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# ACOUSTICS AND NOISE CONTROL IN CANADA

THE CANADIAN COMMITTEE ON ACOUSTICS



# L'ACOUSTIQUE ET LA LUTTE ANTIBRUIT AU CANADA

LE COMITÉ CANADIEN DE L'ACOUSTIQUE

CONTRIBUTIONS

Articles in English or French are welcome. They should be addressed to a regional correspondent or to a member of the editorial board.

SUBSCRIPTIONS

Acoustics and Noise Control in Canada is distributed free. To have your name put on the mailing list, please contact Donald H. McKay, Environmental Protection Service, Department of the Environment, Ottawa, Ontario K1A 0H3.

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(continued on inside back cover)

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CONTRIBUTION

Vous êtes invités à faire parvenir des articles en anglais ou en français. Prière de les adresser à un correspondant régional ou à un membre de la rédaction.

SOUSCRIPTION

L'acoustique et la lutte antibruit au Canada est distribué gratuitement. Veuillez communiquer avec M. Donald H. McKay, Service de la protection de l'environnement, Ministère de l'Environnement, Ottawa (Ontario), K1A 0H3, pour faire inscrire votre nom sur la liste d'envoi.

Ce bulletin d'information est publié par le Comité canadien de l'acoustique. La société Radio-Canada, le Ministère de l'Environnement et le Conseil national des recherches s'occupent de la coordination, de l'impression et d'autres services administratifs. Le contenu du bulletin ainsi que les avis exprimés ne représentent pas nécessairement l'opinion du Comité canadien de l'acoustique ou du gouvernement du Canada et des ministères et organismes fédéraux; ce sont les auteurs qui en assument la responsabilité.

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NEWS/NOUVELLES

Exhaust Noise Laboratory Established in Windsor

The Industrial Research Institute of the University of Windsor has established an Exhaust Noise Laboratory as part of an Institute research contract with Standard Tube Canada Limited, Woodstock, Ontario. The research will explore the acoustical properties of exhaust pipes and exhaust piping systems.

Standard Tube (a major supplier of exhaust piping to the automotive industry) is hopeful that information obtained will be useful to designers in attaining the noise performance levels required for 1975 automobiles.

The new laboratory has three main components - an automotive engine serving as an exhaust source with the engine noise isolated from the testing area, an exterior testing rig where the noise from test pipes can be measured without interference from the exhaust noise, and an instrument section.

FUTURE MEETINGS/CONFERENCES A VENIR

The next of the series of information seminars sponsored by the Division of Physics, National Research Council is scheduled for Oct. 15-17, 1973, and will be on Community Noise. Tentative plans are to cover technical, planning and legislative aspects of the subject. Readers wishing to receive further information directly as plans develop should contact T. Embleton, Division of Physics, National Research Council, Ottawa, Ontario, K1A 0S1, telephone (613) 993-2840.

Annual Meeting of the CCA

The 11th Annual Meeting of the Canadian Committee on Acoustics will be held in Ottawa on Oct. 18 and 19, 1973. A full day of technical program is being organized for Thursday Oct. 18 by Doug Allan on the general topic of Industrial Noise Problems, with Friday morning being devoted to the business meeting.

This is a call for papers and anyone wishing to present a paper or otherwise contribute to the technical program should contact D.H.W. Allan, Industrial Research Institute, University of Windsor, Windsor 11, Ontario, telephone (519) 253-8862.

RECENT CANADIAN PUBLICATIONS/PUBLICATIONS CANADIENNES RECENTES  
DONALD H. MCKAY  
DEPARTMENT OF THE ENVIRONMENT/MINISTÈRE DE L'ENVIRONNEMENT

We intend to publish information, including abstracts, if provided by the author(s), on recent publications of persons working in acoustics and noise control in Canada. Contributions to this section are welcome. They should be sent to a regional correspondent or to a member of the editorial board.

The Department of the Environment assumes no responsibility for the accuracy or the completeness of this list.

