UNIVERSITY OF QUEENSLAND

COMPUTER CENTRE

FOURTH ANNUAL REPORT

1st January to 31st December 1965

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Computer Centre Executive Committee 1965

Professor H.C. Webster, CMG, Ph.D., D.Sc., F.InstP., MIEE	Professor of Physics (Chairman)
Professor S.A. Prentice, B.Sc., M.E.E., MIE(Aust.), MIEE	Professor of Electrical Engineering (Deputy Chairman)
Professor J.H. Lavery, B.Sc., M.E., AMICE, MIE(Aust.)	Professor of Civil Engineering (President, Professorial Board)
Professor C.S. Davis, D.F.C., M.Sc., Ph.D.	Professor of Mathematics
Professor D.W. McElwain, M.A., Ph.D., F.B.Ps.S.	Professor of Psychology
Professor R.G.H. Prince, B.E., B.Sc., Ph.D., AMIChemE	Professor of Chemical Engineering
Dr. S.A. Rayner, M.Ed., Ed.D., M.A.	Deputy Registrar
Mr. R.E. Kelly, B.E.	Senior Lecturer in Computing (Officer-in-Charge)
Mr. E.J. Sokoll, B.E.	Lecturer in Computer Electronics

Computer Centre Advisory Committee 1965

in addition to the above -

Mr. J.E. Kindler, M.E., M.I.E.(Aust.)	Co-Ordinator General's Department
Mr. S. Schubert, B.E., A.M.I.E.(Aust.)	Main Roads Department
Mr. E.F. Fell, A.M.I.R.E.(Aust.)	Public Service Commissioner's Office
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Dr. L.E. Howard, B.Sc., Ph.D.	Mathematics Department, University of Queensland
Mr. E.D. Murray, M.C., B.E., MIEAust, MIEE	Chairman, Computer Advisory Sub-Committee, University College of Townsville
Mr. I.M. Hunter, B.Sc., AMIEAust, AMIMechE, AMIEE	Department of Engineering, Townsville University College

Staff of the Computer Centre 1965

(at 31.12.65)

Officer-in-Charge and Senior Lecturer in Computing	*R.E. Kelly, B.E.*
Lecturer in Computer Electronics	*E.J. Sokoll, B.E.*
Senior Demonstrators (Programmers)	*I. Oliver, B.Sc., B.Econ.* *R.N. Buchanan, B.Sc., Dip.Ed., Dip.A.C.*
Demonstrator	*W. Whiten, B.Sc.*
Maintenance Technicians	*G.L. Jerrard* *D. Brunner*
Machine Operators	*Anne McArthur* *Beverley Mash* *Patricia Stevens*
Data Preparation Assistants	*Patricia M. Short* *Vicki Lake*
Clerk-Typist	*Carole L. Chapman*

ANNUAL REPORT

INTRODUCTION

The demand for the services of the Computer Centre has now extended to forty University Departments including the Administration. Use of the computer for data processing of an administrative nature has increased, including the processing of examination results in some Faculties and of accounts in two Departments.

Although no organisational changes were introduced in 1965, it is envisaged that the service bureau function may need to be separated from the normal academic functions in order to permit proper development of research projects.

The overall effect both within and without the University of the past few years of operation is increasingly apparent. Apart from the considerable teaching achievement of the staff, post-graduate research has received a strong stimulus and many projects involving the statistical analysis of large scale experimental basis have been completed successfully.

COMMITTEE ACTIVITIES

The Executive and Advisory Committees met as required to consider matters of policy on service bureau work, finance and staffing. To meet the needs of Townsville University College, the purchase of a second computer (an IBM 1620) for location at Townsville was recommended by the Advisory Committee. The provision of additional magnetic tape equipment at St. Lucia and a card punch solely for use by clients was approved.

Liaison has been maintained with the Advisory Committee at Townsville University College, through representation on the respective Committees.

A sub-committee of the Executive Committee was formed to consider service policy on computer services of an administrative nature, and a series of recommendations on time allocations were agreed to.

Full insurance of the computer equipment was recommended; it was however agreed not to seek insurance cover against loss of revenue from equipment failure.

STAFF

Mr. D. L. Overheu, the first appointee to the position of Officer-in-Charge, resigned in January, 1965. The position has been filled by Mr. R. E. Kelly, previously Lecturer in Computer Electronics. An additional computer operator was appointed to provide for extended hours of operation.

TEACHING AND LIAISON ACTIVITIES

An increased number of persons attended programming courses, bringing the total since 1961 to over 1,500. The staff delivered 350 lectures, conducted 250 tutorials and seminars while demonstrating and consulting services occupied a further 2,900 contact hours.

The following table summarises the programming courses and enrolments in each for 1965:

Type of Course	No. of Courses	Number Enrolled
Elementary Programming (GAP)	3	54
Basic FORTRAN	11	276
Advanced FORTRAN	2	49
GECOM Programming	1	9
WIZ Programming	1	25
Programming Peripherals	1	16
Totals	19	429

In addition to these "service" courses, the staff delivered lectures to undergraduate students chiefly in the Faculty of Engineering.

Enrolments for the post-graduate Diploma in Automatic Computing increased to 8.

RESEARCH AND DEVELOPMENT

A number of research projects have been undertaken by members of staff. These include research into the problem of high school timetables, generalised procedures for analysis of factorial experiments, matrix compilers, mixed linear programming, and the design of high speed arithmetic circuits. It is expected that some of these projects will yield significant results during 1966.

During the year, members of staff undertook an intensive programme of development of basic subroutines. The results of these efforts, which are listed in Appendix I, have made a substantial contribution to the range of available library programs.

A number of publications issued by the Computer Centre are listed in Appendix II.

COMPUTER USE

A summary of computer use (in hours) during 1965 is shown in Appendix III. The total switched-on time for the year was 3615.5 hours with a total use time of 2651.3 hours. This latter figure should be compared with a scheduled availability of 2913 hours. The standby time of 702 hours was incurred largely outside normal working hours and because of unavoidable delays during normal running. It became obvious during the year that the availability of the computer was limiting the time used. For this reason full two-shift operation was introduced during October and the additional computer time thus made available was immediately absorbed.

The distribution of computer time is illustrated in Figure 1 which shows the proportion of time used by various functions.

