ISVR has now been in existence almost ten years. Before that, research into noise control had been carried out in the Department of Aeronautics for twelve years. Noise Research at Southampton has, therefore, grown into adulthood (the good old 21 years) during the past year, one year earlier in fact than the University itself.

How much has it contributed, and how much is expected of it during the next decade? This is a question I should like to put to you as an incidental part of a broad brief recently given to me by the Secretary of State for the Environment, viz. to take a ten year look at the growth or reduction of the noise nuisance in this country during the next decade.

The national picture is one which gives cause for great concern whilst, at the same time presenting a series of great challenges; the number of persons in our urban communities subject to a traffic noise level greater than 70dB (A scale) for more than 10% of the time is - at present - 8,500,000. Since at this level, as many people complain about traffic noise as do not, this implies that above 4,000,000 are disturbed in urban areas. If nothing is done to halve the growth of such noise, this can be expected to rise to 14 millions by 1980, or to 7,000,000 people if no increase in noise is allowed on any one vehicle.

It is further estimated that 2,000,000 people live within the 35 NNI contours around Heathrow, and some 500,000 are seriously disturbed; equally disturbing is the recent disclosure that 600,000 people work in a noise environment which is likely to give rise to substantial deafness over a number of years.

If we add to this an unspecifiable - but large - number of persons disturbed in their neighbourhoods by miscellaneous noises, it is not an overstatement to say that noise is now our premier pollutant.

The whole matter might sound hopeless if it were not that our socio-acoustic researches have put us into a position where we can fairly (con't to page 2)
accurately predict the effects of noise reductions on the environment. For example, the effect of halting the trend for diesel engines to become more noisy and to replace them (power for power) by engines (and their associated vehicles) which are 10dB quieter would reduce the population disturbed by traffic from 14,000,000 to less than 500,000.

What a challenge this is to the ISVR. Its programme on diesel engine noise is of enormous importance both in terms of science and sociological return. I would go so far as to say that the 'low noise diesel engine truck' programme being carried out jointly by ISVR, MIRA, and the Department of the Environment is the most thrilling applied research and development programme in any University today.

But this is just one of the exciting projects going on. I asked earlier what had ISVR succeeded in doing during the last ten years? Apart from its development into what is still a unique educational system in all aspects of acoustics, it has prepared the way for many of the advances now being introduced industrially. Its work on fan noise is providing dividends in the RB211 engine and its work on the effect of impulsive noises on deafness and on annoyance has helped greatly to pinpoint the nature of the factory deafness and the acceptability of the sonic boom. But what will the next decade produce? The Institute is at a crossroads now and must before long choose its new path.

Since applied research invariably leads to the need to understand the fundamental nature of physical and sociological phenomena it would be excusable if established workers in the field fell to the temptation of confining themselves to basic problems - after all, pure research is so easy to finance and to justify. But scientists who have eschewed practical problems have, in the past, filled the pot of knowledge with some pretty insipid soup. I still believe that the best and most taxing knowledge is that of 'how to use knowledge' - no matter how much the purists like to look down upon it.

The alternative road, that of 'development', whilst harder to follow is more likely to be productive. It needs larger scale experimentation and the money to go with it, it needs collaboration with outside bodies in industry and government and it must await some awakening by the Research Councils to the fact that 'big engineering' is just as important as 'big physics' and it needs special systems of funding.

It also needs a wide-awake University to recognise that in 'interdisciplinary institutes' of the ISVR type may lie the embryos of future university teaching developments in transportation, medicine, town and environmental planning, instrumentation and pollution control.

The ISVR is now large enough to tread several paths. The important thing is to realise that these are paths and that they lead to known, but very different, destinations.

Is the acoustic work of the Institute being aimed along known paths? And how many of its students are aware of the broad significance of their programmes? Will your work have an impact on the acoustical environment of this country - if not in the next decade - at least in the following one?

Too much university work today is 'insipid soup' and this is why industry has doubts about wanting you.

Prof. Richards, who is well-known at ISVR as its founder and first director, is currently vice-chancellor at The University of Technology, Loughborough.
Thirty-three students are beginning work on ISVR MSc courses in Sound and Vibration, in Audiology and in Environmental Aspects of Automotive Engine Design and Operation. Both the Audiology and Automotive Courses are offered for the first time this year and response to both has been enthusiastic.

Six students will commence the Audiology studies which are designed to train science-oriented graduates for audiological scientific officer posts in the forthcoming Hospital Scientific Service.

The new Automotive course is a joint project of ISVR and the Mechanical Engineering Department and includes topics from environmental studies to basic engine thermodynamics. Seven students are enrolled.

Twenty are enrolled in the traditional sound and vibration course which covers subjects ranging from the effects of noise and vibration on man, to the physics of acoustics and structural dynamics.

