eine allein Spanien (II).

Ie Exkursion Böden entwickelt unter kontinental-mediterranen, semi-ariden und sub-humiden Klimaverhältnissen sind im Programm aufgenommen, z.B.: Rendzinen, Xero-Rendzinen, kalkreiche Braunerden, kalkfreie Braunerden, Rote Mediterrane Böden, Grumosole, Pelosole, Salzböden, Planosole und Podsole. Der Reiseplan wird sein wie folgt: Madrid-Granada-Sevilla-Jerez-Rosal de la Frontera-Beja (Portugal)-Monte Gordo-Sagres-Lisboa-Badajoz-Madrid. Die Dauer wird sein 11 Tage; die Kosten sind auf \$150. geschätzt worden. Maximum Teilnehmer: 130.

Iie Exkursion Böden entwickelt unter kontinental-mediterranen, ariden, semi-ariden und sub-humiden Klimaverhältnissen werden besucht und studiert werden, nämlich: Mediterrane Braunerden, Böden mit Kalkkonkretionen und Kalkkrusten,

Xero-Rendzinen, Sieroseme, Salzböden, kalkfreie Braunerden, und Alluvialböden. Der folgende Reiseplan ist dafür vorgesehen: Madrid-Santa Cruz de Mudela-Bailen-Cazorla-Granada-Guadix-Almeria-Murcia-Alicante-Valencia-Madrid. Die Dauer ist 8 Tage; die Kosten sind auf \$100. geschätzt worden. Maximum Teilnehmer: 130.

Die Möglichkeit eines mehr ausgedehnten Exkursionsprogrammes, einschliessend eine Prae-Konferenz Tour nach Marokko, wird noch studiert. Einschreibungsformulare werden zur Zeit rundgeschickt werden.

Die Organisation der Konferenz und Exkursionen ist in Händen der Spanischen Bodenkundlichen Gesellschaft.

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

Symposium on the Use of Isotopes and Radiation in Soil-Plant Nutrition Studies

Ankara, Turkey

28 June — 2 July 1965

This Symposium, organized by the International Atomic Energy Agency and F.A.O., will be concerned with the use of isotopes and radiation in studies of chemical reactions of inorganic ions in the soil and their uptake and translocation by plants; the exchange properties of organic matter in the soil; the physical conditions of the soil, including irrigation practices; and the usage of fertilizers. It is being organized with a view to discussing the additional information that has been acquired in many countries since the first international symposium on this subject was convened by the same two sponsoring organizations in Bombay in 1962.

List of topics

Use of isotopes and radiation in

- a. Soil chemistry of inorganic ions and/or fixation. (Ionic exchange diffusion and effects of flooding)
- b. The contribution of organic matter to plant nutrition. (Carbon, nitrogen, sulfur and phosphorus cyclus and their relationship to plant growth and composition)
- c. Soil physics.
(Soil moisture supply and movement through soil and into the plant, irrigation practices, soil atmosphere and soil density)
- d. Ion uptake and translocation.
(Uptake, losses, interactions and translocation of ions absorbed through roots and leaves)
- e. Fertilizer usage.
(Fertilizer sources and methods, times and rates of application; production of labelled fertilizers; root activity)

NEWS OF THE COMMISSIONS
NOUVELLES DES COMMISSIONS
NEUES AUS DEN KOMMISSIONEN

Commission I (Soil Physics)

West-European Working Group on Soil Structure

The West-European Working Group on Soil Structure met twice at the occasion of the 8th International Congress of Soil Science at Bucharest, Rumania, once conjointly with the other regional groups. It was decided that each working group will prepare its own book for publication in one volume. A recommendation was formulated which was presented to the Council of I.S.S.S., suggesting that the 450 page volume of the West-European Group, which is now ready for publication, be published as a joint F.A.O.-I.S.S.S. edition.

The Method Book will consist of 8 chapters containing the following subject matter:

- I. General information about the site.
- II. Field information on soil structure.
- III. Sampling, transportation, storage.
- IV. Laboratory information on soil components.
- V. Chemical and physico-chemical determinations of properties related to soil structure.
- VI. Determination of properties related to soil geometry.
- VII. Behaviour of the soil under applied forces.
- VIII. Field measurements.

Commission IV (Soil Fertility & Plant Nutrition)

**Report of the Working Committee on International
Cooperation in Field Trials on Soil Fertility.**

1. The working committee was set up during the 6th Congress of the I.S.S.S. Joint research into soil fertility by means of field trials was decided to be the task of the committee, restricting it to the temperate climate of Europe.

The project was defined as: "Study of the influence of physical, biological and climatological factors on the nitrogen condition of the soil and the nitrogen supply of the crops". This project was considered scientifically and economically important for all participating countries. It could be expected that the different approaches to the problem, using also different methods, would influence one another and would stimulate their mutual understanding and appreciation when dealing with data obtained by joint research.

