

UNIVERSITY OF EDINBURGH

EDINBURGH REGIONAL COMPUTING CENTRE

(Report of the Edinburgh Computing Committee for  
the year ending 31st July 1983)

(16th Report)

REPORT OF THE EDINBURGH COMPUTING COMMITTEE FOR THE YEAR ENDING 31 JULY 1983

1. Membership and remit

A number of amendments to the remit of the Edinburgh Computing Committee were approved. The reasons for these changes were:

a) Neither the membership nor the remit of the Committee was revised when the Program Library Unit separated from the ERCC. Following the review of the PLU, it was felt appropriate that the special relationship between the PLU, as a provider as part of the central computing service, and the Edinburgh Computing Committee should be recognised in the remit and that the Director of the PLU should become a member ex officio of the Committee.

b) It was reported in the last annual report that the Research Council use of ERCC had declined and that the Agricultural Research Council had become the least important of the Research Council users. It was no longer appropriate for the ARC to act as an umbrella organisation representing the views of the Research Councils and other Treasury funded institutes and for the ARC to determine the Research Councils' representatives on the Committee. The remit was altered to recognise this position.

c) Following a change in the organisation of the ERCC there is now only one Deputy Director and not two as the remit suggested.

The membership of the Edinburgh Computing Committee for 1982-83 is shown in Appendix A. Dr Crosbie replaced Mrs M M Barritt as a nominee of Educational Policy Committee in anticipation of his taking over Convenership of the Committee in 1983-84.

Dr Gordon Burns, for many years a Deputy Director of the ERCC and member of the Edinburgh Computing Committee, died in July 1983. An appreciation of Dr Burns is appended to this report.

2. Forward look to 1987-88

The Committee felt that it was appropriate to review its plans for the period to 1987-88 and has reported on these in some detail to Educational Policy Committee and Senatus. The report invited Faculties to comment on the implications for computing services of academic developments. The report has been referred to Faculties and departments and the Committee hopes that the responses it receives will enable it to better plan the volume and range of service which are to be provided centrally. The Committee also hopes that cooperation between ERCC and PLU, and the Library and Secretary's Office on areas of common concern will be strengthened in the interests of developing a coordinated plan for computing across the University.

Some of the items in this report, in particular mainframe replacement and capital finance are covered more fully in the forward look report.

3. Mainframe services

The computers which provide most of the local service to the University, the 2972s, have been very heavily congested in 1982-83 with service deteriorating to a barely acceptable level at certain points in the

Spring and Autumn terms. It had been expected that this congestion would get worse in 1983-84. Steps were taken to tighten up the scheme for the allocation of resources so that access at peak periods would be more restricted and that a reasonable level of service would be provided to those users who did have access.

In fact congestion is unlikely to be a serious problem because it has been possible to upgrade the 2972s over the summer of 1983 and provide an increase in power of around 25%. It was reported in the previous annual report that a Distributed Array Processor (DAP) had been installed as an adjunct to the 2972s to provide exceptionally fast computing for certain research applications, particularly in Physics. This machine has proved very successful and the Department of Physics has acquired a second DAP. In order to accommodate this machine it was necessary to upgrade the 2972s to 2976s. It was possible to do this at very modest cost as part of the negotiations with ICL for the DAP and provide much needed extra computing power.

Growth in use of EMAS has slowed down, no doubt because of the increasing congestion. The increase in EMAS use in 1982-83 over the previous year was 13% compared to 24% growth in the previous year. The most notable increase was in Social Sciences (over 50%) but Medicine and Veterinary Medicine have made significantly less use of EMAS. The statistics of usage are contained in Appendices C,D and E.