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Nous nous proposons de faire publier des informations, y compris des résumés (s'ils sont fournis par l'auteur), sur des ouvrages récents de personnes travaillant dans le domaine de l'acoustique et de la lutte antibruit au Canada. Nous vous invitons à envoyer vos documents à un correspondant régional ou à un membre du conseil de rédaction.

Le ministère de l'Environnement n'assume aucune responsabilité dans le cas d'une liste inexacte ou incomplète.

Brammer, A.J., Noise Radiation from Engine and Drive Train, paper presented to the Acoustics Soc. America, Nov. 1972, (author's address: Acoustics Section, Div. Physics, National Research Council, Ottawa, Ont. K1A 0S1).

Brammer, A.J., Olson, N., Piercy, J.E., and Toole, F.E., Non-linear effects in Helmholtz - resonator mufflers for internal combustion engines, paper presented at the meeting Acoust. Soc. America, Buffalo, April 1972 (author address: Acoustics Section, Div. Physics, National Res. Council, Ottawa, Ontario K1A 0S1).

Brammer, A.J., and Piercy, J.E., Mufflers for small engines: some phenomena revealed by analysis of waveforms, paper presented at the 85th mtg., Acoust. Soc. America, Boston, April 1973 (authors' address: Acoustics Section, Div. Physics, National Res. Council, Ottawa, Ont. K1A 0S1).

Brammer, A.J., and Piercy, J.E., In-ear monitoring of noise exposure, paper presented to the 84th meeting of the Acoustical Society of America, Miami, Nov. 1972 (procure from Acoustics Section, Div. of Physics, National Res. Council, Ottawa, Ontario K1A 0S1).

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Brammer, A.J., and Toole, F.E., The noise thermometer, a large-display sound level meter, J. Acoust. Soc. America, v. 51, p. 1777-80 (1972).

Crowley, R.W., The Effects of an Airport on Land Values, working paper A72.4, Ministry of State for Urban Affairs, 333 River Road, Ottawa, Ont. K1A 0P6, Feb. 1972.

Donato, R.J., Sound transmission through a double-leaf wall, J. Acoust. Soc. America, v. 51, n. 3 (pt. 1), p. 807-15 (March 1972).

Donato, R.J., Insulating Houses Against Noise, to be published J. Acoustic Soc. America, 1973 (author's address: Building Physics, Div. Building Res., National Res. Council, Ottawa, Ont. K1A 0R6).

Donato, R.J., Correlation of reverberant sound fields using a k-transform technique, Res. paper 505, Building Phys., Div. Building Res., National Res. Council, Ottawa, Ont., K1A 0R6 .

Eggleston, P.L., The Sonic Boom-Weighing its Implications for Policy Considerations, Canadian Aeronautics and Space J., v. 18, n. 5, p. 117 (May 1972)

Foreman, J.E.K., and Dickinson, S.M., Noise Measurements and Attitudinal Surveys of the Cities of London and Woodstock, Ontario, Canada, submitted to Sound and Vibration, 1972 (authors' address: Dept. Mech. Engng. U. Western Ontario, London, Ont.).

Garland, D.B., Augmentor-wing shows promise for improved STOL operations, ICAO Bulletin, v. 72, n. 12, p. 9 (Dec. 1972).