2. From the very beginning two main sites of research could hereby be distinguished: Giessen and Groningen. Two rather similar setups of the work therefore were proposed, afterwards linked up with one another.

The research-centre at Groningen gave the impulse to start with short term (one year duration) trials using series of increasing applications of nitrogen. In 1958 eight series could be realized, comprizing ca 30 of such trials (six levels of dressing with four replications) at Oldenburg, Linz, Rostock, München, Giessen, Leuven, Ljubljana and Groningen. As test-crop was used oats. These series are designated „Internationale Stickstoffversuche - I.N.V. (international nitrogen experiments)". The set-up of the experiments followed an outline allowing a detailed evaluation of the fertility factors affecting the growth and yield of the crop. Different field-observations and analytical data were necessary herefore. The aim of this approach to the problem is to deduce and interpret the "fertility" of the soil from all the separate factors.

The research-centre at Giessen advocated the so-called "Internationale Dauerversuche - I.D.V." (international permanent field experiments). Tentatively it is decided to maintain these trials during 10 years. Every year the three crops — potatoes, winter-wheat and oats — are grown on each plot, observing a rigid rotation. The fertilization levels are $N_0K_2P_2$, $N_1K_1P_1$, $N_2K_2P_2$ and $N_3K_3P_3$. These

permanent field-trials are started by the research-institutes at Oldenburg, München, Giessen (2), Dülmen, Braunschweig-Völkenrode, Stuttgart, Thyrow-Berlin, Leipzig I, Leipzig II, Rostock, Linz, Wien, Leuven, Versailles, Groningen, Liebfeld-Bern, Ljubljana (3) and Zagreb.

The aim of these experiments is the investigation of the complex factors: habitat, fertilization, year (weather) and crop, and of the interaction of these factors. The computation of the results is always accompanied by the analysis of variance. In these long term trials a detailed study of the effect of the growth-factors is possible due to the determination of the many data in soil, crop and climate.

In addition to the above field trials it was decided to perform pot-experiments in some of the research centres. Oats is used hereby as test-crop with 6 to 8 levels of nitrogenous fertilization, applied in triplicate. In 1958 for the pot-experiments was used the soil from one of the I.N.-trials, whereas in 1959—1961 the soil was derived from one of the I.D.V.-plots. These experiments were performed at the institutes Oldenburg, Giessen, Rostock, Leipzig I, Linz, Groningen, Versailles and Ljubljana. For all the trials uniform batches of seed and potatoes were applied, provided for by the institute at Giessen. The necessity hereof was clearly demonstrated by a preliminary investigation in 1957.

3. We are of the opinion that a good cooperation, studying the strictly defined problems, is achieved, as can be illustrated by the following considerations:

- a. The data obtained in the I.N.V.-series are centrally brought together and tabulated. The different cooperating institutes derive herefrom interesting data, using them for their reports and publications. The methods to be used for the compilation of the results, which will be performed by Dr. Th. J. Ferrari at Groningen, are chosen by mutual deliberation.
- b. The data of the I.D.V.-series are every year sent-in, already neatly tabulated. From 1961 onward all members of the working-committee are provided with the results of the last year. These "Bericht über die internationalen Dauerversuche" (report about the international permanent field experiments) is already issued for the years 1961 and 1962. The description of the soil profiles is performed as far as possible centrally. Soil profiles preserved by lacker are collected. Though the final compilation of the results only will be possible after the complete 10-year period, experience for that task is already gained by doing it now for shorter series of years. For this centralized compilation is responsible Prof. Dr. E. von Boguslawski at Giessen with his staff.
- c. The results of the pot experiments raised the doubt whether the observed differences are brought about by differences in the habitat or in the applied methods. Mutually now the performance of pot experiments is studied at Giessen and Groningen, and since 1964 also at Oldenburg. The technical staffs of the different institutes contacted one another regularly. The way of watering the pots proved to be very important. The results of this effort is an in detail defined procedure for pot experiments. This guaranties a better possibility to compare series of pot experiments performed by institutes in different countries.
- d. Modern tabulation and computation equipment was provided by the "Österreichische Stickstoffwerke" (Austrian nitrogen industries) at Linz, and by the university at Giessen.
- e. Much additional research had to be done with soils, crops and seed from the participating institutes.
- f. The performance of the experiments and the obtained results have successively been discussed during assemblies at Groningen, Giessen, Hamburg, Groningen, Braunschweig-Völkenrode, Linz, Bern and München.
- g. The different method of soil fertility research mutually influenced one another. On the one side it was recognized that a detailed study of the separate factors, applying the adequate techniques, is necessary, but the significance of the whole complexes of factors, characterizing the fertility of the different habitats, is also realized. Take for instance the conception „Bodenzahl", generally used in Germany. It was evaluated for all the experimental plots. The value of the soilprofiles of the I.D.-trials was also estimated, especially by Dr. G. Schmidt at München, Mr. E. Brauer at Gies-

sen and Dr. H. Schiller at Linz. The visual evaluation of the structure of the soil, developed in Groningen, must also be mentioned in this connection. This also was done on all plots used for this research.