The 2976s are due for major enhancement in 1985 funded by the Computer Board and the 2988, which provides the Regional service, is due for replacement in 1987. A working party has been considering the replacement of the large central computers and has reported its preliminary findings to the Committee. The Committee has concluded that, within the period to 1987-88 at least, large central machine(s) will continue to provide an important part of the computing service. The view of the Committee is that the most effective way of providing this part of the service is to continue to use the operating system developed within the University (EMAS). Steps will be taken to ensure that this choice of operating system will not unduly constrain the choice of hardware and that the central service will look to the user as similar as possible to the sort of computer which he may have in his department.

The Committee thinks that it is inevitable and proper that more medium sized and small personal computers will be introduced into departments. The Committee has developed strategies on central support for these computers. Some will be bought centrally to enable ERCC and PLU to assist users in departments and to provide a limited central service on these machines.

#### 4. Software

Software is becoming an increasingly important component of computers and, as the number of machines in departments grows, much of this cost may have to be met from Faculties own equipment grants rather than centrally. The Committee has established a Working Party on software to develop a strategy for procurement. In particular the Working Party will consider the balance to be struck between central and Faculty funding for software, and bulk software licence agreements for the University as a whole.

#### 5. Review of the PLU

A Working Party was established to review the future of the Program

Library Unit because of the impending retirement of its first Director, Mrs M M Barritt. The Working Party reported early in session 1982-83. A number of options were considered for the continuation of the essential services which the PLU provides, including merger with ERCC. However, the Working Party concluded that the interests of users would be best served by the PLU continuing as a separate Unit. Indeed the Working Party recommended that the role of the PLU should be strengthened and the distinct nature of its services clarified by the transfer of some functions from ERCC to PLU, in particular the database function.

The report of the Working Party was accepted by the Edinburgh Computing Committee, Educational Policy Committee and the University Court and an appointing committee for the new Director of the PLU established. Dr G M Stacey was appointed Director with effect from 1 July 1983. Dr Stacey was formerly Principal Computing Officer in ERCC and had been Acting Director of PLU since October 1982.

#### 6. Communications

The communications network is considered to have a vital part of play in the development of the greater distribution of computing power in departments which is seen as the inevitable consequence of technological change. There has been considerable congestion in parts of the network, particularly the link between the central area and King's Buildings, and a lot of investment is being made in upgrading the network to remove the main bottlenecks.

An important component in the provision of cheap and easy communications is the use of the new digital telephone exchanges to carry data in the same telephone lines as speech. One such digital PABX exchange is being installed at King's Buildings in cooperation with ICL to provide speech and data communications as a pilot scheme. The cost of the equipment is met from a Department of Industry loan which will have to be repaid in 1986 if the evaluation is successful.

#### 7. Office systems

An increasing number of department are using microcomputers for word-processing and other office tasks. In order to try to avoid the proliferation of incompatible equipment, the Committee has agreed a strategy on support for office systems. The Committee thought that the supported system, as well as providing equipment which could be easily used by secretarial staff, should be reasonably cheap, flexible, compatible with other computing equipment in the University and readily connectable to the University network for communication with other users and access to specialised services. The system chosen was not a specific microcomputer but the UCSD p-System software which can be used on a variety of microcomputers. This software is also recommended for general purpose computing in the University. The Personnel Office provides training for secretarial and clerical staff using this system.

The Court Equipment Committee has made a special allocation of £43k for equipment for central support for office system. This sum is to be used to buy laser xerographic printers to provide a fast, high quality printing service, for a workstation to enable ERCC to provide support for office systems and for the evaluation of new equipment and software.

#### 8. DEC-10 service

ERCC runs a national interactive computing service for the SERC on a DEC-

10 computer at King's Buildings. The SERC has decided that it is no longer appropriate to provide the service centrally in this way and has negotiated the closure of the system in March 1986. The staff of the DEC-10 service have been employed on rolling contracts funded by the SERC. As far as possible, these staff are being offered other ERCC posts as vacancies arise, during a gradual run-down of the service.