- Goulet, P., and Northwood, T.D., Subjective Rating of Broad-band Noises Containing Pure Tones, paper presented to the 84th meeting of the Acoustical Soc. America, Miami, Nov. 1972 (procure from Building Physics Section, Div. Building Res., National Res. Council, Montreal Road, Ottawa, Ont. K1A 0R6).
- Harford, K.D., and Siddon, T.E., Certification of Exhaust System Components, paper presented at 85th meeting, Acoust. Soc. America, Boston, April 1973 (authors' address: Aero Acoustic Systems Ltd., 3-690 Number 3 Road, Richmond, B.C.).
- Harford, K.D., Siddon, T.E., and Kennedy, D.S., Stationary Motor-Vehicle Noise Assessment in Semi-reverberant spaces, paper presented at 85th meeting, Acoust. Soc. America, Boston, April 1973 (authors' address: Aero Acoustic Systems Ltd., 3-690 Number 3 Road, Richmond, B.C.).
- Johnston, G.W., V/STOL Community Annoyance due to Noise: Proposed Indices and Levels, Res. Report No. 6, U. of Toronto and York U. Joint Program in Transportation (Centre for Urban and Community Studies, Univ. of Toronto, 150 St. George St., Toronto 181, Canada, June 1972).
- Koczkur, E., Broger, E.D., Henderson, V.L., and Lightstone, A.D., Noise Monitoring and a Sociological Survey in the City of Toronto, J. Air Pollution Control Association, v. 23, n. 2, p. 105 (Feb. 1973).
- Langford, W.H., Canada Industrial Noise 1972, Report C/S/H/2, Legislative Res. Branch, Dept. of Labour, Ottawa, Ont. K1A 0J2, Jan. 1973.
- Lee, H.K., and Ribner, H.S., Direct Correlation of Noise and Flow of a Jet, J. Acoust. Soc. America, v. 52, p. 1280 (1972).
- McNairn, C.H., Airport Noise Pollution: the Problem and the Regulatory Response, Canadian Bar Review, vol. 50, no. 2, p. 248 (May 1972).
- Morris, P.J., Richarz, W., and Ribner, H.S., Reduction of peak jet noise using jet refraction (abstract), J. Acoustical Soc. America, v. 52, p. 163 (1972).
- National Research Council of Canada, Legislative Control of Noise-Feasibility and Recommendations, Report APS-500, July 1972 (procure from Acoustics Section, Div. of Physics, National Res. Council of Canada, Ottawa, Ont. K1A 0S1).
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- Piercy, J.E., The Absorption of Sound in the Atmosphere, paper presented at an Acoustical Soc. America Symposium, Sept. 1972 (author's address: Acoustics Section, Div. Physics, National Res. Council, Ottawa, Ont. K1A 0S1).
- Piercy, J.E., Noise Propagation in the Open Atmosphere, paper presented at the 84th mtg., Acoust. Soc. America, Miami, Nov.-Dec. 1972, (author's address: Acoustics Section, Div. Physics, National Res. Council of Canada, Ottawa, Ont. K1A 0S1).

Piercy, J.E., Attenuation of Sound in Air I: Theory, draft of a paper to be submitted to the J. Acoustical Soc. America, 1973 (author's address: Acoustics Section, Div. Physics, National Res. Council, Ottawa, Ont. K1A 0S1).

Piercy, J.E., Attenuation of Sound in Air II: Measurements and Methods of Calculation, draft of a paper to be submitted to the J. Acoustical Soc. America, 1973 (author's address: Acoustics Section, Div. of Physics, National Res. Council of Canada, Ottawa, Ont. K1A 0S1).

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Piercy, J.E., Embleton, T.F.W., and Olson, N., Impedance of Soft Ground and its Effect on Practical Measurements, paper presented at 85th mtg., Acoust. Soc. America, Boston, April 1973 (authors' address: Acoustics Section, Div. Physics, National Res. Council, Ottawa, Ont. K1A 0S1).

Poulin, M., and Northwood, T.D., Reverberation Room and Impedance Tube Measurements of Carpet Absorption, paper presented to the 84th mtg., Acoust. Soc. America, Miami, Nov. 1972 (procure from Building Physics, Div. Building Res., National Res. Council, Ottawa, Ont. K1A 0R6).

Price, A.J., Community Noise Survey of Greater Vancouver, J. Acoustical Soc. America, v. 52, n. 2 (pt. 1) p. 488-92 (Aug. 1972).

Price, A.J., Wakefield, C.W., and Rackl, R., The Measurement of Acoustical Flanking in Buildings, p. 83 of Inter-noise 72, proc. Inst. Noise Control Engng., Acoust. Soc. Am., Intern. Conf. Noise Control Engng., Washington, Oct. 1972 (purchase from Editor, Noise/News, P.O. Box 1758, Poughkeepsie, N.Y. 12601, price \$25.00).

Price Waterhouse Associates, Cost Benefit Study on Land Use Within the Borough, 1972 (purchase from Office of the Clerk, Corporation of the Borough of York, 2700 Eglinton Ave., W., York, Ont. M6M 1V1, price \$12.50).