There is gradually growing a desire to recognize and formulate the laws which determine the reactions of the crops upon nitrogen fertilization, hereby following the principles laid down by Mitscherlich.

h. The schemes of the I.N.- and the I.D.-trials are already followed in some countries.

4. The additional investigations performed with the soil, crop and seed, used for the experiments, and also with the experimental plots can be specified as follows:

- a. The methods for the determination of pH, PK, and Mg used in the laboratories at Leuven, Linz, Oldenburg, Rostock and Oosterbeek (the Netherlands) were compared.
- b. The seed, harvested on the different I.D.V.-plots is used for the study of the influence of the origin on the developing crop.
- c. The biological quality of the seed obtained on the I.D.-experiments will be studied.
- d. The determination of the digestibility of the straw is initiated.
- e. The baking quality of the wheat of different origin is compared.
- f. On the experimental plots the pH(H₂O)-values are periodically determined since it is presumed that the pH reflects the changes in the fertility of the soil brought about by variations in the weather.

5. The obtained data are worked up and interpreted in different directions and for different purposes.

- a. The centralized analysis of the data of the I.N.-trials by Dr. Ferrari can be described as follows: he analyses the different aspects with the aim to derive herby models, which then can be treated with the regression-analyses of with the method of the path-coefficients. Twelve factors are hereby connected with the parameters of the N-curve.
- b. Prof. Dr. von Boguslawski presented a paper on the working up of the data of the I.D.-experiments during the 8th congress ("The influence of site and fertilizing on the plant yield in the instance of the I.D.V.-series")
- c. H. Schiller and E. Lengauer at Linz analysed the results of their I.N.-trials with the numeric-graphical method, and reported about that already.
- d. Dr. E. Primost and Mr. G. Rittmeyer at Linz delivered a report entitled: "Ergebnisse der Qualitätsuntersuchungen aus den I.D.V.-Serien 1961 des Winterweizens" („Results of the investigation of the quality of the winter-wheat from the I.D.V.-series in 1961").
- e. Dr. G. Schmidt at München used the data of the there performed I.N.V.-series for the investigation of the influence of nitrogen fertilization upon the yield of dry matter and protein on soils with different levels of organic matter, Mg, P and K. Besides that he also studied the influences of nitrogen on soil-structure and weed-flora. Dr. Ferrari could deduce from his own data the influence of nitrogen fertilization upon the attack by the oat cist nematode.
- f. At Giessen was published a Ph.D.-thesis of Helmut Rasp entitled "Der Einfluss der stickstoffdüngung auf Ertrag und Nährstoffentzug von Hafer auf Löslehmböden" ("The influence of nitrogen fertilization on the yield and uptake of nutrients of oats on löss-clay-soils").
- g. The fixation of NH₄ by the soils used in this research has been investigated at Giessen and at Linz.
- h. The relation is determined between the fertilization, uptake and alteration of the fertility of the soils of the I.D.-trials.

6. What is now planned for the future? The analysis of the results of the I.N.-trials is just in full progress. We consequently hope before long to complete the final report. It is the intention to publish the conclusions of the separate reports in the Bulletin of the I.S.S.S.

We are full of good expectation and the tone is healthy among the participants. But we are aware of the weakness of the administrative and material structure of our working committee. A central person for the strengthening of the internal contacts would improve the solidity of the committee and could perhaps open new perspectives. We are lucky to have got the assistance of Mrs Rauth at Giessen for the administration. We try to consolidate the connections between the institutes since we are convinced that hereby the chance to come to a more permanent co-operation in the field of soil fertility research would be increased. The support of the I.S.S.S. is for us essential.

P. Bruin.

P.S. Material support from UNESCO is now assured.

van Baren.

Commission VI (Soil Technology)

Some members of the VIth Commission suggested a session on Soil Erosion to be held concomitantly with the Symposium on Mediterranean Soils, which is to be organized by the VIth Commission in September 1966 in Spain.

The members of Commission VI working in this field are kindly requested to send to Prof. Dr. I. Staicu, Institutul Central de Cercetări Agricole, Bd. Mărăști 51, Bucuresti, Rumania, their opinion on the desirability of holding such a Session, not later than July 31, 1965.

Eventual participants of the suggested meeting who wish to deliver scientific papers, are invited to send the titles of their communications at an early date.

If sufficient interest is shown, appropriate measures will be taken.