#### 9. IT Fellowships

At the request of the Committee on Information Technology and with the agreement of Resources Committee, the Edinburgh Computing Committee agreed to provide £100k for one year for fellowships in Information Technology, this sum to be underwritten from ERCC's reserves. The aim of this fund was to attract new researchers to this University, or to free University staff, to begin work on projects in Information Technology and develop them to the point where they could attract external finance. £40k has been spent in 1982-83 with the balance of up to £60k to be spent in 1983-84.

#### 10. Capital finance

An assessment of the Committee's likely requirements for capital equipment funds in the period to 1987-88 was included in the forward look report referred to under section 2. The Committee concluded that the likely funds available were insufficient to sustain a reasonable level of central service, the shortfall being about £300k. The Committee therefore asked the Court Equipment Committee on UGC equipment grants for an increase in the Committee's allocation from the funds. The Court Equipment Committee agreed to supplement the Committee's allocation by £50k for 1983-84 and the following year. The Committee will try to obtain the balance of the shortfall from the Computer Board.

In addition a case was made to the UGC for funds under the restructuring scheme for staff and equipment rental to support a central Unix service in anticipation of Computer Board funding for 1985-86. The result of that submission is not yet known.

#### 11. Recurrent finance

The financial statements for ERCC and PLU for 1982-83 are attached in Appendices F and G respectively.

ERCC has been subject to savings targets far in excess of pro-rata. The aim has been to try to generate income in order to maintain services as far as possible. The main sources of income are sale of computer services, and consultancy and sale of software. The policy has been that income generating projects should be relevant to the University. However, such projects are not necessarily high priority in the University context. Thus ERCC staff have in some cases been diverted into projects which are of relatively low priority to the University while other tasks which are more important from the University point of view have not been tackled. Demand for computing services continues to grow. In particular in the area of communications, microcomputer support, and support for medium sized machines in departments, the Committee believes that it has not been able to make available the staff resources which are required to provide reasonable levels of service.

The accounts show a deficit on the year's undertakings of approximately £112.4k after transfer of £80k to capital purposes. However if account is taken of expenditure on the information technology fellowships referred to

in item 7, other exceptional expenditure on information technology, and unclaimed income which is expected to be recovered in 1983-84 then the recurrent deficit is reduced to only flk. Nevertheless, bearing in mind that a further savings target of £64.7k has to be met in 1983-84, and the Committee's belief that additional investment is required in the growth areas mentioned above, the prospects do not appear bright.

The accounts for PLU show a modest surplus for 1982-83. There is however a question mark over a major source of PLU's software income in 1984-85 and the small accumulated surplus provides a no more than adequate buffer against loss of income at that stage.

A F Woodburn  
October 1983

## APPENDIX A

## MEMBERSHIP OF EDINBURGH COMPUTING COMMITTEE

Nominees of the Educational Policy Committee	Professor M Anderson (Convener) MA PhD A J Crosbie MA PhD J C P Schwarz MA PhD
The Director Edinburgh Regional Computing Centre	G E Thomas BSc MSc PhD MIEE FBCS FRSE
The Deputy Director Edinburgh Regional Computing Centre	P E Williams BSc
Representatives of the Research Councils	D P Blight BSc MSc PhD CEng FIMechE F Verdon
Representatives of the Users' Committee	G M Alder MA PhD T W Jones MA Miss J Muscott BA
Representatives of the Faculty of Science	M A D Fluendy MA DPhil DSc CChem FRSC MInstP FRSE Professor J H D Prescott BSc PhD MIBiol
Representative of the Faculty of Medicine	Professor D C Flenley BSc MB ChB PhD FRCPE FRCP
Representative of the Faculty of Social Sciences	Professor T A Lee MSc CA
Representative of the University Library	Miss B E Moon MA FLA
Representative of the Secretary's Office	P Layhe MBA FCMA
The Professor of Computer Science	Professor S Michaelson BSc ARCS FRSE FIMA FRSA
Secretary	A F Woodburn BSc DPA

An Appreciation of Dr J G Burns

Dr Gordon Burns, a deputy director of the ERCC, died at his home on the 17th July. Gordon Burns was associated with the University for over 30 years and contributed greatly during that period to the work in his original discipline, Physics, and then in the development of our central computing services. In this article three of his colleagues join in registering their appreciation of Gordon's work in the University.