Rackl, R., Further Studies on Cross Correlations between Fluid Dilatations and Flow Noise, paper presented at the 84th meeting, Acoustical Soc. America, Miami, 28 Nov.-1Dec. 1972, (author's address: Dept. of the Environment, Environmental Protection Service, Ottawa, Ontario. K1A 0H3).

Reif, Z., and Brown, R., Evaluations of Proposed Regulations Pertaining to Noise Created by Motor Vehicles, Industrial Res. Inst., Univ. of Windsor, Windsor, Ont., 6 July 1972 (purchase price \$4.00).

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Ribner, H.S., MacGregor, G.R., and Lam, H., Basic Directivity of jet noise with improved correction for refraction (abstract), J. Acoustical Soc. America, v. 52, p. 163 (1972).

Ribner, H.S., Morris, P.J., and Chu, W.H., Laboratory simulation of development of superbooms by atmospheric turbulence, J. Acoustical Soc. America, v. 53, n. 3, p. 926 (March 1973).

Schafer, R.M., et al., A Survey of Community Noise By-laws in Canada, Behavioural Science Foundation and Communication Studies, Simon Fraser University, Burnaby 2, B.C., 1972 (purchase price: \$0.50).

Shaw, M.F., Truck noise reduction: a review of alternative strategies, Report 42, Systems Analysis Branch, Canadian Transport Commission, 275 Slater, Ottawa, Ont. K1A 0N9, Sept. 1972.

Shaw, E.A.G., and Olson, N., Theory of Steady-State Urban Noise for an Ideal Homogeneous City, J. Acoust. Soc. America, v. 51, p. 1781-93 (1972).

Siddon, T.E., Jet Noise Research - Progress and Prognosis, p. 452 of Inter-Noise 72, proc. Intern. Conf. Noise Control Engng., Washington, Oct. 1972 (procure from Editor, Noise/News, P.O. Box 1758, Poughkeepsie, N.Y. 12601).

Siddon, T.E., Surface dipole strength by cross-correlation method, J. Acoust. Soc. America, v. 53, n. 2, p. 619 (Feb. 1973).

Siddon, T.E., and Harford, K.D., A low-cost approach to area-wide noise monitoring, submitted to J. Acoustical Soc. America, 23 Mar. 1973 (authors' address: Consulting Engng.Div., Aero Acoustic Systems Ltd., 3-690 Number 3 Road, Richmond, B.C.).

Thiessen, G.J., Noise Problems in the Community, paper presented to the Air Pollution Control Assoc., Nov. 1972 (author's address: Acoustics Section, Div. of Physics, National Res. Council, Ottawa, Ont. K1A 0S1).

Thiessen, G.J., Effect of Noise on Sleep, paper presented at the 84th meeting Acoust. Soc. America, Miami, Nov.-Dec. 1972, (procure from the author, Acoustics Section, Div. Physics, National Res. Council of Canada, Ottawa, Ont. K1A 0S1).

Thiessen, G.J., Community Noise-Surface Transportation, paper presented to the Acoust. Soc. America, Nov. 1972, (author's address: Acoustics Section, Div. Physics, National Res. Council, Ottawa, Ont. K1A 0S1).

Warnock, A.C.C., Acoustics of Open-Plan Offices, to be published J. Acoust. Soc. America, 1973 (author's address: Building Physics, Div. Building Res., National Res. Council, Ottawa, Ont. K1A 0R6).

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CUMULATIVE PUBLICATIONS LIST/LISTE CUMULATIVE DE PUBLICATIONS

We intend to print cumulative lists of publications of Canadian individuals or organizations as is illustrated below. Contributions are welcome. We may shorten long lists to fit the space available.

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Nous avons l'intention de faire imprimer des listes cumulatives d'ouvrages publiés par des particuliers ou des organismes canadiens, tel qu'il est illustré ci-dessous. Nous vous invitons à contribuer à cette entreprise. Nous aurons peut-être toutefois à raccourcir certaines listes en fonction de l'espace disponible.