Commission VI (Technologie du Sol)

Certains membres de la Commission VI ont suggéré de tenir une réunion sur l'érosion des sols en Espagne en 1966, en même temps qu'aura lieu la Conférence sur les sols méditerranéens.

Les membres de la Commission VI qui s'occupent des problèmes d'érosion, sont priés de donner leur opinion sur cette suggestion au Prof. Dr. I. Staicu, Institutul Central de Cercetări Agricole, Bd. Mărăști 61, Bucuresti, Rumania, avant le 31 juillet 1965.

Les collègues désireux de présenter une communication scientifique sont priés de soumettre le titre de leur contribution à bref délai.

En cas d'intérêt suffisant, les arrangements nécessaires seront organisés.

Kommission VI (Bodentechnologie)

Einige Mitglieder der VIten Kommission haben vorgeschlagen eine Sitzung über Bodenerosion abzuhalten gleichzeitig mit dem Symposium über Mediterrane Böden, welche durch Kommission V September 1966 in Spanien organisiert werden wird.

Die Mitglieder der VIten Kommission, die in dieser Richtung interessiert sind, werden freundlichst gebeten, ihre Meinung in dieser Hinsicht Herrn Professor Dr. I. Staicu, Institutul Central de Cercetări Agricole, Bd. Mărăști 61, Bucuresti, Rumania, nicht später als 31. Juli 1965 bekannt zu machen.

Mögliche Teilnehmer an der vorgeschlagenen Sitzung, welche wissenschaftliche Beiträge einzuliefern wünschen, werden gebeten die Titel etwaiger Verhandlungen zeitlich anzugeben.

Wenn genügend Reaktionen eingegangen sind, werden diesbezügliche Massregeln getroffen werden.

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

British Society of Soil Science

On April 13th a meeting on Pesticides in the Soil was held by the British Society of Soil Science in the London School of Economics at London. The programme reads as follows:

- DR. R. J. HANCE (A.R.C. Weed Research Organisation, Begbroke)
Some aspects of adsorption of herbicides by the soil.
- DR. C. G. L. FURMIDGE (Woodstock Research Centre, Sittingbourne)
Physical factors affecting the persistence and availability of granular herbicides applied to the soil.
- DR. G. S. HARTLEY (Chesterford Park Research Station, Saffron Walden)
Soil as a chromatographic column for pesticides.
- DR. G. A. WHEATLEY (National Vegetable Research Station, Wellesbourne)
The behaviour and rates of loss of organochlorine insecticides in the soil.

Lunch (available at the L.S.E. Refectory)

- DR. E. P. LICHTENSTEIN (Entomology Department, University of Wisconsin, Madison)
Ecological factors affecting the persistence of insecticides in the soil.
- DR. C. A. EDWARDS (Rothamsted Experimental Station)
Effects of insecticides on soil fauna.
- DR. B. N. K. DAVIS (Monks Wood Experimental Station, The Nature Conservancy)
The role of invertebrates in transmission of organochlorine insecticides in food chains.
- Discussion introduced by DR. N. WALKER (Rothamsted)

Forthcoming Meetings

B.S.S.S. Autumn Meeting: 17th-20th September, 1965, at Swansea. Besides the normal programme, members of the Soil Biology Group are arranging a session on Techniques in Soil Zoology.

6th-9th September, 1965: First International Conference on Thermal Analysis, in Aberdeen. The theme will be Thermal Techniques and their applicability, and further details may be obtained from Dr. R. C. Mackenzie, The Macaulay Institut for Soil Research, Craigiebuckler, Aberdeen, Scotland.

Sociedade Portuguesa da Ciência de Solo

At the last meeting of this Society the following officers were elected:

- | | | |
|--------------------------|---|---------------------------------------|
| President | — | Dr. Eng. J. V. J. de Carvalho Cardoso |
| Secretary | — | Eng. L. Rodrigues Balbino |
| Treasurer | — | Dra. M. L. Nogueira da Franca |
| Delegate to the I.S.S.S. | — | Dr. Eng. J. V. J. de Carvalho Cardoso |

**MISCELLANEOUS NEWS — INFORMATIONS DIVERSES —
VERMISCHTE MITTEILUNGEN**

An Inter-American center for land and water resource development

AN INTER-AMERICAN CENTER for Land and Water Resource Development is being created at the University of Los Andes in Merida, Venezuela, under a six-year contract between OAS and Utah State University at Logan. According to a Utah State announcement, there will be a nine-man technical staff, with the restriction that no more than three come from any member country. Participants are to attend on a fellowship basis, two each from the 20 member nations for each session of the school. Programs will be of three types: (1) five-day seminars for administrators, (2) one-month short courses for program expeditors, and (3) regular six-month courses for technical workers.

