

NORWEGIAN JOURNAL OF GEOLOGY

2000 Number 3, Volume 80

# Norsk Geologisk Tidsskrift







## Norsk Geologisk Tidsskrift

A Norwegian journal of geology issued quarterly by the Norwegian Geological Society (Norsk Geologisk Forening). First published in 1905, the journal has as its general aim to publish review articles, papers, notes and discussions with relevance to the varied and complex geology of Norway, the Polar regions and adjacent offshore areas. Accordingly, scientific papers from all geological, geophysical and geochemical disciplines will be considered for publication.

SPONSOR The Research Council of Norway (Norges forskningsråd).

EDITORS Mai Britt E. Mørk, Øystein Nordgulen, Lars Olsen, Trondheim.

SECRETARY Eli Bjerkan, Trondheim.

ADVISORY EDITORS T. B. Andersen, Oslo; D. Bruton, Oslo; B. C. Burchfiel, Cambridge, Massachusetts; O. Eldholm, Oslo; W. Helland-Hansen, Bergen; B. Jamtveit, Oslo; E. Jansen, Bergen; G. Juve, Oslo; P. Jørgensen, Ås; I. Lønne, Longyearbyen; R. B. Pedersen, Bergen; B. Robins, Bergen; G. Raade, Oslo; H. P. Sejrup, Bergen; J. Skei, Oslo; K. P. Skjerlie, Tromsø; A. M. Spencer, Stavanger; R. Steel, Laramie, Wyoming; M. Stephens, Uppsala; F. Surlyk, Copenhagen; J. L. R. Touret, Amsterdam; T. H. Torsvik, Trondheim; R. D. Tucker, St. Louis, Missouri.

MANUSCRIPT ADDRESS Manuscripts conforming with the instructions given on page 3 of this cover should be addressed to: Editor of Norsk Geologisk Tidsskrift, NGU, N-7491 Trondheim, Norway. Telefax: +47 73 9216 20.

BUSINESS ADDRESS Communications regarding accepted manuscripts, proofs, orders for offprints, subscriptions, etc. should be sent to the publisher's office in Oslo (see below).

PUBLISHER Taylor & Francis, PO Box 2562 Solli, NO-0202 Oslo, Norway. Tel. +47 22 12 98 80, fax. +47 22 12 98 90, email. post@tandf.no. U.S. address: Taylor & Francis Group, Journals Customer Service, 325 Chestnut Street, 8th Floor, Philadelphia, PA 19106, USA. Tel. +1 (800) 354 1420. Tel. +1 (215) 625 8900. Fax. +1 (215) 625 2940.

SUBSCRIPTION PRICE Members of the Geological Society of Norway (Norsk Geologisk Forening) who have paid their annual subscription (NOK 450,-) receive the journal free from Taylor & Francis. Membership subscriptions, changes of address, and communication from members concerning the journal should be sent to the Treasurer, Norges geologiske undersøkelse, Norsk Geologisk Forening, P.O. Box 3006, Lade, N-7002 Trondheim, Norway.

Subscription price for non-members of the Norwegian Geological Society (postage included for four issues per year) is: USD 190.00. In Scandinavia NOK 930,-. Airmailed to subscribers worldwide. In

Japan, all subscriptions should be ordered through the Maruzen Co. Ltd., 3-10 Nihonbashi 2-chome, Chuo-ku, Tokyo 103, Japan. In India, Pakistan, Bangladesh, Sri Lanka and Nepal, the exclusive agent is: Globe Publication Pvt Ltd., B-13, 3rd Floor, A Block, Shopping Complex, Naraina Vihar, Ring Road, New Delhi-110028, India.

This journal can be ordered in microform from University Microfilms International, 300 North Zeeb Road, Dept. P. R., Ann Arbor, MI 48106, USA.

© 2000 Taylor & Francis. All articles published in *Norsk Geologisk Tidsskrift* are protected by copyright, which covers the exclusive rights to reproduce and distribute the article. No material in this journal may be reproduced photographically or stored on microfilm, in electronic databases, video or compact disks, etc., without prior written permission from Taylor & Francis.