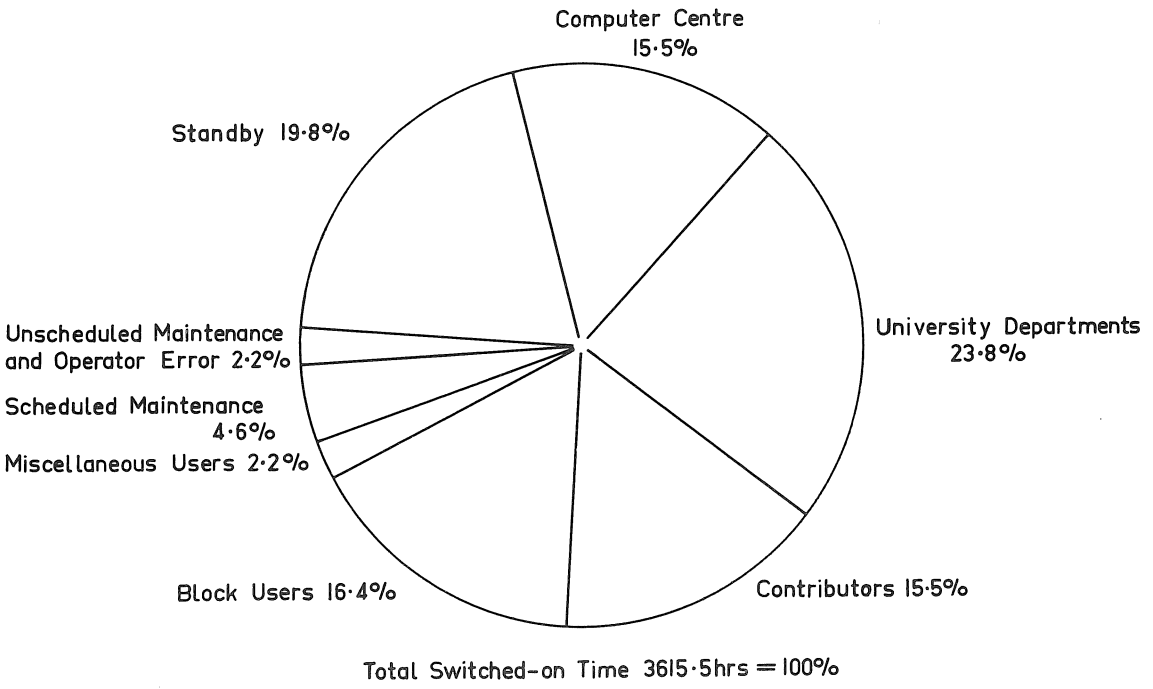

FIG. 1. DISTRIBUTION OF HOURS OF TOTAL SWITCHED-ON TIME

Appendices IV and V show the distribution of computer time used by University Departments and External Organizations, respectively. The computer time shown as 'Computer Centre' is significantly greater than other users. This time is distributed between development projects, demonstrations and normal operating overheads. It should be noted that use of the computer by University Departments is increasing rapidly, while external use is gradually falling off. The latter effect is undoubtedly due to the installation of the State Treasury Department computer during June.

It is expected that the present trends will continue during 1966. A graph of the growth of computer use since 1962 is shown in Figure 2, together with predictions to 1968. The predicted upsurge in computer use for University purposes is based upon the increasing requirements for undergraduate teaching and administration.

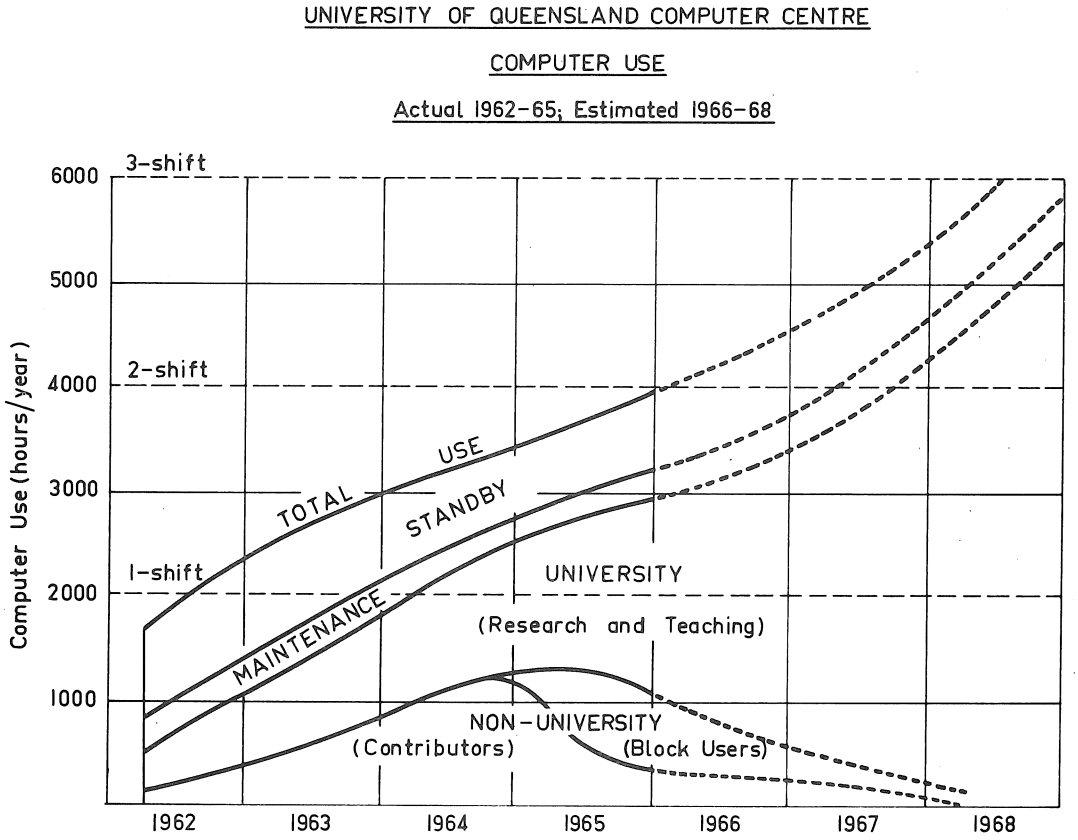

FIG.2. GROWTH OF COMPUTER USE - ACTUAL 1962-65; ESTIMATED 1966-68

Most users of the computer facilities have provided a list of new programs developed during the year, and this information, edited for uniformity of presentation is given in Appendix VI. Attention is drawn to the very wide variety of computation and data processing work which has been carried out with the present facilities.

FACILITIES AT TOWNSVILLE UNIVERSITY COLLEGE

As referred to previously, a small computer was installed at Townsville University College to facilitate teaching and research work involving computer use. Considerable local support for financing operating costs has been obtained through advance contributions for computer service.

AIR CONDITIONING

Rising maintenance charges and some uncertainty about the capacity of the air conditioning equipment to meet additional loading led to a proposal to overhaul and extend the equipment. This work has been undertaken by the Commonwealth Department of Works and will be completed in June 1966. The maintenance contract has also been undertaken by this Department. Staff of the Computer Centre wish to record their appreciation of the cooperation evident at all stages of discussion and execution of the improvements. An additional Plant Room was constructed adjacent to the present building to permit rearrangement and noise suppression of the equipment.

FINANCIAL POSITION

The financial position, shown in Appendix VII, is considered satisfactory. The salary payments of the 13 members of staff are arranged thus:

University General Funds	8
Computer Centre Operations Account	5

A Sinking Fund was established to provide for minor capital equipment additions and/or replacements.

FUTURE NEEDS

The inadequacy of the present equipment for needs after 1967 has been fully explained in a statement to the Australian Universities Commission. Replacement of the equipment by a much faster system having time sharing facilities has been specified, the *minimum* requirements being as follows:

(a) A directly addressable memory with a cycle time of not more than 2μs and a capacity of 32K words of 36 bits. The directly addressable memory should be capable of expansion. Hardware memory protection and relocation of programs is desirable.

(b) A central processing unit permitting hardware floating point operations.

(c) A backing store (drum or disc) with a total capacity of one million words.

(d) Six magnetic tape units having a transfer rate of 90 Kc/s.

(e) A card reader operating at 1,000 cards per minute and a card punch operating at 100 cards per minute.

(f) A high-speed printer operating at 1100 lines per minute with a complete 64 character set and a line width of 120 characters.

(g) A paper tape reader and punch, graph plotter and C.R.O. display unit.

(h) Six remote terminals operating on a time-shared basis.

(i) The system must be capable of expansion.

Unless a computer of speed considerably in excess of the present one is installed during 1967, rationing of time will become necessary. As outlined in the above submission, access to the central computer through remote terminals will be an essential requirement; otherwise Departments may find it necessary to acquire small computers for their individual needs.