Building Physics Section, Division of Building Research, National Research Council of Canada:

The following is a partial list of reports, reprints, etc. available from the Building Physics Section, Division of Building Research, National Research Council of Canada, Ottawa, Ontario K1A 0R6.

- NRC 3311 The horn as a coupling element for acoustic impedance measurements by T.D. Northwood and H.C. Pettigrew, reprint from the Journal of the Acoustical Society of America, Vol. 26, No. 4, July 1954, p. 503-506. (DBR Research Paper No. 12)
- NRC 3475 Acoustical Factors in architectural design by T.D. Northwood, reprint from Journal, Royal Architectural Institute of Canada, Vol. 31, No. 11, November 1954, p. 397-399. (DBR Technical Paper No. 23)
- NRC 4125 Noise control in Toronto's new subway by W.H. Paterson, Toronto Transit Commission and T.D. Northwood, Division of Building Research, reprint from Noise Control, Vol. 2, No. 5, September 1956, p. 28. (DBR Research Paper No. 28)
- NRC 4215 Acoustical design of enclosures for power transformers by T.D. Northwood, L.B. Smith and E.J. Stevens, reprint from Noise Control, Vol. 3, No. 2, March 1957, p. 37-39, 86. (DBR Research Paper No. 31)
- NRC 4747 Acoustical design of the Alberta Jubilee Auditoria by T.D. Northwood and E.J. Stevens, reprint from the Journal of the Acoustical Society of America, Vol. 30, No. 6, June 1958, p. 507-516. (DBR Research Paper No. 70)
- NRC 5163 Absorption of sound by a strip of absorptive material in a diffuse sound field by T.D. Northwood, M.T. Grisaru, and M.A. Medcof, reprint from the Journal of the Acoustical Society of America, Vol. 31, No. 5, May 1959, p. 595-599. (DBR Research Paper No. 83)
- NRC 5347 Random sound field in reverberation chambers by C.G. Balachandran, reprint from the Journal of the Acoustical Society of America, Vol. 31, No. 10, October 1959, p. 1319-1321. (DBR Research Paper No. 89)
- NRC 5600 Sound absorption coefficients and acoustical design by T.D. Northwood and C.G. Balachandran, reprint from Proceedings of the Third International Congress on Acoustics, Vol. 2, 1961, p. 847-849. (DBR Research Paper No. 141)
- NRC 6759 Sound-insulation ratings and the new ASTM sound-transmission class by T.D. Northwood, reprint from the Journal of the Acoustical Society of America, Vol. 34, No. 4, April 1962, p. 493-501. (DBR Research Paper No. 160)
- NRC 6812 Rail vehicle noise by T.D. Northwood, reprint from the Engineering Journal, Vol. 46, No. 1, January 1963, p. 30-33. Discussion, Vol. 46, No. 3, March 1963, p. 62. (DBR Research Paper No. 155)