(Reprinted from Arid Lands Research Newsletter Number 15, 1965).

The International Hydrological Decade

THE INTERNATIONAL HYDROLOGICAL DECADE (IHD), sponsored by UNESCO, officially was opened on 1 January, 1965. Modeled somewhat after the International Geophysical Year, the IHD will draw on the talents of individuals in practically every major country in the world in an effort to bring about a better understanding of the hydrological cycle with all its ramifications and complexities. The IHD will see a concentration of studies directed toward basic research in all aspect of the cycle, toward inventories of streams, lakes, glaciers and other forms of water storage; it also will be concerned with networks of data observations and with the exchange of knowledge which could benefit all people. It is to be emphasized, however, that the Decade will be for scientific hydrology and not for studies on water resources. The total global quantity of water amounts to a staggering figure, although only a small portion is currently of a "usable" nature. Perhaps one outcome of the studies during the Decade will be an increase of the "usable" amount. The distribution of the estimated quantity of water is as follows, with volumes in rounded quantities (see R. L. NACE, "Water Management," U.S. Geological Survey Circular 415, 1960):

Location	Volume of water (thousands of cubic miles)	Percentage of total water
OCEANS	317,000	97.1
ATMOSPHERIC MOISTURE	3.1	0.001
SURFACE WATER		
Polar icecaps and glaciers	7,300	2.24
Fresh-water lakes	30	0.009
Saline lakes and inland seas	25	0.008
Average in stream channels	0.28	.0001
(total)	(7,360)	(2.26)
SUBSURFACE WATER ON THE CONTINENTS		
Root zone of the soil	6	0.0018
Ground water above depth of 2,640 feet	1,000	0.306
Ground water from 2,640 to 13,200 feet	1,000	0.306
(total)	(2,000)	(.61)
TOTAL WORLD'S SUPPLY OF WATER — 326,000,000 cubic miles		

UNESCO's function in the Decade will be primarily that of coordination and education. It will sponsor scholarships and training schools, plan symposia and international meetings, and arrange collaboration with international unions. UNESCO presently is appointing a coordinating council for the IHD, and it will

provide the secretariat. Through our daily concern over water, those of us living in arid and semiarid areas perhaps should better understand the need for such a Decade. However, the problem is in itself of a global nature and cannot be fully explored except on a world-wide scale; thus, there will be no immediate concentration of study in the United States, at least, directed solely toward "arid land hydrology." Each country participating in the program is to develop and finance its own program along lines which should assure maximum benefit for each particular area. Less well-developed and newly emerging countries can, and will, participate to the best of their abilities by beginning the observations on hydrologic regimens so necessary for a complete global picture and carry out other tasks within their abilities. They will also be able to send people to established institutions in other countries for training and gaining experience.

(By T. L. SMILEY)

(Reprinted from Arid Lands Research Newsletter Number 15, 1965).

J. V. BOTELHO DA COSTA, Ph. D. †

(1910—1965)

J. V. Botelho da Costa est né à Lisbonne le 16 Septembre 1910. Il a suivi le cours d'ingénieur agronome à l'Institut Supérieur d'Agronomie et il a obtenu en 1933 son diplôme avec la classification de distinction. En même temps, il a suivi, à la Faculté de Sciences de l'Université de Lisbonne, un cours de Géologie.

De 1933 à 1935, étant boursier de la „Junta de Educação Nacional”, il a fait un stage en Angleterre, dans le Département de Physique de la „Rothamsted Experimental Station”.

En 1936, il a obtenu le degré de „Doctor of Philosophy” (Agricultural Chemistry) dans la Faculté de Sciences de l'Université de Londres.

Aussi en 1936, après concours public, il est nommé „professor auxiliar” de l'Institut Supérieur d'Agronomie. Dans cette École il a collaboré d'abord à l'enseignement de Physique Agricole et, plus tard, de Chimie Agricole. En 1941 il a fait un cours libre de Pédologie. En 1945 il a pris charge de la chaire de „Mesologia Ultramarina” (Physiographie des Territoires d'Outre-Mer). En 1948 il est devenu „professor catedrático” titulaire de cette chaire, qu'il a laissé en 1952 pour devenir titulaire de la chaire de Pédologie et Conservation du Sol, laquelle venait d'être créée.

De 1939 à 1950, il a dirigé des travaux de cartographie de sols pour la „Junta de Colonização Interna”.