APPENDIX I

DEVELOPMENT PROJECTS - COMPUTER CENTRE STAFF

The following programs have been developed by Computer Centre staff members during 1965:

R. N. Buchanan

SORT - A general FORTRAN subroutine for internally sorting records containing regular or scattered keys.

COMPAR - A general FORTRAN subroutine for comparing keys in two records.

FIX - A GAP subroutine to convert floating point to double length integers.

FLOAT - A GAP subroutine to convert positive or negative integers to floating point.

PCARD - A GAP subroutine for punching decimal cards from a number of packed words.

PUNCH - A GAP subroutine for punching decimal cards from a number of characters stored one per word.

PRINT - A GAP subroutine to pack and print a number of characters on the high speed printer and slew a specified number of lines.

WPLINE - A GAP subroutine which prints a number of packed BCD words on the high speed printer and slews a specified number of lines.

A program to selectively dump specified sections of symbolic programs from BRIDGE compatible tapes.

I. Oliver

, RF - A subroutine to allow the input of free field format numeric data in FORTRAN programs.

UNPACK - A GAP subroutine which unpacks BCD information stored as three characters per word into words containing one BCD character per word.

NXTCRD - A FORTRAN function subprogram which delivers the character in any column of a card before a READ statement is given for that card.

XAQF - A FORTRAN function subprogram for determining integer multiply overflow, and divide remainder check.

AAUCHK - A subroutine for performing floating point arithmetic in CARD FORTRAN and for checking overflow, underflow, and significance of results.

APPENDIX I - Continued.

I. Oliver (continued)	SOLVE - A complete program for solving large sets of simultaneous equations.
	DETERMINANT - A FORTRAN subroutine which finds the determinant of a square matrix.
	SIM - A FORTRAN subroutine to solve sets of simultaneous linear equations and find the determinant of a matrix of coefficients.
	RPERM - A FORTRAN subroutine which generates a pseudo-random permutation of the first n integers.
	RANDOM - A FORTRAN subroutine which generates a pseudo-random variate x uniformly distributed in the interval $0 \leqslant x < 1$.
	ERF - A GAP subroutine to calculate the value of the error function for any value of the argument.
	GAMMA - A GAP subroutine to evaluate the gamma function for any value of the argument.
E.J. Sokoll	A program to produce an absolute binary deck, complete with library subroutines, from a FORTRAN relocatable program.
	CKSUM - A GAP subroutine to calculate the checksums of multiple-origin absolute binary cards.
	PBC - A GAP subroutine to punch multiple origin binary cards in absolute format.
	SLEW - A GAP subroutine to slew the paper in the high speed printer a specified number of lines or to a particular tape channel.
W.J. Whiten	PLOTTER - A subroutine to provide graphical output from FORTRAN programs.
	CONTOUR - A FORTRAN subroutine which determines equi-potential lines from a matrix of potentials enabling the extraction of contours of constant potential.
	A FORTRAN subroutine which plots contours of constant potential from a given potential field.
	PLOT VECTOR - A complete program which plots the contours of a vector field produced by a FORTRAN program.
	LETTER - A FORTRAN subroutine which supplied the BCD representation of the i-th letter of the alphabet.
	ZERO - A FORTRAN subroutine to find a simple real root of a real function, without the use of derivatives.

APPENDIX I - Continued.

W.J. Whiten (continued)

CZERO - A FORTRAN subroutine to find a single complex root of a complex function, without the use of derivatives.

DEVN - A FORTRAN subroutine which calculates the normal deviate corresponding to a given probability.

PROBN - A FORTRAN subroutine which calculates the probability corresponding to a given normal deviate.

A general integration program which integrates one or more differential equations by a 4th order Runge Kutta process.

A FORTRAN subroutine to find the roots of polynomials with real or complex coefficients.

A complete program to find the roots of polynomials with real or complex coefficients.

TRACE - A set of subroutines used in FORTRAN programs to provide a record of the flow of control from one subroutine to another, and a record of the value of each variable as it is calculated.

Copies of the above programs are available at the Computer Centre.

APPENDIX II

PUBLICATIONS - COMPUTER CENTRE STAFF

E.J. Sokoll	Relocatable Programming for the GE 225.
	High-Speed Printer Subsystem.
	Paper Tape Subsystem.
	Compilation and Running Procedures for the CARD FORTRAN Programming System.
I. Oliver	CARD FORTRAN Tape Subroutines.
I. Oliver E.J. Sokoll	MAC - A Matrix Compiler.
R.E. Kelly I. Oliver	WIZ Programming Manual (Revised, April, 1965).

APPENDIX III

SUMMARY OF DISTRIBUTION OF COMPUTER TIME (HRS.)

TYPE OF WORK	MONTHLY USE - 1965												Total for Year	Monthly Average
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC		
PRODUCTION	77.7	96.4	110.5	96.5	84.3	108.2	130.2	109.4	116.9	124.9	116.7	110.5	1282.2	106.9
DEVELOPMENT	130.2	119.9	121.4	109.1	135.0	122.3	81.6	90.2	93.6	127.1	131.3	95.9	1357.6	113.1
DEMONSTRATION	0.0	.5	2.6	2.3	2.0	1.1	.2	1.4	1.3	0.0	0.0	.1	11.5	1.0
TOTAL USE TIME	207.9	216.8	234.5	207.9	221.3	231.6	212.0	201.0	211.8	252.0	248.0	206.5	2651.3	220.9
NORMAL DELAY	.8	.5	.8	2.2	.3	.5	2.7	3.1	1.3	1.0	.9	.2	14.3	1.2
STANDBY	57.2	44.0	40.2	61.1	47.5	80.6	95.7	57.7	69.4	52.4	52.6	43.6	702.0	58.5
TOTAL UNUSED TIME	58.0	44.5	41.0	63.3	47.8	81.1	98.4	60.8	70.7	53.4	53.5	43.8	716.3	59.7
TOTAL AVAILABLE TIME	265.9	261.3	275.5	271.2	269.1	312.7	310.4	261.8	282.5	305.4	301.5	250.3	3367.6	280.6
OPERATOR ERROR	3.4	1.8	5.4	4.6	3.0	4.7	4.0	3.0	4.4	4.2	3.8	2.4	44.7	3.7
UNSCHEDULED MAINTENANCE	1.4	2.8	.6	0.0	0.0	1.3	4.3	0.6	3.6	1.3	18.9	1.4	36.3	3.0
TOTAL ERROR TIME	4.8	4.6	6.0	4.6	3.1	6.0	8.3	3.6	8.0	5.5	22.7	3.8	81.0	6.7
SCHEDULED ON TIME	270.7	265.9	281.5	275.8	272.2	318.7	318.7	265.4	290.5	310.9	324.2	254.1	3448.6	287.3
ENGINEERING MAINTENANCE	12.4	12.1	13.9	9.6	11.0	11.1	12.6	10.3	15.0	8.8	27.8	12.2	156.8	13.0
ENGINEERING DEVELOPMENT	2.9	0.0	0.0	0.0	0.0	0.0	0.4	0.0	3.1	1.6	1.6	.5	10.1	.8
TOTAL SCHEDULED MAINTENANCE	15.3	12.1	13.9	9.6	11.0	11.1	13.0	10.3	18.1	10.4	29.4	12.7	166.9	13.9
TOTAL SWITCHED ON TIME	286.0	278.0	295.4	285.4	283.2	329.8	331.7	275.7	308.6	321.3	353.6	266.8	3615.5	301.2

