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QUESTION 73

TRANSACTIONS

COMPTES RENDUS

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151, bd Hausmann, 75008 Paris, France
Tél. : 33 (0) 1 40 42 68 24 - 53 75 16 22 - 53 75 16 52
Fax : 33 (0) 1 40 42 60 71

NOTE

Units of Measurement

As for the previous Congresses and though some authors do not fully agree, we attempt to follow the recommendations of the International System of Units (SI).

For example, hm^3 and km^3 were preferred to 10^6 and 10^9 m^3 , or million and billion cu.m. See Bulletin 34 "ICOLD Guide for the International System of Units (SI)", page 13.

The decimal sign may be the full stop (Anglo-Saxon usage) or the comma (European usage); but as a safeguard against confusion, full stop (period) and comma are used as decimal sign only.

Where the number of digits before or after the decimal sign exceeds three, the digit should be divided into groups of three by half space.

We meet not enough co-operation from some authors writing in English who go on keeping the comma to separate the groups of three digits instead of using half space. It was not possible to make the appropriate corrections in all the tables provided by the authors and even in the text. Sorry for the inconvenience.

AVERTISSEMENT

Unités de Mesure

Comme pour les Congrès précédents et bien que certains auteurs manifestent des réticences à ce sujet, on s'est efforcé de suivre les recommandations du Système International d'Unités (SI).

Par exemple, on a utilisé plus volontiers hm^3 et km^3 au lieu de 10^6 m^3 et 10^9 m^3 ou million et milliard de mètres cubes. Voir Bulletin 34 « Guide CIGB du Système International d'Unités (SI) », page 13.

De même, on a retenu le point (usage anglo-saxon) et la virgule (usage européen) comme signe décimal, mais pour éviter toute confusion, la virgule et le point ne sont utilisés que comme signe décimal.

Aussi, quand le nombre de chiffres avant ou après la virgule est supérieur à 3, les chiffres sont groupés par 3, chaque groupe étant séparé par un court espace.

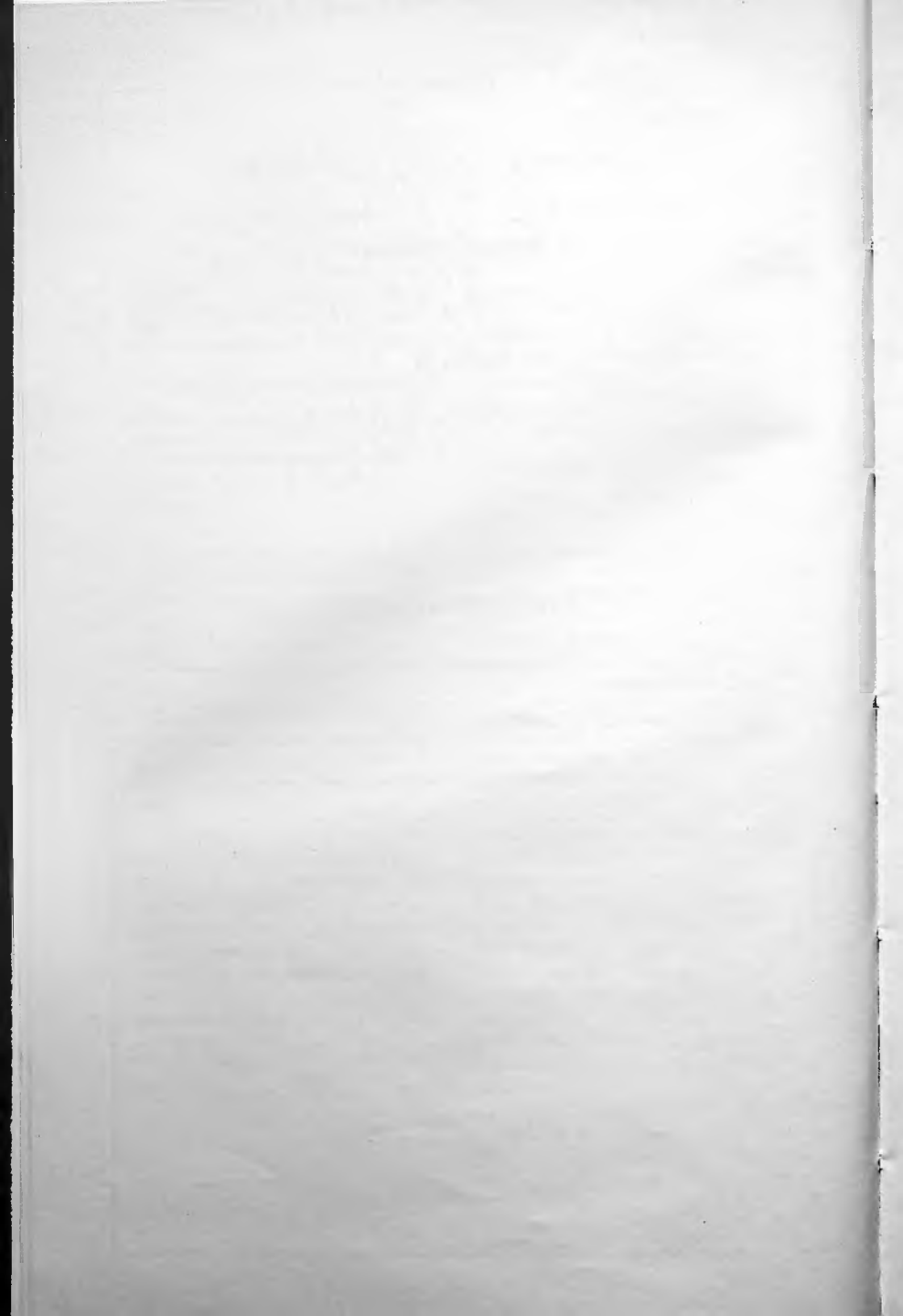
A ce sujet nous rencontrons encore des difficultés de la part de quelques auteurs de langue anglaise qui continuent à utiliser la virgule au lieu d'un court espace pour séparer les groupes de trois chiffres. Nous n'avons pas pu apporter les corrections nécessaires dans tous les tableaux fournis par les auteurs et même dans le texte. On voudra bien nous en excuser.