Depuis 1946 il a dirigé des missions successives pour l'étude des sols de la province portugaise d'Angola, tandis qu'à l'Institut Agronomique se poursuivent des études complémentaires de laboratoire, jusqu'aux présent effectués sous sa supervision. L'orientation générale et les systèmes établis pour l'Angola sont portés au Mozambique par un de ses collaborateurs, et ont influencé la plupart des études similaires que s'effectuent dans les autres provinces portugaises d'Outre-Mer. En 1953 il est nommé chef de la Mission de Pédologie d'Angola, de la „Junta de Investigações do Ultramar” (Bureau de Recherches d'Outre-Mer). En 1960 il a quitté cette poste pour assumer la direction du Centre d'Études de Pédologie Tropicale, du même Bureau, lequel, entre autres activités, s'occupe de la direction scientifique des études pédologiques de tous les organismes dépendants du Bureau, et de la formation de spécialistes en pédologie tropicale.

Ses recherches et travaux techniques ont porté surtout sur les domaines suivants: physique du sol (relations sol-eau-plante); fertilité du sol (étude de méthodes pour l'évaluation des éléments nutritifs assimilables dans différents types de sols); génèse, classification et cartographie des sols (surtout des sols des régions tropicales). Elles ont donné lieu à un nombre considérable de publications. La pédologie appliquée et certains aspects de la technologie des sols ont été aussi l'objet de son activité.

Dans sa presque totalité, la terminologie pédologique portugaise lui est due. Il est l'auteur de plusieurs livres, entre eux le premier manuel portugais pour l'étude morphologique du sol (1942) et un précis d'Agrologie (1944).

Il a pris part à plusieurs réunions scientifiques internationales, tels que les Congrès Internationaux de la Science du Sol (1934, 1950, 1954, 1956, 1960). Au Congrès de 1950 il a été élu vice-président de la Commission de Technologie du Sol, et au Congrès de 1954 il est devenu président de la même commission.

En Afrique il a dirigé la délégation portugaise aux travaux de la 1^{ère}, 2^{ème} et 3^{ème} Conférences Interafricaines des Sols, et à la Conférence Régionale de Pédologues de SARCCUS, et il a présidé aux réunions du SARCCUS en Angola et au Mozambique.



Il a été Président du Conseil d'Administration du Service Pédologique Inter-africain et Président de la Société Portugaise de la Science du Sol.

A présent il était:

- Professeur de Pédologie et Conservation du Sol à l'Institut Supérieur d'Agronomie de Lisbonne
- Directeur du Centre d'Etudes de Pédologie Tropicale de la "Junta de Investigações do Ultramar" (Bureau des Recherches d'Outre-Mer)
- Membre du Conseil du Bureau des Recherches d'Outre-Mer
- Membre du Conseil de la „Junta de Energia Nuclear" (Bureau de l'Energie Nucléaire)

Il était Officier de l'Ordre de Mérite Agricole de France.

CENTRE DE ESTUDOS
DE PEDOLOGIA TROPICAL

Dr. Willard Gardner († 31.12.1964)

Dr. Willard Gardner, who was often referred to as "father of modern soil physics", died December 31, 1964, after a long illness. Nationally and internationally recognized as a consultant and researcher in soil sciences, Dr. Gardner had retired from Utah State University faculty in 1949. He continued to hold emeritus standing until 1954.

During his career, Dr. Gardner was a member and officer of several scientific and learned societies. He was president of the Utah Academy of Sciences, Arts and Letters 1929—30 and received the award for "outstanding achievement in science" from that organization in 1941. He was honored as a distinguished member of the American Association for the Advancement of Science. He served as president of the Western Society of Soil Science in 1932, and was a Fellow in the American Society of Agronomy and the Physical Society. He held membership in the Soil Science Society of America, the American Geophysical Union, the American Society of University Professors, and the National Council of National Economy League.

Dr. Gardner was awarded the James E. Talmadge Scientific Achievement Award in 1960 by Brigham Young University for "Distinguished Service in the Field of Science." He was listed in the first edition of "Leaders on American Science" and in "Distinguished American Scientists." He was also listed in "American Men of Science" and "The International Blue Book" (Who's Who in the World).

Dr. Gardner's picture is hung with others in the "Rothamsted Agricultural Experiment Station" in England representing the men who have done most to advance agricultural science. His influence and contributions are reflected in the large roster of national and international distinguished scientists who were his students and who now mourn his passing.

SOIL MAP OF AFRICA, 1 : 5.000.000. Joint Project no. 11, Publication no. 93, C.C.T.A., Lagos, 1964. Edited in 6 sheets with Explanatory Monography by Dr. J. L. D'Hoore.

The world soil literature and soil cartography is now enriched by the Soil Map of Africa, resulting from years of joint effort of the soil specialists of the Commission for Technical Cooperation in Africa. Over the ten years which elapsed since the idea was born to prepare this map, Dr. D'Hoore, eretime Director of the Inter African Pedological Service, has been most intimately connected with the work. In the preface by C.C.T.A.'s Secretary-General a.i.: Mr. Richelieu Morris, avails himself of the opportunity to join others in the many tributes that have been paid to the outstanding work of he Editor-in-Chief, and indeed there is ample reason to congratulate Dr. D'Hoore with his achievement also on behalf of international soil science.