APPENDIX IV

DISTRIBUTION OF COMPUTER TIME (HRS.) USED BY UNIVERSITY DEPARTMENTS

	DEPARTMENT	MONTHLY USE - 1965												TOTALS FOR YEAR				Total to Date
		J	F	M	A	M	J	J	A	S	O	N	D	1962	1963	1964	1965	
001	Computer Centre	54.5	65.8	45.4	58.1	60.7	52.5	46.1	40.1	38.0	53.7	33.2	33.7	381.0	475.8	470.3	581.8	1908.9
002	Civil Engineering				0.1	1.0	1.8	2.5	5.2	7.5	3.6	1.9	3.5	11.3	18.9	18.3	27.1	75.6
003	Economics							0.2	0.1					0.7	2.8	1.8	0.3	5.6
004	Physics	14.2	12.5	13.6	18.1	22.8	13.8	27.6	24.7	22.8	18.6	21.5	3.4	79.3	131.9	194.7	213.6	619.5
005	Psychology	1.3	0.6	5.0	1.7	1.6	1.2	1.3	2.9	4.6	3.2	6.6	7.2	0.8	20.5	78.2	37.2	136.7
006	Electrical Engineering	3.7	10.3	18.0	7.1	2.4	2.5	8.4	11.1	8.8	12.0	1.2	2.5	22.5	20.0	19.7	88.0	150.2
007	Mechanical Engineering	6.1	6.6	6.9	5.3	3.2	6.8	3.6	5.2	3.5	3.5	4.1	5.6	16.5	25.1	35.5	60.4	137.5
008	Mathematics	1.2	1.8	3.5	0.8	0.3	0.4	1.7	3.3	6.6	11.2	18.6	0.4	7.8	8.3	25.2	49.8	91.1
009	Geology	6.4	1.6	0.4	1.3	0.1	0.6	1.4	0.2		0.3	0.2	0.2	4.2	0.2	7.2	12.7	24.3
010	Animal Husbandry	0.9	2.0	5.7	3.7	1.1	1.4	3.9	5.3	6.5	5.9	2.3	2.8	14.7	47.8	33.8	41.5	137.8
011	Data Processing Section	2.7	0.4	2.6	5.1	3.2	4.4	1.4	1.8	10.0	29.4	43.5	35.1	7.9	2.3	29.9	139.6	179.7
012	Agriculture	0.4	4.4	0.1	0.2	0.6	1.2	1.0	1.1	1.6	2.2	2.3	2.0	2.3	18.4	23.6	17.1	61.4
013	Education	2.5	1.3	1.0	0.5	0.7	0.3	0.2	2.3		3.8	2.9	1.1	3.4	35.2	24.3	16.6	79.5
014	Mining & Metallurgy	1.9	0.4	0.8	0.8	3.4	2.6	4.6	2.0	0.9	1.4	1.7	1.6	2.7	6.7	33.4	22.1	64.9
015	Computer Research													4.6	29.1			33.7
016	Parasitology						0.5	0.5		0.2	2.5	4.9	0.5	1.2			9.1	10.3
017	Vet. Preventive Medicine								0.1	1.3	0.9	2.3	0.6	1.4	0.3		5.2	6.9
018	Surveying										0.9	1.9			0.1		2.8	2.9
019	Vet. Anatomy	2.1	3.9	2.1	0.2	0.1	0.1	0.1	0.1	2.2	0.1	0.1		1.6	3.2	0.7	11.1	16.6
020	English	2.3	2.6	2.9	0.5			0.3				0.7		0.4		0.4	9.3	10.1
021	Vet. Clinical Studies														0.6	2.0		2.6
022	Remedial Education		0.2	0.3	0.4	0.5	0.1			1.3		0.3			1.8	0.7	3.1	5.6
023	Accountancy							0.1								0.5	0.1	0.6
024	Microbiology		0.8	1.3	0.6	1.2	1.1			0.2		1.3			2.2	11.0	6.5	19.7
025	Physiology														0.3	0.4		0.7
026	Chemistry				1.5	2.4	1.9	0.2	0.1	0.1	3.0	1.0	8.9		0.3	1.6	19.1	21.0
027	Geography	0.2								0.1	1.0	1.3			0.6	4.5	2.6	7.7
028	Townsville University College														0.5	1.9		2.4
029	Child Health		0.1	0.1	0.1		0.2	0.1	0.1	0.3		0.5	0.5				2.0	2.0
030	Social & Prev. Medicine		0.1	0.6	0.4	0.5	1.1	0.5	0.6	2.0		0.3	0.3			4.9	6.4	11.3
031	Examinations Section		2.0	0.8								2.5	10.2			8.6	15.5	24.1
032	Botany		0.2													1.7	0.2	1.9
034	Chem. Engineering		0.2	0.3			1.4	1.6	3.3	3.9	7.2	2.0	3.8				23.7	23.7
035	History			0.6	1.4												2.0	2.0
036	Zoology			0.1													0.1	0.1
037	Dentistry			0.8	0.6	1.0	2.6	2.0	6.3	10.5	4.5	2.9	4.3				35.5	35.5
038	Administration							0.5	0.3	0.4	0.2	0.4	0.3				2.1	2.1
040	Photography						1.8	1.5	1.9	0.9	1.0	1.0	1.0				9.1	9.1
	TOTALS	100.4	117.8	112.9	108.5	106.8	100.3	111.3	118.1	134.2	170.1	163.4	129.5	564.3	852.9	1034.8	1473.3	3925.3