All three courses are one-year in duration and require completion of a lecture course and research project.

ISVR MEMBERS TO CANADA, U.S.

Aruna Kapur and Parma Mungur have been invited by Prof. Graham Gladwell, (ISVR, 1968-1970) to play their duct acoustics games on the University of Waterloo computer from October to December.

Aruna will be returning to ISVR in January, but the Mungur family will be making its way to Hampton, Virginia where Parma will become associate professor with the ISVR-George Washington University-NASA programme at the NASA-Langley Research Center.

Currently in Hampton are Maurice Petyt and family and George Kuhn. Both are lecturing with the ISVR-GW-NASA programme and will return to Southampton in January.

Other ISVR changes include the departure of Ian MacDonald for Canada after 6 years here. Ian will work as a consultant for 3 months.

WOLFSON UNIT OFFERS COURSES

The Wolfson Unit will offer three specialist courses next month. They are "Industrial audiology and hearing conservation" for members of the Factory Inspectorate, "Noise and the brewing industry" (both organized by Ian Acton) and "A further course for engineers in process industries" (organizer Andy Middleton).

Courses projected for 1973 are:

January: "Advanced refresher course for Public Health Inspectors" (Ian Acton)

26-30 March: Clinical Audiology Course (Audiology Group)

9-10 July: Noise from prime movers. A symposium being organized by Prof. Priede for the BAS at the University of Southampton.

17-21 September: Technical Audiology Course A, and

24-28 September: Technical Audiology Course B - both limited to 24 National Health Service Technicians.

Any further information on ISVR related courses may be obtained from Grace Hyde, Conference Secretary, ISVR.
ISVR–LOCKHEED WIN £300,000 CONTRACT

A joint ISVR-Lockheed team including Professors Phil Doak and Geoff Lilley, and Mike Fisher and Peter Lush, has won a £300,000 follow-on contract to carry on the remaining phases of a jet noise research programme over a two-year period beginning in November 1972. The first, 13-month phase of research into supersonic jet engine noise was completed in July.

Administering the grant is the US Air Force Aero-Propulsion Laboratory, Wright-Patterson Air Force Base, with financial support from the US Department of Transportation.

The work will be carried out at the Lockheed-Georgia Company's Aerospace Sciences Laboratory in Marietta, Georgia, with Harry Plumblee as programme director.

Results of the Phase I study have been issued by the USAF as Technical Report AFAPL-TR-72-53 — Volumes I–VI (plus two data appendix volumes accompanying Volume V).

The total follow-on contract funds are being shared approximately equally between the Lockheed-Georgia/ISVR "flying international" team and an "all-American" team from General Electric.

The next deadline for your contributions is November 17.

ISVR VITAL STATISTICS

81–23–159 — these are the vital statistics of our mailing list. For the first edition we sent 81 copies to the United States and other countries outside Europe, 23 to European countries (including Eastern Europe) and 159 within Great Britain.

The total figure mailed out amazingly almost equalled the number circulated within the ISVR itself. Our biggest overseas recipient is the US, with 28 (incl. two postgrad wives), next are Australia and Canada, nearly equal with 17 and 16 respectively. New Zealand has only one.

Norway is the highest in Europe, with 5, Germany has 4, Czechoslovakia 3, France and Sweden 2 each. Spain, Italy, Greece, Holland, Switzerland, Yugoslavia and Bulgaria are all also represented.

PROFS. CLARKSON AND RICHARDS ON NOISE ADVISORY COUNCIL

Noise pollution and control in Great Britain is a major concern of Professors Brian Clarkson, Elfyn Richards and Geoff Lilley as members of the Noise Advisory Council. The purpose of this body has been to review progress in noise control and make recommendations to the Government in this field.

The Noise Advisory Council was set up in 1970 as part of the Prime Minister's arrangement for dealing with environmental pollution. In its first year of life, Anthony Crosland, then Secretary of State for Local Government and Regional Planning, or his deputy, took the chair at the Council meetings. Under the present government, the Minister primarily responsible is Peter Walker, Secretary of State for the Environment.

The Council has a broadly based membership. Both sides of industry are represented and the areas of interest of the individual members cover a wide spectrum of subjects relevant to the general problem of noise pollution.

Professor Clarkson notes that at first several of the members were concerned that the Council might become a "whitewashing" body to give an air of respectability to arbitrary decisions taken by the Government. However, the body has led in several areas of current interest and exercised a useful influence. It has produced substantial reports which are forming the basis of Government action. These are: aircraft noise: flight routeing near airports; neighbourhood noise; and, traffic noise: the vehicle regulations and their enforcement.