The textbook, published both in French and in English, comprises 209 pages, including an index of technical terms, with as annexes a political map of Africa 1 : 30.000.000 and a stratigraphical and lithological sketch map on that same scale. It starts with an impressive list of about ninety different authors, representing 33 separate states of the African Continent. All these colleagues have collaborated for ten strenuous years, but thanks to their perseverance and thanks to the best scientific tradition in which this collaboration was fostered, this excellently executed soil map is now available for students in soil geography.

The Monograph consists of four parts: I. The African Environment; II. The mapping units; III. Characteristic profiles and analytical data and IV. The map. Each of the parts is divided in a number of chapters, all together giving the best possible picture of to-day of the African Continent as one big geographical unit. Extensive lists of literature are added to each part, whereas two concluding tables give the percentages of total surface and surfaces in thousands of square km by each of the cartographic units (275) and each of the elements of cartographic units (57) respectively.

INDEED A MOST OUTSTANDING CONTRIBUTION TO INTERNATIONAL SOIL SCIENCE.

S. V. ZONN, L. O. KARPACHEVSKI, V. V. STEFIN: Forest soils of Kamchatka. 253 p., graphs, tables, pictures, literature. Publishing House of the Academy of Sciences of the USSR, Moscow, 1963.

The book gives the characteristics of poorly studied volcanic soils of the remotest area of the USSR, the Kamchatka peninsula, which is a part of the Pacific volcanic ring. The results of these studies have been presented in the following chapters.

1. Natural conditions (soil forming rocks, relief, hydrology, climate, forest vegetation, age of soils and volcanic activity as a special factor of soil formation).
2. Texture composition and water-physical properties of volcanic soils on the ash deposits).
3. Water regime of some soils (under deciduous, white birch, aspen, spruce and stone birch forests).
4. Role of vegetation in soil formation process (ash content of plants, their forest floor and litter; cycle of ashing elements in the forest biocoenosis; some functional properties of litters; cataclitic of soils; decomposition litter and biological activity of soils).
5. Main characteristics of taiga soils, mountain forest tundra soils and tundra soils.
6. Problems of nomenclature, systematics and classification of volcanic soils.
7. Fertility of volcanic soils and their properties.

The route and stationary studies of soils and their processes made it possible to explain the peculiarities of soil formation under the influence of volcanic activity (ash falls, ash transportation by water and so on). As a result of these studies the Kamchatka soils were referred to as volcanic soil, which are characterized by andesite-basalts and andesite composition, stratification, high porosity and other properties. Here the influence of forest of different floristic composition on

properties of litters and soils is especially great. The lack of podzolization and formation of special type of humus cinnamonic-ochra soils under endemic stone-birch forests is one of the important soil characteristics. The soil age has been studied on the basis of volcanic eruptions. Finally a comparison of the Kamchatka soil with volcanic soils of Alaska (USA), Japan and other countries is presented.

S. V. ZONN

S. V. ZONN: High mountain forest soils of Eastern Tibet, 226 p., graphs, tables, pictures, literature, Publishing House "Science", Moscow 1964.

The soil cover of the Eastern Tibet and the adjacent Sino-Tibet Alps has not been so far studied and there is no data available on this area. The author was the first soil scientist, who worked in this area at the altitude of 2500 to 4500 m. for two summer seasons. He studied distinctive, well developed soils, 1.0—1.5 m. thick.

The results of these studies have been summarized in the following chapters:

1. Condition of soil formation (geographic location, main characteristics of geomorphology, climate, population, made of life)
2. Some general problems of soil formation (information on degree of soil study, peculiarities of weathering and soil formation)
3. Vertical and zonal distribution of vegetation cover and soils.
4. Principle problems of forest soil grouping.
5. Dark coniferous forest soils.
6. Soils of evergreen oakery and birch grove.
7. Pine-wood soils.
8. Deciduous-Rhododendrous forest soils.
9. Coniferous broad-leaved forest soils.
10. Meadow-forest soils of high mountain thin forest.
11. High mountain meadow soils.
12. Main genetic types of soils and their comparative characteristics.
13. Soil classification and systematization.
14. Brief characteristics of forest soil properties.
15. Summary and prospects of further soil studies.

The soils have wide chemical and analytical characteristics which explain their peculiarities. Among them there is a number of new types and high-mountain analogies of brown and cinnamonic forest soils as well as soils developed on the old red weathering crust. Here the soils with typical indices of pseudo-podzolic process are described. The properties of these soils are characteristic for subtropical soil formation in high mountainous area.

The present book is of great importance studying the soil formation in the high mountainous area.