APPENDIX V

DISTRIBUTION OF COMPUTER TIME (HRS.) USED BY EXTERNAL ORGANIZATIONS

	ORGANIZATION	MONTHLY USE - 1965												TOTALS FOR YEAR				Total to Date
		J	F	M	A	M	J	J	A	S	O	N	D	1962	1963	1964	1965	
	CONTRIBUTORS:																	
101	Main Roads Department	64.2	51.3	60.9	56.2	*								46.6	215.6	551.4	232.6	1046.2
102	Southern Electric Authority	3.2	4.3	2.1	4.6	7.1	7.7	3.7	1.8	5.2	3.1	5.1	4.6	5.2	40.0	29.5	52.5	127.2
103	Primary Industries Department	1.9	1.4	3.3	1.4	1.5	4.7	4.3	1.7	2.1	3.2	3.4	*	12.7	39.9	39.4	28.9	120.9
104	Irrigation & Water Supply	3.5	2.9	0.6	3.3	2.4	2.0	5.0	2.9	1.0	1.3	2.3	4.6	35.5	72.2	43.3	31.8	182.8
105	Co-Ordinator General's Dept.	3.9	4.8	6.2	3.9	4.2	5.2	5.0	2.5	0.9	3.0	1.9	1.9	5.2	2.9	13.8	43.4	65.3
106	Forestry Department	*												18.4	43.2	95.6		157.2
107	Survey Office	*												14.1	20.6	70.7		105.4
108)																		
109)	Brisbane City Council	2.3	5.8	5.8	5.1	8.2	8.7	9.0	2.4	4.8	2.1	7.5	12.3	1.6	1.2	9.3	74.0	86.1
110)																		
111	Aust. General Electric	ø												1.0	7.5	0.5		9.0
112	Queensland Government Railways		0.2	1.0	0.9	0.2	3.0	3.2	0.7	2.5	2.7	3.3	1.9	2.3	9.9	1.7	19.6	33.5
113	P.M.G. Department	3.5	2.8	4.6	1.4	2.1	*							3.3	20.0	23.9	14.4	61.6
114	C.S.I.R.O.	3.2	6.0	9.3	*									1.0	40.2	88.3	18.5	148.0
115	S.E.C. of Queensland	*													7.6	19.3		26.9
116	Mt. Isa Mines Ltd.	1.2	1.5	2.8	3.1	2.9	2.9	3.8	3.1	2.6	2.9	2.9	2.3		31.1	59.8	32.0	122.9
117	Wide-Bay Burnett R.E.B.												0.2			0.1	0.2	0.3
118	Capricornia R.E.B.	0.2	0.8	1.1	0.2	1.3	2.0	1.0	0.8	0.3	0.5	0.0	0.1			1.1	8.3	9.4
119	Cardno & Davies	0.6	0.0	0.1	2.3	2.7	0.9	0.5	3.1	0.8	1.3	4.1	4.5			13.5	20.9	34.4
120	Townsville R.E.B.			0.2			0.1	0.2	0.2							1.4	0.7	2.1
121	Cairns R.E.B.								0.2	0.2		0.8	0.7			0.1	1.9	2.0
122	Mackay R.E.B.			0.4													0.4	0.4
	Total - Contributors	87.7	81.8	98.4	82.4	32.6	37.2	35.7	19.4	20.4	20.1	31.3	33.1	146.9	551.9	1062.7	580.1	2341.6
	BLOCK USERS:																	
401	Main Roads Department					61.3	70.6	45.7	45.8	46.9	36.5	30.8	20.7				358.3	358.3
403	Primary Industries Department												3.9				3.9	3.9
406	Forestry Department	9.9	10.9	13.7	6.1	7.8	8.3	7.5	4.9	1.7	5.0	6.1	4.7				86.6	86.6
407	Survey Office	6.9	1.8	4.1	3.2	4.0	3.4	4.7	1.4	1.7	4.8	3.9	5.0				44.9	44.9
413	P.M.G. Department						2.9	4.8	4.3	3.4	4.2	2.1	3.7				25.4	25.4
414	C.S.I.R.O.				7.2	4.7	4.9	4.8	9.9	4.3	7.1	9.1	4.0				56.0	56.0
415	S.E.C. of Queensland	3.1	5.3	5.3	2.1	2.2	3.5	1.8	1.1	0.7	3.0	1.2	0.0				29.3	29.3
423	Commonwealth Dept. of Works									0.8	1.3	1.2	2.3				5.6	5.6
424	Sugar Research Institute											0.6	0.4				1.0	1.0
	Total - Block Users	19.9	18.0	23.1	18.6	80.0	93.6	69.3	67.4	59.5	61.9	55.0	44.7				611.0	611.0
	Total - Miscellaneous Users	5.4	6.1	8.1	7.0	8.4	9.1	6.4	6.9	6.4	8.3	6.1	5.3	2.4	8.7	55.8	83.5	150.4
	TOTALS	113.0	105.9	129.6	108.0	121.0	139.9	111.4	93.7	86.3	90.3	92.4	83.1	149.3	560.6	1118.5	1274.6	3103.0

* Converted from Contributor to Block User status. ø Special contract now terminated.