Special regulation for photocopies in the USA: Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Taylor & Francis for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided the fee of US\$ 19.00 per article is paid to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA. 0029-196X/00/US\$ 19.00. This authorization does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must be obtained from Taylor & Francis.

Published quarterly by Taylor & Francis, Oslo, Norway. Annual subscription price USD 190.00. Periodical postage paid at Jamaica, NY 11431. Printed in the UK. U.S. Postmaster; Send address changes to Norsk Geologisk Tidsskrift, Taylor & Francis Group, Journals Customer Service, 325 Chestnut Street, 8th Floor, Philadelphia, PA 19106, USA. Air freight and mailing in the U.S. by Publications Expediting Services.

Indexed in: *Biological Abstracts* (-1985), *British Geological Literature*, *Chemical Abstracts*, *Current Contents/Physical, Chemical and Earth Sciences*, *Energy Research Abstracts*, *FaxonFinder*, *Geological Abstracts*, *Economic Geology*, *Geographical Abstracts/Physical Geography*, *GeoREF* (Online Database for Bibliography and Index of Geology), *Life Sciences Collection*, *Norske Tidsskriftartikler*, *Metal Abstracts*, *Petroleum Abstracts*, *Research Alert*, *SciSearch*, *Science Citation Index*, *World Aluminum Abstracts*.

Cover picture: Moulded exoskeleton of the trilobite *Paladin* (*Neokaskia*) *borealis* Kobaysahi, 1987 from the Permian Kapp Starostin Formation (Svenskeegga Member) on North Akseløya, Svalbard. The animal has exited on the right and turned over the free cheek that lies upside down. (Photo: David L. Bruton, Paleontological Museum, Oslo).

## Instructions to Authors

*NORSK GEOLOGISK TIDSSKRIFT* publishes papers in English, exceptionally in Norwegian. Authors proposing or introducing new stratigraphic names are requested to conform to the rules laid down by the Norwegian Committee on Stratigraphy (see *Norsk Geologisk Tidsskrift* 66, *Suppl. 1*) and to contact the Committee to obtain approval for these new names: Norsk Stratigrafisk komite, NGU, P.O. Box 3006-Lade, N-7002 Trondheim, Norway. Manuscripts with abstract, references, figures and tables on separate sheets, should be sent in four copies to the Editorial address on page 2 of this cover. The author's permanent and temporary addresses must be given. Manuscripts accepted for publication will not be returned to the author unless requested. The author is requested to retain a complete copy of the manuscript. Proofs sent to the author should be read carefully and returned promptly. The author will be charged for changes against the manuscript made by him in the proof. If the length of an article exceeds 15 printed pages, the author will be charged for the exceeding pages. Reprints should be ordered on the form provided when returning the proofs.

**MANUSCRIPT.** The manuscript must be printed on one side of standard sized paper, double spaced, and with approximately 5 cm margins. The text must be clear and concise; before submission the manuscript should be checked by a linguistically competent person. Manuscripts should be arranged in the following order: (1) Concise and informative title. (2) Author's name unabbreviated. (3) A short abstract, not exceeding 12 lines. It should always start with the name of the author(s), title of article, *Norsk Geologisk Tidsskrift* with space left for Vol. No. and page numbers. The abstract should convey the scope of the paper, emphasizing the results and conclusions, not merely describing the contents of the paper. (4) The author's name and professional postal address in italics. (5) The main text. Use three or fewer grades of headings. All headings should start at the left-hand margin and be typewritten in lower case: they are not to be underlined. Brief *Acknowledgements* of grants and other assistance, if any, should be placed at the end of the text. Indicate in the left-hand margin the approximate positions for the insertion of Figures and Tables. The words Figs. and Table should be written with capital initials and should be referred to in the text by their number. (6) A list of References conforming with the examples given below. Abbreviations should not be used: complete journal titles should be given in the list of references. Use the ampersand (&) for all joint authorships in the reference list and for double authorship in the text. Use et al. for references with three or more authors in the text. (7) Figure captions on a separate sheet. (8) Tables should be numbered with arabic numerals, each having a descriptive heading and typed on a separate sheet. Very large tables should be typewritten on separate sheets to be printed on facing pages. They must be typewritten on good quality paper with all rules drawn in.