- NRC 7005 Acoustics and church architecture by T.D. Northwood, reprint from the Journal of the Royal Architectural Institute of Canada, Vol. 30, No. 7, July 1962, p. 51-55. (DBR Technical Paper No. 140)
- NRC 7493 Absorption of diffuse sound by a strip or rectangular patch of absorptive material by T.D. Northwood, reprint from Journal of the Acoustical Society of America, Vol. 35, No. 8, August 1963, p. 1173-1177. (DBR Research Paper No. 187)
- NRC 8087 Sound insulation and the apartment dweller by T.D. Northwood, reprint from the Journal of the Acoustical Society of America, Vol. 36, No. 4, April 1964, p. 725-728. (DBR Technical Paper No. 185)
- NRC 8398 Comparison of reverberation-room and impedance tube absorption measurements by D. Olynyk and T.D. Northwood, reprint from the Journal of the Acoustical Society of America, Vol. 36, No. 11, November 1964, p. 2171-2174. (DBR Research Paper No. 240)
- NRC 8896 Subjective judgments of footstep-noise transmission through floors by D. Olynyk and T.D. Northwood, reprint from the Journal of the Acoustical Society of America, Vol. 38, No. 6, December 1965, p. 1035-1039. (DBR Research Paper No. 281)
- NRC 9092 Direct-energy density in transmission-loss measurements by R.J. Donato, reprint from Journal of the Acoustical Society of America, Vol. 40, No. 1, July 1966, p. 1-3. (DBR Research Paper No. 287)
- NRC 9162 Noise control in residential buildings by T.D. Northwood, H.B. Dickens and A.T. Hansen, Summary of Seminar presented at 1966 Annual Convention of the NHBA in Montreal, Jan. 11, 1966. (DBR Technical Paper No. 230)
- NRC 9882 Angular Distribution of lower room modes by R.J. Donato, reprint from the Journal of the Acoustical Society of America, Vol. 41, No. 6, June 1967, p. 1496-1499. (DBR Research Paper No. 340)
- NRC 10056 Assessment of wood-joist and concrete floors by D. Olynyk and T.D. Northwood, reprint from Journal of the Acoustical Society of America, Vol. 42, No. 4, April 1968, p. 730-733. (DBR Research Paper No. 358)
- NRC 10612 Frequency considerations in the subjective assessment of sound insulation by T.D. Northwood and D.M. Clark, reprint from the Proceedings, 6th International Congress on Acoustics, Tokyo, August 1968, p. 109-E--112. (DBR Research Paper No. 391)

- NRCC 11462      Influence of diffusivity on the transmission loss of a single-leaf wall by A. de Bruijn, reprint from the Journal of the Acoustical Society of America, Vol. 47, No. 3 (Part I), March 1970, p. 667-675. (DBR Research Paper No. 444)
- NRCC 11463      Subjective study of the sound-transmission class system for rating building partitions by D.M. Clark, reprint from the Journal of the Acoustical Society of America, Vol. 47, No. 3 (Part I), March 1970, p. 676-682. (DBR Research Paper No. 445)
- NRCC 12337      Correlation of reverberant sound fields using a k-transform technique by R.J. Donato, May 1972. (DBR Research Paper No. 505)
- NRCC 12352      Sound transmission through a double-leaf wall by R.J. Donato, reprint from Journal of the Acoustical Society of America, Vol. 51, No. 3 (Part I), March 1972, p. 807-815. (DBR Research Paper No. 506)

TECHNICAL NOTES

- TN 433      Calculation of motor vehicle noise alongside level and depressed roadways, by T.D. Northwood and D. Olynyk, February 1965.
- TN 501      Airborne sound insulation in a series of wood-frame apartment buildings, by D. Olynyk, September 1967.
- TN 526      Sound insulations of some window constructions, by D. Olynyk, November 1968.

CANADIAN BUILDING DIGESTS

- CBD 10\*      Noise transmission in buildings, by T.D. Northwood, October 1960.
- CBD 41\*      Sound and people by T.D. Northwood, May 1963.
- CBD 51\*      Sound insulation in office buildings, by T.D. Northwood, March 1964.
- CBD 92\*      Room acoustics - design for listening, by T.D. Northwood, August 1967.
- CBD 139      Acoustical design of open-planned offices, by L.W. Hegvold, July 1971.

BUILDING RESEARCH NOTES

- BRN 44      Absorption of diffuse sound by a strip or rectangular patch of absorptive material, by T.D. Northwood, April 1964.
- BRN 59      Impact sound transmission tests on a concrete slab floor with various surface constructions, by D. Olynyk, July 1967.
- BRN 65      Impact sound transmission field data for concrete and wood joist floors, by D. Olynyk, November 1968.
- BRN 66      Transmission loss of plasterboard walls, by T.D. Northwood, October 1968. (Revised Dec. 1968, July 1970)

IN PRESS

1. Acoustics of Open-Plan Offices, by A.C.C. Warnock (to appear in J. Acoust. Soc. Am.).
2. Insulating Houses Against Noise, by R.J. Donato (to appear in J. Acoust. Soc. Am.).