APPENDIX VI

SOME WORK CARRIED OUT BY USERS OF THE COMPUTER IN 1965

UNIVERSITY DEPARTMENTS

Dept. No.	Department	Work carried out on Computer
002	CIVIL ENGINEERING:	
	C. O'Connor	Yield in a polycrystalline material.
		Elasto-plastic stress distributions in a notched tension bar.
	J. Meek	Analysis of grid structures and applications to planar frames.
	R. Nilsson	Plastic analysis of frames.
		Annual and supplementary examination results for Engineering faculty.
004	PHYSICS:	
	R.J. Stening	Calculation of currents driven by dynamo action in the ionosphere.
	P.E. Monro	Calculation of ray paths of radio waves reflected from an irregular ionosphere.
	M.J. Burke	Investigation of the movement of signal variations recorded at spaced detectors.
	K.L. Jones	Analysis of signals received from artificial earth satellites.
	J.S. Mainstone	Statistical analysis of magneto-telluric micro-pulsation data.
	A.S. Cheam L. Wing-Fatt	Fourier analysis of torque-magnetometer data.
	J.D. Argyros L. McNamara R. Young	Investigation of the physical conditions in stellar atmospheres.
	A. Mir	Calculation of absolute backscatter coefficient.
	S. Khan	Determination of azimuth and zenith angles and its analysis.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
005	PSYCHOLOGY:	
	L. D. Bainbridge	Use of Shepard-Kruskal programme for determining dimensions of similarity in form perception.
	J. T. Damm	Factor analytic studies in achievement motivation.
	E. Drinkwater	Study of semantic differential.
	L. E. Enticknap	Factor analytic study of personality variables.
		Studies in perception.
	A. Howard	Pair comparison scaling.
	G. E. Kearney	Item analysis by new Rasch technique.
		Factor analysis of abilities.
	G. McBride	Personality and blood group relationships.
		Social organisation in hens and turkeys.
		Effect of inbreeding and selection on reproductive characteristics in chickens.
	A. Silcock	Correlational analysis of behaviour ratings.
		Factor analysis of semantic differential.
	K. D. W. White	Factor analytic study of factors in conformity.
006	ELECTRICAL ENGINEERING:	
	E. J. Abercrombie	Calculation of electric field changes caused by lightning discharges.
	R. A. Barham	Cauer-Guillemin synthesis.
	R. E. Bogner	Simulation of a random process.
	R. E. Bogner M. K. Ward	Calculation of tables for use in the design of linear slope group delay filters.
	M. Darveniza	The calculation of probability of lightning flashover with power arc follow, in wood pole lines.
	G. Glasson	Calculations of arc currents and stability criteria for experimental investigations on polluted insulators.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
006	ELECTRICAL ENGINEERING - Continued.	
	G. Haack	Glide path details from field data.
	D. Mackerras	Calculation of step and ramp function response of E.R.A. lightning counter input circuit.
	M.W. Robson	Development of a departmental accounting program.
	M.A. Sargent	The calculation of the lightning performance of transmission lines.
	T.M. Parnell	Solutions of statistical equations relating to high voltage withstand tests.
007	MECHANICAL ENGINEERING:	
	T. F. Leahy	Program for determining the stress in circular cylinders (solid and hollow) subjected to rotational loading and/or normal stresses on its curved surfaces.
	K. Bremhorst	Program to study the behaviour of hot-wire anemometers under non-isothermal conditions.
	R. Irvine	Program to calculate the natural frequencies and normal modes of multi-degree systems with up to 10 degrees of freedom.
008	MATHEMATICS:	
	B. L. Adkins	Analysis of multi-factor dental experiment.
	L. Bass W.J. Moore	Computations of membrane potentials.
	A.S. Jones	Calculation of hypergeometric function.
	L.E. Howard	Earthquake location problems.
009	GEOLOGY:	
	J.P. Webb L.E. Howard	Development of earthquake epicentre location program.
	W.R. Maiklem P.J. Conaghan	Grainsize analysis.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
011	DATA PROCESSING:	
	D.J. Ferguson	Stock control programs.
		Decimal conversion program.
		Monthly salaries.
		Enrolment statistics.
		Updating staff records.
012	AGRICULTURE:	
	I.F. Horton	Multivariate analysis of data for large mixed factorial plot experiments, using magnetic tapes.
		Analysis of triple lattice multivariate data.
	I.F. Horton B.L. Adkins	Study of multivariate covariance analysis.
		One-way and two-way multivariate analysis of variance.
	M.C. Schroders	Subroutine for production of orthogonal polynomials for unequally- or equally-spaced data.
		Analysis of large split-plot factorial design with many variables.
		Analysis of bulk density data for Darling Downs soils.
		Analysis of Lattice-square design sugarcane variety trials with multivariate data.
013	EDUCATION:	
	R.P. Tisher	Calculation of means, standard deviations, and intercorrelations for a series of science tests.
		Detailed item analysis of a set of science tests involving calculation of intercorrelations, difficulty levels, and point biserial correlation.
	R.S. Adams	A matrix analysis of incident and deviation scores from several hundred variables, using means, standard deviations, and tests.
	M.J. Dunkin	Calculation of means, standard deviations, correlations, and factor analysis of a set of personality needs measurements.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
013	EDUCATION - Continued:	
	M.M. Davis	Factor analysis and general rotation program on 11 to 15 variables for approximately 200 subjects yielding 4 to 6 factors.
014	MINING AND METALLURGICAL ENGINEERING:	
	W.R. Bull	Methods of simulation of flotation circuits for mineral concentration.
	C.E. Gregory	Analysis of measurements on aerodynamic aspects of mine shaft design.
	P. Vela	Program for converting load values obtained during tensile testing to true stress values.
	A.J. Lynch	Simulation by the use of matrix models of the operation of comminution-classification closed circuit systems.
	P.D. Bush	Analysis of results of measurements to determine the mechanism of comminution.
017	VETERINARY PREVENTIVE MEDICINE:	
	R.M. Inglis	Ruminant electrocardiography.
	H. Winter	Volume distribution curves of ovine erythrocytes.
018	SURVEYING:	
	I.A. Harley	Model distortions arising from tilts when heighting from parallax measurements on aerial photographs.
		Relative orientation of stereoscopic photographs and computation of model coordinates.
019	VETERINARY ANATOMY:	
	R.M. Butterfield	Studies of relative growth in cattle.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
020	ENGLISH:	
	M.C. Cunningham	Program for the alphabetisation of work lists with translation and classification.
		Program for the counting of phonemes and phoneme sequences, from word lists in a language, given the symbols used for each phoneme.
022	REMEDIAL EDUCATION:	
	J. McLeod	Law of Comparative Judgment.
		Analysis of variance.
	J. Anderson	The Law of Comparative Judgment (Case V and Case III models).
		Principal components factor analysis from raw scores.
		Product moment intercorrelation.
		Rank order intercorrelation.
023	ACCOUNTANCY:	
	G.G. Meredith	Investment analysis using present value method to determine optimum investment programme, given numerous alternatives.
		Calculation of present value factors, future value factors, and annual equivalent factors, for application to capital investment programmes.
024	MICROBIOLOGY:	
	E. Szabo	Single-linkage cluster analysis of the Sucath type.
		Complete-linkage cluster analysis, devised by Szabo and Skerman.
		Intra-cluster and inter-cluster similarity estimation.
		Printout of similarity matrix in triangular format.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
026	CHEMISTRY:	
	M. Batley	Calculation of the electrostatic polarization energies of organic semiconducting crystals.
		Calculation of molecular orbital energies.
	B. Brady	Determination of activity coefficients for mixtures of 3-methyl butene-1 and sulphur dioxide from measured values of the total vapour pressures of the mixtures.
	D. Clegg R. Cooney	Calculations of the frequencies of spectral lines.
	L. Fryday	Calculation of energy levels for a number of organic molecules.
	E.C.M. Grigg	Calculation of vibrational frequencies and isotope effects from force constants.
	C. Kennard	Crystal structure analyses.
029	CHILD HEALTH:	
	A.E. Dugdale	Statistical analysis of clinical and research data.
030	SOCIAL AND PREVENTIVE MEDICINE:	
	J.H.A. Cane	Classification of patients into different diagnostic groups using "Bayesian decision procedures".
		Multivariate analysis of variance of skin cancer and skin keratoses data.
	O.W. Powell	Data processing in an hospital information system.
032	BOTANY:	
	M.M. Ludlow	Analysis of leaf expansion data in terms of cell numbers and cell sizes.
034	CHEMICAL ENGINEERING:	
	R.G.H. Prince D.B. Batstone	Auto-correlation functions for pressure fluctuations in the space below a perforated plate.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
034	CHEMICAL ENGINEERING - Continued:	
	R.G.H. Prince D.J. McCann	Solutions to seal point equations for perforated plate distillation columns.
	R.G.H. Prince R.L. Muller	Simulation of the operation of an ethylene oxide plant, using a steepest ascent technique to optimize the profit function.
	E.T. White	Evaluation of residence time distributions for mixed vessels with dead zones.
	E.T. White A.S. Anderssen	Calculation of experimental results for natural convective heat transfer from a flat toroidal heater.
		Calculation of experimental results for the frequency of bubble formation at a submerged orifice.
		Program for resolving the convolution integral; residence time distributions are calculated from the input and response signals of a system.
035	HISTORY:	
	R.L. Lawson	Analysis and comparison of census reports of 1891 and 1901.
036	ZOOLOGY:	
	W. Stephenson	Correlation coefficients.
		Determination of relationships between Portunid crabs by a simple technique of numerical taxonomy.
037	DENTISTRY:	
	B.J. Kruger	Statistical analysis of data from a 2 x 2 factorial study of the effect of fluoride and molybdenum on dental morphology in the rat.
		Calibration trials of dentists for studying within- and between-examiner variability.

APPENDIX VI - Continued.

Dept. No.	Department	Work carried out on Computer
037	DENTISTRY - Continued:	
	I. Oliver	Programs for a longitudinal study of dental health in two groups of Brisbane children (a Bristol-Meyers project):
		Buffered character input/output subroutines for CARD FORTRAN.
		Updating of personal record file of names and addresses.
		Listing of personal record file.
		Listing of personal record file sorted by name.
		Listing of personal record file sorted by address.
		Updating of records of examinations for caries, gingivitis, stain, and contact.
		Listing of examination records.
		Random dentifrice assignment.
		Reallocation of class code numbers.
		Reproducibility of examinations.
		Year-to-year reproducibility.
		Statistical distribution of caries by age, sex, and dentifrice.
		Sorting of personal record file into class order.
		Printing of dentrifice labels.
040	PHOTOGRAPHY:	
	E.W. Hollywood	Internal Accounts.

APPENDIX VI - Continued.