"...An old Scotch certain cure for deafness was ants eggs, mixed with the juice of onions, when dropped into the ear ......."

(from W G BLACK, Folklore Society Publication No. 12, 1883. Contributed by MIKE SHELTON)
NEW FRIENDS JOIN ISVR IN 1972-'73

One of the most pleasant aspects of life at the ISVR is making new friends among the overseas visitors. In 1972, the usual substantial number of visitors coming for longer periods of study, research, and (we hope) relaxation at the ISVR include the following:

W.M.COLEMAN, Sr. Demonstrator in the Department of Physics, James Cook Univ. of North Queensland, who will be working on instrumentation problems with Prof. Davies, September-June 1973.

Dr. D.C.GIBSON, Sr. Research Scientist, CSIRO, Division of Mechanical Engineering, Australia, who will be working with Gary Koopmann on the design of Helmholtz resonators for use as acoustical absorbers in flow ducts, September-June 1973.

Dr. M. SCHMUELY, Sr. Lecturer, Department of Mechanics, Technion, Haifa, who will be working as a Lord Marks Foundation Fellow with Prof. Clarkson and Maurice Petyt on crack propagation problems, September-June 1973.

Dr. N.W.M. KO, Lecturer in the Department of Mechanical Engineering, University of Hong Kong, on a Science Research Council contract visiting fellowship, working with Prof. Davies on pressure measurements in turbulence, September-December 1972.

N. POPOVICI, engineer in the computer department of Institute Polytechnique, Bucharest, on a UNESCO fellowship, who will work with Colin Mercer on data analysis problems, October-September 1973.

Anita LAWRENCE, Sr. Lecturer in the Faculty of Architecture, University of New South Wales, who will study and discuss traffic and community noise problems with ISVR academics and Wolfson engineers during October and December.

Dr. N.T.ASNANI, Assistant Professor in the Department of Mechanical Engineering, Indian Institute of Technology, Delhi, on study leave, who will be working with Denys Mead on structural dynamics, November-April 1973.

J.F. URY, Assoc. Professor in the Faculty of Mechanical Engineering, Technion, Haifa, on an Israeli visiting fellowship, who will be working with Prof. Davies on unsteady flow problems from March 1973-September 1973.

Dr. D.P. GOLDSTEIN, Assoc. Professor of Audiology and director of the Audiology Clinic of Purdue University, who will be working with Ross Coles on clinical audiology problems from January-August 1973.

- PHIL DOAK

STAFF ACTIVITIES

Priede to Organise IEE Meeting

Automotive Group Head, Prof. Theo Priede, will be chairing and organizing a day session of the Society of Environmental Engineers International Automotive Engineering Congress in Detroit, Michigan, USA, 8-12 January 1973.

ISVR members presenting papers at the conference will be David Anderton and Jeff Baker; and Nick Lalor and Eric Grover (with Stan Jenkins of Cummins Engine Company).

North American Trip for Dr. Coles.

Ross Coles, head of the audiology group, has just returned from a month's visit in N. America. While there he lectured in Colby College, Maine, on industrial noise and hearing conservation and carried on consultancy work with the Royal and U.S. Navies.

He also visited the University of Toronto Department of Otolaryngology, where he investigated techniques for dealing with disorders of hearing and balance, and the Stanford Research Institute.
RAE PROVIDES IMPORTANT LINK FOR ISVR

Another important link maintained by ISVR with 'outside' research bodies is that with the Royal Aircraft Establishment. The joint efforts of the two bodies are part of a unique major working link between the R.A.E. and Southampton University, operative since September 1966. The link has fostered the establishment of joint programmes of research and collaboration in planning and execution of both research and teaching in various departments of both the University and RAE.

Areas of collaboration which have involved the ISVR are mainly in noise and vibration and human factors.

Research into noise transmission into aircraft cabins, response of buildings to sonic bangs, response of damped structures in a random pressure field and the damping of carbon fibre reinforced plastic rotor blades, has been carried on in the area of noise and vibration.

In human factors, concentration has been on ear defenders, dichotic listening, vibration standards and communications in noisy aircraft cabins.

A Joint Advisory Board oversees the link and includes in its membership Professors G.M. Lilley (co-chairman), R.L. Bell, B.L. Clarkson and J.W. Craggs, all representing the University, and R.J. Lees (co-chairman), E.G.C. Burt, Dr. B.P. Mullins, Prof. K.W. Mangler and Mrs. P.M. Smith (University Liaison Officer), representing RAE.

The link has also extended to the appointment of Prof. Clarkson as Honorary Deputy Chief Scientific Officer to RAE. In addition, Dai Webb has been appointed visiting Reader with the ISVR.