Gordon Burns came to Edinburgh University as an undergraduate in 1952 and graduated with honours from the Department of Natural Philosophy (now Physics) in 1955. He then joined Dr M.A.S. Ross in her early work in fluid dynamics and was awarded a Ph.D. in 1958 for his thesis entitled:

'Investigation of the boundary layer on a plane surface'.

At that time he was using the 18" wind tunnel at the Heriot-Watt College but, soon after, he began his design work on the 4' Low velocity tunnel which was built on the old High School Yards site and was to become one of the best low-turbulence tunnels in the country. Gordon had an interest in wood-working and this interest was reflected in the wooden construction of the tunnel. It was a refreshing experience for those of us watching the growth of this large structure since it seemed to be entirely constructed by only three men working with hand tools and a power drill. This devotion to wood meant that, when the newly named Physics Department moved to King's Buildings, the tunnel could be sawn up and re-erected on the new site. The old building from which it came, now occupied by the History of Science and Medicine unit, fittingly still retains its old name - the Wind Tunnel.

It was during this period, when the instrumentation of the tunnel was being designed, that his interest in on-line control and data retrieval developed and when he realized the potential of the still somewhat exotic computer for these purposes. Under his encouragement the department acquired its first PDP8 and began to develop it as a multi-purpose facility. The frustrations of editing paper tape for this work led Gordon to many of the ideas on editing programmes which enabled him to make a major contribution to EMAS as it was being developed by his colleagues in the ERCC.

Throughout his period in the Physics Department he was not only starting his family and "modifying" the house in Cumin Place but also refurbishing a cottage at Applecross.

Gordon's interest in computing, which was kindled in the Physics Department, blossomed and resulted in a joint appointment with ERCC in 1968.

He continued, however, to give great help to the Physics Department, chairing its Computing Committee and contributing to the development of the Department's facilities up to the acquisition of the DAP and the planned VAX.

He joined the ERCC having already implemented (along with his brother) an editing system for the KDF9, but soon brought his previous knowledge to bear in the control of computer peripherals by small minicomputers providing much of the system software himself. His earliest management job was to look after the University computing service then based on the English Electric KDF9 computer at Buccleuch Place.

Perhaps his first significant achievement was to oversee the move of our users from the KDF9 to the "interim" IBM 360/50 service which began in March 1969 at



King's Buildings - the EXODUS project. Though a small project compared with similar later events, it is important because it typified the viewpoint which Gordon fostered for the rest of his computing career, namely, that users should be provided with a continuous service and that problems caused by potentially disruptive changes in computer hardware or operating systems should be minimized both through continuity in policy making and through special ERCC projects designed to transport users across systems as transparently as possible.

However, undoubtedly his major contribution to computing in Edinburgh was in the provision of a high-quality interactive computing service. He had faith in the potential of the Edinburgh Multi-Access operating system which was emerging in the Department of Computer Science from the remains of the doomed EMAP project, and the vision to see how it could be fruitfully applied in the University service environment. His persuasion and perseverance culminated in the EMAS user service which began in October 1972 on the ICL 4-75 computer, and which he managed for several years.

His success in this new area of computing led to him taking up a full time appointment with ERCC in 1973 as Deputy Director in charge of the local Edinburgh University computing services. He enhanced the service by upgrading the hardware to a twin ICL 4-75 configuration and designed the new interactive communications networks which he foresaw the expanding service would require. It is a major credit to him that this innovative plan has been able to be adapted and expanded over the succeeding 10 years to support what must be one of the most heavily utilized communications networks in the United Kingdom.

In his most recent years with ERCC his interests lay in how newer technology could be effectively applied to augment the central University service and he ensured that the independent network File Store which had long been required actually came into being.