EXTERNAL ORGANISATIONS

Dept. No.	Organisation	Work carried out on Computer
102	S.E.A.Q.:	
	L. Olsen	Analysis of power system interruption records. Calculation of power system fault current distribution. Determination fault location on a transmission system from readings of neutral current.
	F. Schroder	Analysis of power system load flow, fault level and transient stability. Calculation of average daily load curves. Costing of alternative H.V. transmission schemes.
	N. Galwey	Calculation of coal consumption and energy generated at power stations. Determination of economic generation schedules for forward planning. Economic generation scheduling. Costing of alternative generation schemes.
	B.C. Pyra	Survey calculations, profile plotting, and tower spotting for H.V. steel tower transmission lines.
104	IRRIGATION AND WATER SUPPLY COMMISSION:	
	T. Fenwick K. Mills	Production calculations on: (i) Storage behaviour analyses (ii) Reservoir flood routing. (iii) Backwater computations. (iv) Stream discharge computations. (v) Slope stability analyses. (vi) Economical section for mass gravity dam. (vii) Embankment volumes. (viii) Hydrograph derivations. (ix) Current meter rating tables. Calculation of volumes of stream flow divertible by channel offtakes and addition of flows from multiple sources.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
104	IRRIGATION AND WATER SUPPLY COMMISSION - Continued:	
	L. Cavazza	Slip circle stability analysis of earth and rockfill dams.
		Non-circular stability analysis for sloping earth core type of dams.
	J.A. Shaw	Storage behaviour analysis (monthly) with downstream inflows and transportation losses.
		Storage behaviour analysis (monthly) no restrictions, with evaporation control film.
		Storage behaviour analysis (monthly) no restrictions, dual storage system with downstream inflows.
105	CO-ORDINATOR GENERAL'S DEPARTMENT:	
	J.K. Love	Calculations on the routing of floods over spillways.
	C. McMonagle	Calculation of moments, shears and reactions for various loadings on anchor cantilever bridges.
	J. Gralton	Analysis of continuous skewed slabs for deflections at grid nodes and longitudinal, transverse, and twisting moments.
110	B.C.C. ELECTRICITY DEPARTMENT:	
	J. Sands P. Clappison	Data processing system for 11kV distribution transformer load records.
		Study of the influence of weather on distribution system loads.
		Load flow and short circuit studies on existing and proposed distribution systems.
		Study of system load factors 1958-64.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
112	QUEENSLAND GOVERNMENT RAILWAYS:	
	I. Nibloe	Train running times on Moura short line.
	J. Seymour	Design of piled foundations on Moura Project bridges.
		Preparation of bar bending schedules.
		Design tables for column analysis.
	T. Condon	Substructure analysis of Calliope River bridge.
116	MT. ISA MINES LTD.:	
	R. Andrew	Fitting data to distributions to calculate observed frequencies and generate expected frequencies for data with Poisson and binomial distributions.
	R. Andrew E. F. Gibbs	Mining project financial analysis to determine the profitability of exploiting ore bodies containing up to three useful materials. Provision is made for control to be vested in a parent company or a separate entity, with consequent effects on depreciation for tax purposes.
		Solution of magnetometer misclosures, to distribute magnetometer survey errors.
	E. F. Gibbs	Calibration of absorption spectrophotometer to produce tables for use in assay of materials.
		FORTRAN version of Statpac (a set of statistical subroutines).
		Plotting geophysical and geochemical profiles to produce bar charts showing relative variations of geophysical and/or geochemical measurements taken along a traverse or drill hole.
		FUNCTION POLYVAL (X, A, N) to evaluate a polynomial up to tenth order.
118	CAPRICORNIA R.E.B.:	
		Calculation of stringing charts for overhead transmission lines.
		S.E.A.Q. programs used for load flow, survey calculations and profile plot.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
119	CARDNO AND DAVIES:	
	C.J. James	Project and office costing procedures.
		Volume determination of trapezoidal channels.
	B. Burman	Indeterminate structural analysis.
		Analysis of discrete-member structures under an arbitrary set of loads.
	I.R. Astill C.G. King	Computations for road alignment, geometrics, and earthworks mass diagrams.
122	MACKAY R.E.B.:	Calculation of power system loadings.
201	BUREAU OF SUGAR EXPERIMENT STATIONS:	
		Statistical analyses of field experiments with sugar cane.
202	R.J. McWILLIAMS AND PARTNERS:	
	B.T. Davis	Statistical analysis of concrete cylinder strength test results.
203	CAMERON AND McNAMARA:	
	E.W. Karamisheff	Analysis of continuous, non-prismatic freeway structures.
		Analysis of building frames and portals.
		Design charts for circular hollow reinforced concrete members.
	W.H. Boyce E.W. Karamisheff	Analysis of piled bridge substructures.
		Analysis of framed bridge substructures.
212	TITLES OFFICE:	Processing of survey computations.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
213	A.C.F. & SHIRLEYS FERTILIZERS LTD.:	
	C.O. Schaschke	Optimisation of formulations for mixed fertilizers using linear programming techniques.
		Calculation of volumes of bulk fertilizer stockpiles using Simpson's Rule approximation.
		Sizing of mixing unit raw materials storage based on throughput rates.
		Random number generating program.
215	AMPOL REFINERIES LTD.:	
	A.C. Nommensen	Preparation of orifice plate calibration tables.
		Performance evaluation and trend forecasting of reforming plant.
		Indigenous crude oil price evaluations using the Modified Nelson Method prescribed by the Tariff Board.
		Heat exchanger fouling factor calculations and trend forecasting.
		Linear programming for optimum cracking plant performance.
	A.E.S. Dyson	Linear programming model generation.
		Product blending correlations.
		Determination of the effect of process variables on the operation of the propane decarbonising unit.
		Statistical analysis of tankage utilisation.
220	BUREAU OF METEOROLOGY:	
	H.E. Whittingham T.L. Piggott	Harmonic analysis of tides.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
401	MAIN ROADS DEPARTMENT:	
	I. Moriarty G. Eberhardt B. Peterson W. Simpson B. Lennon R. Kelsey B. Willmett	Part analysis of Brisbane Transportation Study
	G. Moxey B. Willmett W. Simpson	Creation of master files and error correction of Toowoomba Transportation Survey.
	C.G. Smith I. Moriarty G. Moxey	Enlargement of earthworks program.
	B. Cruse	Enlargement of traffic number plate survey program. Enlargement of digital terrain model program.
	G. Eberhardt	Suite of programs for Translator for conversion of GAP programs to PLAN language.
	M.J. Cock B. Willmett	Analysis of plant hire data.
406	FORESTRY:	
	N.B. Henry	Preparation of volume tables for plantation conifers, native hardwoods, and rainforest species. Plantation Register data processing system. Preliminary program for processing experiment measure data.
	N.B. Henry J.W. Moore	Investigation of improved models for describing volume and form relationships in plantation species. Site index studies, slash pine.
	J.W. Moore	Statistical analysis of experiments. Processing mill study data. Processing 10% log sample data. Design of beams for show exhibit.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
406	FORESTRY - Continued:	
	J.A. Winn	Processing forest inventory survey data for hardwoods, cypress pine, and rainforest.
		Assessment of volumes and valuation of standing timber on areas proposed for freeholding.
413	POSTMASTER GENERAL'S DEPARTMENT:	
	J.G. Bartlett	Analysis of data on the behaviour of the Brisbane-Lismore coaxial cable system.
	L.L. Birch	Calculations associated with base impedances, matching network and additional phase shift for directional aerial array at radio station 4QB, Pialba.
	P.J. Kitchen	Processing traffic dispersion measurements to produce collated traffic dispersion percentages.
		Composite growth factor calculations.
		Design of crossbar GV stage for production of trunking diagrams.
		Preparation of metropolitan exchange junction records.
		Preparation of numbering and sorting programs for a State index of exchanges.
		GV design programs for operation under BRIDGE II control.
	P.J. O'Reilly	Layout of transposition sections on open wire carrier routes.
414	C.S.I.R.O.:	
	N.H. Shaw	Analysis of rainfall data.
	L. 'tMannetje	Conversion of dry weight ranks of pasture components. Conversion of total pasture yields into dry weight yields of pasture components. Calculation of N-yield of pasture mixtures.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
414	C.S.I.R.O. - Continued:	
	J.S. Russell	Calculation of Fourier series coefficients.
		Split-plot analysis.
		Multiple regression analysis.
		Numerical solution of differential equations with periodic coefficients.
	K.P. Haydock	Fitting Y = A + B*Exp(C*X) to data.
		Linear regression.
	D.R. Lamond	Preparation of contingency tables from cattle fertility records.
		Analysis of variance of factorial experiments.
		Regression analysis.
		Chi squared analysis.
		Routine calculations for the reduction of experimental data.
	A. Howard	Analysis of data from Brisbane beef consumer acceptance survey.
		Analysis of variance and preparation of contingency tables.
		Development of overlay system for use with FORTRAN.
415	STATE ELECTRICITY COMMISSION OF QUEENSLAND:	
	L.G. Pane	Processing of power system load data to produce average daily load cycles, monthly and annual load duration curves, diversity between systems, and load and energy forecasts.
423	COMMONWEALTH DEPARTMENT OF WORKS:	
	A.G. James	Calculation of effective temperature differentials through air-conditioned structures.