ISVR ANNUAL REPORT 1972

The latest edition of the ISVR annual report became available in August. As usual it covers the research undergone in the previous year (to March '72) but for fuller details readers should write to the respective Group heads or research personnel. Please address any requests for the report to Mavis Bull, ISVR Librarian.

Prof. Priede to Give Inaugural

Professor Theo Priede will give his Inaugural Lecture, "Explosion and Combustion - the Bases of Road Transportation", Tuesday, 31 October, at 5.30 p.m. in Physics Lecture Theatre A. The public are invited to attend.

LALOR LECTURES ON DIESEL NOISE

"The Control of Diesel Engine Noise", a lecture given by Nick Lalor, created a great deal of interest at the annual meeting of the British Association for the Advancement of Science. Nick's lecture reviewed the work of ISVR's Automotive Group and aroused discussion both at the meeting and in several national newspapers.

The Brunel Lecturer was ISVR Alumnus, Prof. Ffowcs Williams of Imperial College. His lecture, 'Science versus Noise', discussed jet engine noise reduction as an example of what could be achieved by cooperation between government, industry and universities.

INTRO BEGINS NEW SEMINAR SERIES

"An Introduction to the Institute of Sound and Vibration Research" by Prof. B.L. Clarkson will begin the seminar programme for the 1972 Autumn Term this Thursday, 12 October, at 2 p.m. in Lanchester Lecture Theatre 'A'.

The series of 20 Thursday afternoon seminars will be given by ISVR staff as well as visitors from industry and other universities and will continue through the 1973 Spring term.

A provisional schedule of the seminar programme is included with this issue of the Review. Visitors are welcome, and encouraged to attend. Any queries should be directed to David Anderton, seminar schedule co-ordinator.
"ISVR's role in joint university-industry-government research programmes" was the special topic at the 9th ISVR Annual Scientific Advisory Committee Meeting on 18 July.

In a penetrating and constructive session, the possibilities of joint programmes of activity to help bridge the gap between the research worker and the practitioner at the design level were discussed in depth.

It was resolved to make every effort to push forward schemes already in operation - particularly one on data sheets for machinery noise - and to attempt to formulate further co-operative schemes in the coming year.

New members welcomed to the meeting were R. Hetherington, Asst. Chief Research Engineer, Rolls-Royce; D.J. Lyons, Director-General of Research, Department of the Environment; R.F. Rissone, Science Research Council; A.G. Smith, Hawker Siddeley Aviation Ltd.; and Dr. R.J. Stephenson, Asst. Scientific Adviser, Greater London Council.

Also discussed at the meeting were special arrangements envisaged for the Tenth Annual Meeting of the Committee, tentatively scheduled for 16-17 July 1973. The date for the Fifth Fairey Lecture, by Professor R.E.D. Bishop, was fixed as 16 July 1973.

This year's meeting was preceded by the 4th Fairey Lecture, "The Propagation of Sound through Moving Fluids" given by Sir James Lighthill. The lecture will appear in a forthcoming issue of the Journal of Sound and Vibration.

- Phil Doak

ISVR ALUMNI -- WHERE ARE THEY NOW?

Colin Mercer obtained his PhD. He is now a lecturer in ISVR and runs the Institute's Random Data Analysis Centre, having been mainly responsible for its development. MSc graduates in '65 were Peter Dawe, Pat Hare and Peter Ratcliffe. Pat is now working with ONERA in Paris, but we should welcome news of the two Peters.

PhD graduates were Barry Shackcloth and John Walker. John is now a lecturer at Bristol University, having worked for some years with Oxford University Press. 1966 saw the first MSc graduates in the expanded MSc courses and these were: David Anderton (now British Leyland Lecturer in ISVR); Duncan Clark (NRC, Ottawa); John Leverton (Westlands, Yeovil, and a visiting lecturer in ISVR); Frank Webb Taylor (returned to USAF on completion of course); "P.G." Vaidya (now a postdoc. research fellow with Tufts University, having spent 3 years at Lockheeds following his award of PhD at Southampton in 1969); Jim Wardhaugh (NEL, East Kilbride); Stuart Humby (originally with Cummins Engines, present firm not known); Mike Russell (CAV); Pat Mitchell (Boeing, Seattle); Guy Swift (Lockheed-Georgia).

Richard Wilkinson was also an MSc graduate at that time, and we should like to hear news of him, Stuart Humby and PhD graduate Barry Shackcloth, together with any other alumni who have recently moved into different posts.

Please Send Your........

We would welcome readers' news and opinions on the current Review. Please send any correspondence to Barbara Koopmann at the ISVR.

NEWS and VIEWS

The next issue of the Review is planned as a special Alumni issue, with news of alumni and their families. All up to date news would be very welcome, and we look forward to hearing from you.

by November 17