**ILLUSTRATIONS.** All illustrations should generally be termed Figures (not Plates) even if occasionally covering an

entire page. Do not send *originals* for illustrations until the manuscript has been accepted/revised. Send, instead, photographs or photocopies with initial submission of the manuscript. It is recommended that figures are constructed either for the entire width of the printed page (i.e. 177 mm) or for the width of one column (i.e. 86 mm); occasionally one-and-a-half columns (130 mm). The maximum printed size in NGT is 177 × 243 mm. Letters should not be smaller than 1 mm after final reduction for printing. Photographs should be clear, sharply contrasted, and printed on white paper with glossy finish. Slides are not accepted. Colour figures can be accepted but authors who wish to use colour will be charged for the additional costs involved. These will vary with the number and position of the figures in the journal: authors should contact the editors in advance for an assessment of the costs of printing in colour. Figures may be composed of several units (A, B, C, etc.). All units should be similar in tone. All figures should be marked with numbers in arabic numerals, and the author's name. Do not attach captions to the figures. When not obvious, the top and the bottom of figures, and their scale, should be indicated.

**ELECTRONIC MANUSCRIPTS.** The editors encourage submission on diskette to facilitate rapid accessibility of the author's work to readers. Only the final (revised) manuscript should be submitted on diskette along with two copies of the printout. The electronic files and printout *must be identical*. Costs for changes to the electronic manuscript may be charged to the author(s). The diskette should be labelled with the author's name, the name of the computer platform and the version of the word processing system used. Please note that although Taylor & Francis can receive files from any word processing system, styled Microsoft Word files are preferred. Graphic elements should be kept as separate files in EPS or TIFF format. Halftones and colour plates should be included separately.

Further information about how to submit electronic manuscripts can be obtained from the Taylor & Francis (e-mail address: support@tandf.no) or from *Author services* at www.tandf.no. See also the folder *Electronic Manuscripts—Instructions to Authors Submittal Form*, which can be obtained from the editorial office.

**REFERENCES.** Examples of correctly cited references:

- Bugge, T., Mangerud, G., Elvebakk, G., Mørk, A., Nilsson, I., Fanavoll, S. & Vigran, J. O. 1995: The Upper Palaeozoic succession on the Finnmark Platform, Barents Sea. *Norsk Geologisk Tidsskrift* 75, 3–30.
- Landvik, J. Y. 1982: Weichsel stratigrafi, sedimentologi og glasiteknikk på Godøy, Sunnmøre. Unpublished thesis, University of Bergen, 151 pp.
- Mangerud, J. 1980: Ice-front variations of different parts of the Scandinavian ice sheet 13,000–10,000 years B.P. In Lowe, J. J., Gray, J. M. & Robinson, J. E. (eds.): *Studies in the Late-Glacial of North-West Europe*, 23–30. Pergamon Press, Oxford.

CONTENTS

MELEZHIK, V. A., FALICK, A. E., MEDVEDEV, P. V. & MAKARIKHIN, V. V.: Palaeoproterozoic magnesite-stromatolite-dolostone-'red bed' association, Russian Karelia: palaeoenvironmental constraints on the 2.0 Ga-positive carbon isotope shift .....	163
EBBESTAD, J. O. R. & YOCHELSON, E. L.: Isotrophic molluscs (Tergomya and Gastropoda) from the Upper Ordovician of Norway .....	187
MØLLER, J. J.: Submerged littoral sediments, beach ridges and wave-cut platforms off Troms, North Norway: revisiting old questions .....	203
MARTI MUS, M. & MOCZYDŁOWSKA, M.: Internal morphology and taphonomic history of the Neoproterozoic vase-shaped microfossils from the Visingsö Group, Sweden .....	213
MANGERUD, J.: Was Hardangerfjorden, western Norway, glaciated during the Younger Dryas? .....	229