APPENDIX VI - Continued.

Dept. No.	Organisation	Work carried out on Computer
423	COMMONWEALTH DEPARTMENT OF WORKS - Continued:	
	P.B. Jones	Calculation of summer cooling and reheat, and winter heating requirements for a multi-room air-conditioned building.
		Production of technical specifications for subsequent offset printing.
	D. Merson	Time phasing of annual branch works programme.
	R. De Voil	Determination of bending moments on multi-span multi-section continuous beams.
		Calculation of tables of fixed end moment coefficients under partial rectangular loading.
	A.G. James P.B. Jones R. De Voil	Stress analysis of rectangular concrete sections.
424	SUGAR RESEARCH INSTITUTE:	
	C.R. Murry R.N. Cullen	A program to prepare sets of tables to be used in the calculation of bagasse analyses from disintegrator determinations.
		A program to prepare sets of tables of the theoretical feed pressures required for a pair of rolls under varying conditions.
	C.R. Murry	A system of programs to analyse data collected during various mill tramway investigations and to output summarised tables of results.

APPENDIX VII

FINANCIAL STATEMENT

ENTITLEMENT ACCOUNT - AS AT 31.12.1965

RECEIPTS		PAYMENTS	
Contributors donations (Note 1):		Charges for computer time invoiced to contributors against entitlement:	
to 31.12.1961	47,192. 6. 8	to 31.12.1962	7,317.18. 2
to 31.12.1962	31,167. 6. 8	to 31.12.1963	27,220. 0. 0
to 31.12.1963	34,167. 6. 8	to 31.12.1964	50,484.10. 0
to 31.12.1964	26,500. 0. 0	to 31.12.1965	25,332.10. 0
to 31.12.1965	2,700. 0. 0	Balance (value of computer time due to contributors) (Note 1)	31,382. 1.10
	£141,727. 0. 0		£141,727. 0. 0

CAPITAL EQUIPMENT ACCOUNT - FOR PERIOD ENDING 31.12.1965 (Note 2)

Contributors donations to 31.12.1964	139,027. 0. 0	Purchase of initial GE 225 system:	
Contributors donations to 31.12.1965	2,700. 0. 0	to 31.12.1964	98,810.11.10
University of Queensland Grants	20,000. 0. 9	Purchase of magnetic tape equipment:	
State Government Grants	15,000. 0. 0	to 31.12.1964	41,890.19. 1
Commonwealth Government Grants	25,000. 0. 0	to 31.12.1965	4,945. 0. 0
Transferred from Operations Account 1965, for purchase of I.B.M. 1620 Computer	7,912.13. 4	Purchase of I.B.M.1620 - part payment, 1965	20,432. 2. 0
Sale of Manuals	304.14. 9	Auxiliary equipment	6,988. 0. 9
Donation - C.J. Elliott and Son	75. 0. 0	Building (with air conditioning)	25,703.14.10
		Furnishings:	
		to 31.12.1964	2,508. 3. 7
		to 31.12.1965	21. 4. 1
		Equipment hire (Note 3)	1,024. 1. 8
		Miscellaneous	2,750.11. 0
		Credit balance	4,945. 0. 0
	£210,019. 8.10		£210,019. 8.10

OPERATIONS ACCOUNT - FOR YEAR ENDING 31.12.1965

Balance b/f 1.1.1965		4,046.19. 1	Salaries		6,525. 8. 7
Revenue from Computer Operations:			Salaries (U.Q. funds, see contra)		12,328. 0. 9
University Departments		10,915. 8. 6	Equipment:		
Other Users		52,704.11. 4	Magnetic tape handler	5,429.11.11	
Contributions by University towards running costs:			Air conditioning modification (Progress)	2,161. 1.10	7,590.13. 9
Salaries	12,328. 0. 9		Equipment (U.Q. funds, see contra)		545. 6. 5
Maintenance	2,252.16. 7		Maintenance:		
Equipment	545. 6. 5	15,126. 3. 9	Magnetic tape stocks	1,958.17. 0	
			Equipment hire	1,053.12. 0	
			Stationery	3,126. 7. 6	
			Electricity	2,200. 0. 0	
			Insurance (Note 4)	152. 4. 5	
			Miscellaneous	669.14. 2	9,160.15. 1
			Maintenance (U.Q. funds, see contra)		2,252.16. 7
			Transfers:		
			To Sinking Fund		20,000. 0. 0
			To Capital Equipment Account for purchase of I.B.M. 1620		7,912.13. 4
			Credit Balance		16,477. 8. 2
		£82,793. 2. 8			£82,793. 2. 8

Note 1 Guaranteed future contributions £1,500 with corresponding time entitlement.

Note 2 This statement excludes capital items purchased from the Operations Account. All major purchases of items of Capital Equipment to 31.12.1965 are listed in Appendix VIII.

Note 3 First year of operation only.

Note 4 Subsequent charges to be debited to University General Funds.

L.N. Livingston, F.A.S.A.
Bursar

APPENDIX VIII

DISTRIBUTION OF CAPITAL EXPENDITURE 1961-1965

Year	Item		Approx. Cost ($)
1961	G.E. 225 Computer System (Advance Payment)		67,084
	Building (Progress Payment)		17,400
	Calculating Machine (Munro)		960
			85,444
1962	G.E. 225 Computer System (Progress Payment)		33,041
	Building (Progress Payment)		33,512
	Paper Tape Equipment (Creed)		7,012
	Furniture, Fittings		3,258
	Test Equipment (Oscilloscope, etc.)		2,192
	Adding Machine (N.C.R.)		3,372
	Equipment (from U.Q. Equipment Grant)		1,768
			84,155
	* Hire of Card Equipment (1 year only)	2,048	
	** Miscellaneous (Overseas Trip, R.E. Kelly ($2,744); Initial Supplies of Manuals, Cards, Tape, etc.)	4,588	6,636
			90,791
1963	G.E. 225 Computer System (Progress Payment)		86,608
	Printer (Progress Payment)		11,812
	Furniture, Fittings		498
	Equipment (from U.Q. Equipment Grant)		1,554
			100,472
1964	Magnetic Tape Equipment		83,782
	G.E. 225 (Final Payment)		10,888
	Printer (Final Payment)		39,252
	Furniture, Fittings		1,260
	Building Additions		494
	Equipment (from U.Q. Equipment Grant)		1,000
			136,676
1965	Magnetic Tape Equipment		20,750
	Air Conditioning Improvements		4,322
	I.B.M. 1620 Computer (T.U.C.)		40,864
	Equipment (from U.Q. Equipment Grant)		1,090
			67,026
			$480,409

* Non capital items, charged as capital expenditure.

** Non capital items, charged as capital expenditure. Shown in 1963, 1964 Annual Reports as £2,774, comprising above amounts plus $960 (Munro Calculating Machine), see 1961 expenditure.