ORAL PRESENTATIONS (available only in manuscript)

1. Noise and What to Do About It, by T.D. Northwood (to Central Chapter, Assoc. Prof. Engineers).
2. Subjective Rating of Broad-Band Noises Containing Pure Tones, by P. Goulet and T.D. Northwood (to Acoust. Soc. Am., November 1972).
3. Reverberation Room and Impedence Tube Measurements of Carpet Absorption, by M. Poulin and T.D. Northwood (to Acoust. Soc. Am., November 1972).

SHORT INFORMATION LISTS AND BIBLIOGRAPHIES ON NOISE/  
BREVES LISTES DE DOCUMENTS D'INFORMATION ET BIBLIOGRAPHIES SUR LE BRUIT  
DONALD H. MCKAY  
DEPARTMENT OF THE ENVIRONMENT/MINISTÈRE DE L'ENVIRONNEMENT

The Department of the Environment has prepared a number of information lists and bibliographies on noise. Each is of the order of one to three pages long. The information lists and bibliographies are in a computer editing system to facilitate frequent updating.

Two of the bibliographies, on train system noise and on noise and people, are given below. An information list on recent Canadian publications is given elsewhere in this issue.

Bibliographies are also available on the following subjects: airplane noise, noise and animals, noise control, fixed-site noise, noise measurement, occupational noise and road system noise. Information lists and bibliographies on other subjects are currently in preparation.

Copies of the information lists and bibliographies may be obtained free by writing to Donald H. McKay, Environmental Protection Service, Department of the Environment, Ottawa, Ontario, K1A 0H3.

Short Bibliography on Train System Noise

Prepared by Donald H. McKay, Environmental Protection Service,  
Department of the Environment, Ottawa, Ontario.  
K1A 0H3, Canada.

Prepared 16 February 1973.

The Department of the Environment assumes no responsibility for the completeness or the accuracy of this bibliography.

Bender, E.K., and Heckl, M., Noise Generated in Subways Aboveground and in Stations, Report OST-ONA-70-1 (AD 701 220) prepared by Bolt Beranek and Newman for the U.S. Department of Transport, Jan. 1970.

Dickerson, D.O., ed., Transportation Noise Pollution, Control and Abatement, Report NASA-CR-115881 (N71-15557) National Aeronautics and Space Administration, Langley Research Center, and Old Dominion University, Summer 1970.

Embleton, T.F.W., and Thiessen, G.J., Train Noises and Use of Adjacent Land, Sound, Its Uses and Control, p. 10 (Jan.-Feb. 1962).

Kendall, H.C., Noise Studied in Retarder Yards, Railway System Controls, vol. 2, no. 7, p. 9 (July 1971).

Kirschner, Francis, Control of Railroad Wheel Screech Noise, 6th International Congress on Acoustics, vol. 4, section F, p. F-61-F-64, Tokyo, Japan, (August 1968).

Kirschner, Francis, New Development in the Control of Railroad Wheel Screech Noise, Proc. Intern. Conf. on Noise Control Engineering, 4-6 Oct. 1972, Washington, D.C., Inst. Noise Control Engineering and Acoustical Soc. America (Noise/News, P.O. Box 1758, Poughkeepsie, New York 12601, 1972).

Northwood, T.D., Rail Vehicle Noise, Res. Paper 155, Div. Building Research, National Research Council of Canada, Ottawa, Canada, April 1963.

Serendipity, Inc., Eastern Operations Division, Suite 701, 2001 Jefferson Davis Highway, Arlington, Virginia 22202, A Study of the Magnitude of Transportation Noise Generation and Potential Abatement, vol. V, Trains System Noise, Report No. OST-ONA-71-1, (PB203 186), Nov. 1970.

Wyle Laboratories, Transportation Noise and Noise from Equipment Powered by Internal Combustion Engines, Report No. NTID 300.13 (PB 208 660) prepared for the U.S. Environmental Protection Agency, Washington, D.C. 20460 (31 Dec. 1971).

Short Bibliography on the Effects of Noise on People

Prepared by Donald H. McKay, Environmental Protection Service,  
Department of the Environment, Ottawa, Ontario,  
K1A 0H3, Canada.

Prepared 22 February 1973.

The Department of the Environment assumes no responsibility for the completeness or the accuracy of this bibliography.

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