be positive steps toward achieving certain objectives as previously outlined.

On the other hand, there are many who would advocate constituting the group in Canada as a technical society, along the lines of other contemporary societies or, in the case of CCA, as a parallel in Canada to the Acoustical Society of America. Perhaps a recommendation to the ASA for the formation of a Canadian branch of this society would best meet the needs. It is not clear in my mind, however, what advantages may be associated with a technical society (dealing presumably with acoustical matters of a technical nature) as compared with a more general association of individuals and groups whose activities directly or indirectly embrace acoustics.

The agenda for the next annual meeting of the CCA, to be held at the National Research Council in Ottawa on October 18 and 19, 1973 (following the Community Noise Seminars sponsored by the Division of Physics of NRC), is now being drafted. I would hope that each of you who attend this meeting would come prepared to comment during the business session on the possibilities which I have outlined for restructuring of the Committee. I would welcome written comments on this matter at any time.

* * * * * *

## ACOUSTICS AT CRIQ

Daryl May and Gilles Crépeau
Centre de Recherche Industrielle du Québec
572, avenue Orly,
c.p. 2090, Dorval 780, Québec

Assisting Quebec industry is the goal of Centre de Recherche Industrielle du Québec, a provincial-government corporation recently set up in Quebec City, in Dorval (near Montreal) and in Sherbrooke, under its director-general, Mr. Michel Normandin. CRIQ's technical divisions include an industrial mechanics section inside which is an acoustics group.

Acoustics at CRIQ is, of course, oriented towards industrial needs. Broadly the activities can be divided into two areas. The first is to deal with industrial noise problems. The second is to develop acoustics products for industry to produce itself. Although CRIQ's acoustics section got under way only about a year ago, work in both these areas has grown to quite significant proportions. While many of the details are naturally confidential and only the client may disclose them, some broad evidence of progress may be given here.

Dealing with existing industrial problems has involved working with industrial clients to quieten noisy product lines. These activities are becoming increasingly challenging with the coincidence of the tendency for the public to demand quieter products and the tendency for manufacturers to want to sell lightweight

structures subjected to stringent "value-analysis". Noise control in many products has moved beyond the stage where a crude "double-the-weight" approach will suffice. As an industrial research centre, CRIQ appears well-placed to satisfy industry's needs for scientific solutions to quieten noisy products.

A typical CRIQ service in this way would begin with CRIQ's information service, known as SAIT (Service d'Analyse d'Information Technologique). SAIT illumines the legislative and other pressures for quieter products and, at the same time, advises the acousticians of recent, relevant reports and developments in acoustics materials. CRIQ's acousticians can then discuss with manufacturers a suitable development programme. Typically, this would begin with establishing the present noise output, and agreeing a broad target line. The product would then undergo a noise source analysis - probably in CRIQ's 2000 cu.ft. anechoic chamber - so as to expose the sources which must be tackled. (The need for such an analysis is often a major educational lack in the industrial partner, who may not appreciate the illogicality of tackling non-prominent noise sources). This source survey is facilitated by a line of analysis equipment, covering constant percentage bandwidths from an octave to 6 per cent, taking both microphone and accelerometer inputs.

The noise survey leads in turn to a noise reduction programme. For some such sources, CRIQ has packaged silencing devices, in one case making use of a computer optimisation routine operating on an improved mathematical model for the acoustics in question. Of course, if it served the client best, one would recommend another, perhaps proprietary product... though an interesting observation is that proprietary acoustic materials have so far been found to be too expensive for most applications.

Product noise reduction obviously ends with a reliable measure of the noise output, according to whatever norm pertains. This is also done for manufacturers wishing to certify a noise level, even if CRIQ has not played a part in attaining that noise level. A typical example has been noise certification for the Quebec snowmobile industry according to the SAE J192 procedure now widely incorporated in legislation. CRIQ tests about fifty models each year and issues an independent, unbiased and confidential certificate. A team is available to manufacturers on generally a day's notice.

Industrial noise problems extend increasingly to hearing conservation, with new legislation currently expected to result in something of a scramble for CRIQ's services to measure noise exposure in factories. This has been done in the past though to a limited extent: CRIQ has done some work in furniture plants. In the future, probable tasks will include advice or services in audiometry, as well as in quietening or masking sources, scheduling workdays... or simply giving a plant a clean bill of health regarding noise exposure.

Since its services have been available only a short while, CRIQ has played only a small part in architectural acoustics, consisting of curing a reverberation problem in a broadcast studio, and some transmission problems elsewhere. Also not yet prominent in the activities is advice about the location of future plant, but one problem that was tackled had all the proper components of what can be expected in the future: an assessment of the expected noise output determined from existing plants and from calculation; a study of its propagation to an adjacent residential area; an evaluation of norms and by-laws relating to the noise levels; and, finally, a technical input to the dispute between the promoter and the city government. The result, unfortunately, was a triumph of illogicality: the noise exposure complied with internationally-accepted norms but not with the city by-laws. These the city officials privately acknowledged to be excessively stringent... but conveniently excluded a development they did not want but had no other powers to curb!

The second major area of acoustics endeavour at CRIQ, which is to develop acoustics products, stems from marketing expectations that acoustics is currently expanding fast enough to justify increasing participation by Quebec industry in satisfying future needs. Marketing projections, by an in-house Marketing team as well as independent surveys, project sales increases of some products by as much as 1000% over the next few years. The products under development are naturally not ready for publicity, but the underlying philosophy is to develop a prototype for an industrial partner to mass-produce, since CRIQ is not a production organization. CRIQ's work is seldom a gift to the company involved, which either pays for development as it occurs... or agrees to a delayed refunding based on the sales of the product. The manufacturer may, however, be subsidized by federal or other research grants, and these may be available to him somewhat more simply when he associates himself with a logical, carefully detailed R & D programme plan prepared by CRIQ.

It is obviously desirable in product development to make use of superior technology, and this CRIQ tries to bring to bear wherever possible, taking patents where appropriate. On the other hand, where marketing findings reveal an every-day product currently produced elsewhere but now justifying local production, it may still be desirable to provide the design input to make that possible.

CRIQ's acoustics facilities are in Dorval at 582 Orly Avenue, phone (514)-636-4401 or telex 02-25678. Daryl May will be pleased to discuss their services with potential clients.

o o o o o o