He will be remembered as an innovator and original thinker and as someone who wasn't afraid of the unconventional approach to a problem. His ability to grasp the complete spectrum of computing activity, from the design of hardware through to high level systems and applications programming, gained the respect of all who worked with him whether in the ERCC itself or in the many University committees on which he served. Perhaps the key to his success lay in his aim of providing the right environment where others could and would produce their best work in the areas for which they were best suited. Even in management he seemed able to motivate his staff without actually imposing a classified management manner. He was always encouraging in attitude and many will remember him pointing out that the job that he had just outlined was really after all "only a few lines of code".

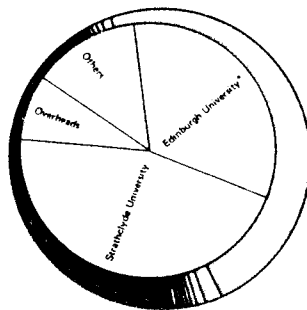
We join Gordon's family in mourning the passing of a stimulating friend and colleague.

Peter Kennedy  
Andrew McKendrick  
G.E. Thomas

Utilisation of 2988 in 1982 - 83  
by Participating Institutions

Institution	Computing Costs £	Proportion of Computing Costs %
Edinburgh University *	615830.96	30.74
Glasgow University	113623.85	5.67
Strathclyde University	917488.61	45.79
Other Universities	879.74	.04
Research Councils	59243.24	2.96
Treasury Supported Users	129287.87	6.45
Commercial Users	3836.02	.19
Overheads	163418.38	8.16
Totals	2003608.67	100.00

Utilisation of 2988 in 1982-83  
by Participating Institutions



\*Including ERCC.

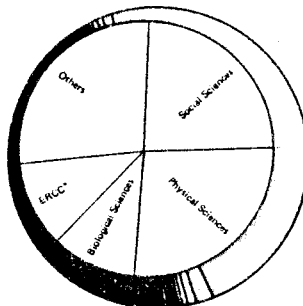
Utilisation of 2988 in 1982 - 83  
by University of Edinburgh and Research Councils

Faculty or Sub-Faculty or Research Council	Notional Cost	Proportion of Total Cost
Arts	5896.16	.87
Divinity	793.94	.12
Law	13.42	—
Social Sciences	162448.17	24.06
Music	—	—
Medicine	32301.72	4.78
Dentistry	2825.10	.42
Veterinary Medicine	12265.71	1.82
Physical Sciences	182220.62	27.00
Engineering Sciences	9218.06	1.37
Biological Sciences	73111.21	10.83
Non-Faculty Departments	59982.44	8.89
E.R.C.C. *	74754.41	11.07
ARC	4584.76	.68
MRC	9003.73	1.33
NERC	45654.75	6.76
Total	675074.20	100.00
Other Universities **	1031992.20	
Treasury Supported Users	129287.87	
Commercial Users	3836.02	
Total	1840190.29	

\* Less Overheads

\*\* Strathclyde, Glasgow, Heriot Watt & Other Universities

Utilisation of 2988 in 1982-83  
by University of Edinburgh and Research Councils



\* Less Overheads

Utilisation of 2972 in 1982 - 83  
by University of Edinburgh and Research Councils

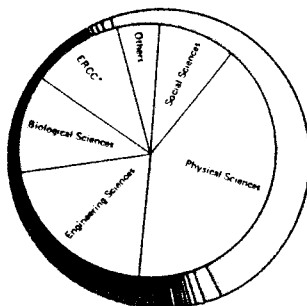
Faculty or Sub-Faculty or Research Council	Notional Cost	Proportion of Total Cost
Arts	8007.40	.45
Divinity	—	—
Law	214.99	.01
Social Sciences	165658.68	9.32
Music	—	—
Medicine	7283.25	.41
Dentistry	480.72	.03
Veterinary Medicine	276.53	.02
Physical Sciences	733581.26	41.26
Engineering Sciences	383470.16	21.57
Biological Sciences	220355.33	12.39
Non-Faculty Departments	44846.10	2.52
E.R.C.C. *	207618.18	11.68
ARC	1281.73	.07
MRC	706.37	.04
NERC	4029.32	.23
Total	1777810.02	100.00
Other Universities **	6750.14	
Treasury Supported Users	25791.92	
Commercial Users	31043.99	
Total	1841396.07	