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PAPERS ON Q 73

RAPPORTS SUR LA Q 73

Special problems associated with earthfill dams**Subject**

- a) Mechanical properties of materials, stress-strain relationships, liquefaction potential.
- b) Acceptable static and seismic deformations of earthfill dams.
- c) Seepage: saturation effects, pore pressures, internal erosion, hydraulic fracturing, influence of transverse and longitudinal cracking.
- d) Culverts buried in earthfill dams.
- e) Impact of weather conditions.

Note: *This Question excludes (i) purely numerical procedures, (ii) impervious elements other than earth cores, (iii) overtoppable earthfill dams.*

Problèmes particuliers relatifs aux barrages en terre**Objet**

- a) Caractéristiques mécaniques des matériaux, relations contraintes-déformations, potentiel de liquéfaction.
- b) Déformations statiques et sismiques acceptables pour les barrages en terre.
- c) Percolations: effets de la saturation, pressions interstitielles, érosion interne, fracturation hydraulique, influence de la fissuration longitudinale et transversale.
- d) Conduits enterrés dans le corps du barrage.
- e) Influence des conditions climatiques.

Note: *La Question exclut (i) la description des méthodes numériques, (ii) les organes d'étanchéité autres que les noyaux en terre, (iii) les barrages en terre déversants.*

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Dix-neuvième Congrès
des Grands Barrages
Florence, 1997

**SPECIAL TESTS WITH WELL-GRADED CORE MATERIAL :
STRESS AND STRAIN BEHAVIOUR
AND INTERNAL EROSION (*)**

Walter SCHOBER

Professor emeritus, Dipl. Ing. Dr. techn.

Georg ATZL

Former Associate Professor, Dipl. Ing. Dr. techn.

University of Innsbruck

AUSTRIA

1. INTRODUCTION

The function of every embankment dam is to act as a seal and at the same time to safely transmit to the subsoil such forces as dead-weight, and hydrostatic and seismic loads. As a one-hundred percent seal is rarely achieved, earth cores must also be designed to prevent erosion caused by seepage. Such processes demand particularly careful attention in view of their longterm character and the difficulties and uncertainties of detection. That is the reason why the dam engineer must take due account of the stress and strain behaviour of the material with regard to changes in density and hence permeability in the case of earth cores. In addition, permeability is also dependent on saturation effects in the case of high dams.

This report describes the tests performed in the planning stage for the 200 m high Dabaklamm Dam in Tyrol, which has already been treated in Report R. 5 on Question Q. 67 [1] with reference to 2D and 3D bearing

(*) *Essais spéciaux sur des matériaux de noyau de granulométrie continue : comportement en contraintes et déformations, et érosion interne.*