S. V. ZONN

J. J. SCHURMAN and M. A. J. GOEDEWAAGEN. Methods for the examination of root systems and roots. 1965, Pudoc Wageningen, Neth.

A description is given of the methods used in root investigations at the Institute for Soil Fertility at Groningen. These methods aim at the determination of a number of specific characteristics of the root systems and roots in field experiments and in container experiments.

In field experiments use is made of:

1. Monoliths. This comprises the pinboard method and the excavations. Both methods give a more or less complete picture of the root system and can be used for individual roots.

2. Soil samples of minor volume. These are obtained by augers or similar devices. From the fragments of the root systems obtained by this method exact root weights per soil layer are calculated. This method has also been simplified, allowing a rapid evaluation of the root mass in soil samples.

3. Profile walls. In this method the roots are mapped and afterwards counted.

In container experiments the plants are cultivated under distinct experimentally selected conditions. In this case use is being made of soil-filled concrete tubes, cases, and boxes with a glass panel, water cultures and combinations of these. Root development is studied by a partial sampling by auger or by sampling the complete soil layers with a special apparatus or by washing the whole profile. In case of sampling by auger the moisture content of the various layers can be

determined. Washing the whole profile results in obtaining a complete root system, which allows for a study of details of individual roots.

A method has been devised for the study of individual roots.

J. J. SCHURMAN

ROY L. DONAHUE: Soils. An introduction to soils and plantgrowth, 2nd ed. 1965, Prentice Hall Inc., Englewood Cliffs, N.J., U.S.A.

As indicated in the sub-title this is an introduction with as the first objective to help the student develop intellectual curiosity leading towards an understanding of the basic principle underlying soil science and their relationship to the growth of plants. This goal is fully achieved undoubtedly thanks to the author's wide experience with farming people all over the world and specifically over the last ten years in India.

The book deals with the interrelationships among geology, soil, water, plant growth, and fertility, all in an easily understandable way aiding the student to memorize the contents of each consecutive chapter by listing a number of questions pertinent to the subject matter discussed. These are such topics as organic matter and water in soils, improving soils by the use of fertilizers, soil and water conservation, irrigation and drainage, etc. It is amply illustrated, be it that the numerous reproductions are not always of the best quality.

New is the addition of appendices on (A) atomic weight and values of common elements; (B) conversion factors; in which it is regretted that the conversion of the various U.S. measures into the metric system is omitted; (C) verbal definitions of soil textural classes and (D) glossary of a great number of terms and notions as used in the text.

All in all a to be recommended text book for any one interested in intelligent crop growing.

H. J. FIEDLER und H. REISSIG; Lehrbuch der Bodenkunde, pp. 544, Abb. Tab. Litt. Gustav Fischer Verlag, Jena, 1964, DM 43.20.

A new german textbook on soil science out of the well-known Forestry Research Station Tharandt of the Technical University at Dresden. The very well cared for volume is divided in ten chapters: (1) history of soil science; (2) rock weathering; (3) soil biology; (4) soil chemistry; (5) plant nutrients; (6) soil physics; (7) soil tillage; (8) factors and processes of soil formation; (9) soil systematics, and (10) soil fertility. The sequence of subjects treated might be disputed. It would e.g. seem more logical to include concepts on soil formation (8) into the basic considerations on rock weathering (2). Also the mixing of pure and applied soil science in the various chapters makes a full comprehension of the contents less easy. That soil biology gets attention before the chapter on chemistry is undoubtedly to be attributed to the fact that the textbook is conceived from a forestry background. This does however not distract from the merits of the volume which indeed gives a rather complete picture of the various aspects of soil science.

FREDERICK G. TICKELL: The Techniques of Sedimentary Mineralogy, volume 4, pp. 220, 158 fig., 35 tables, Elsevier Publishing Co., Amsterdam, 1965. Dfl. 45.— or Sh. 90.— or DM 50.—.

In general the book appears to be compact and well organized. Excellent use has been made of subheads as an aid in locating particular topics. Notice is given of practically all the techniques currently being used in sedimentary petrology and mineralogy. Nothing new is, however, contained in the chapters dealing with these aspects, nor are any of the techniques described in detail. It does not give the analyst or technologist a simple choice of the preferred techniques, neither is it an aid in the interpretation of the results.

The real value of the book is to be found in chapter 6 and appendix I. The system for the microscopic identification of detrital minerals in appendix I seems to be comprehensible and not too cumbersome. Superfluous use has been made of photographic plates, some of which are irrelevant, i.e. photographs of microscopes, etc. It is also doubtful that the numerous drawings of crystals (98 in total) add substantially to the usefulness of the volume as a technical handbook for sedimentary mineralogists, data to be found in standard handbooks on mineralogy which will be present in any sedimentologist's library. It did, however, add to the luxuriousness of the edition and consequently to the rather excessive price of the book.

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