\* Less Overheads

\*\* Strathclyde, Glasgow, Heriot Watt and Other Universities

Footnote: DAP usage = £369031.55 (not included above)

Utilisation of 2972 in 1982-83  
by University of Edinburgh and Research Councils



\* Less Overheads

Edinburgh Regional Computing Centre

INCOME AND EXPENDITURE ACCOUNT

CONSOLIDATED

	<u>INCOME</u>	
	£	£
<u>Computer Board direct grant</u>		641,530.00
<u>Fully charged out services</u>		
Research Councils	90,779.35	
Commercial	103,877.41	
Treasury supported	235,671.16	
Edinburgh University	33,705.82	
Other universities	1,611.03	
Software contracts	189,892.10	
Staff contracts	531.84	
	<hr/>	655,068.71
<u>SERC Contract</u>		
SERC payments	195,960.00	
Sales income	25,521.22	
	<hr/>	221,481.22
<u>Miscellaneous</u>		22,365.19
<u>Recoveries</u>		168,339.97
<u>Administrative services</u>		278,236.74
<u>Edinburgh University contribution</u>		1,599,739.00
<u>Balances b/fwd from 1981/82</u>		
Due to SERC		4,614.24
ERCC		389,580.39
		<hr/>
		£4,001,955.46
		<hr/>

EXPENDITURE

£

£

Staff costs

Academically related	1,188,992.15	
Other	515,600.55	
Casual	91,446.46	
	<u>1,796,039.16</u>	

Materials and services

Travel and subsistence	43,565.57	
Computer materials	149,260.04	
External service charges	523,246.31	
Mainframe maintenance	296,957.70	
Telecomms	197,683.81	
Engineering development	53,691.21	
Information & training	27,698.21	
General expenses	323,254.46	
	<u>1,615,367.31</u>	
less stocks-in-hand	21,333.81	
	<u>1,594,033.50</u>	

Overheads

Edinburgh University services		
ERCC	214,025.00	
less overcharge		
1980/81	880.86	
	<u>213,144.14</u>	
SERC	15,575.00	
	<u>228,719.14</u>	

Bad debts written off 48.25

Transfer to PLU 35,332.00

Transfer to capital account 80,000.00

Balances c/fwd to 1983/84

Due to SERC	627.46	
ERCC	267,155.95	
	<u>267,783.41</u>	
	<u>£4,001,955.46</u>	

Program Library Unit

INCOME AND EXPENDITURE ACCOUNT 1982-83

	<u>Income</u>	
	£	£
<u>Computer Board grant</u>		6,332.00
<u>Fees for services</u>		101,166.51
<u>Transfer from ERCC</u>		28,000.00
<u>University award</u>		
Salaries	117,902.49	
Materials and services	18,219.00	
University overheads	4,250.00	
	<hr/>	
		140,371.49
		<hr/>
		275,870.00
Balance b/fwd from 1981-82		11,118.33
		<hr/>
		286,988.33
		<hr/>

## Appendix G

Expenditure

	£	£
<u>Salaries</u>		
University establishment	138,708.82	
Externally financed staff	34,589.61	
		<hr/>
		173,298.43
<u>Materials and services</u>		
Royalty repayments	20,259.86	
UK universities software costs	6,332.00	
General expenses	45,265.29	
		<hr/>
		71,857.15
<u>University overheads</u>		5,000.00
		<hr/>
		250,155.58
Balance c/fwd 1983-84		36,832.75
		<hr/>
		286,988.33
		<hr/>