

the MONITOR

May, 1991

Commodore Users Group of Saskatchewan

Vol. 6, No. 5

Obligatory Stuff

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If you have any questions about CUGS please feel free to contact any of the above executive members.

The Monitor is published monthly by the COMMODORE USERS' GROUP OF SASKATCHEWAN (CUGS), Regina, Sask. CUGS meetings are held the FIRST WEDNESDAY of every month (unless otherwise noted) at McDonald's on 6210 Rochdale Blvd. The next meeting will be held: **June 5, 1991 from 7:30 - 9:30 p.m.**

CUGS is a non-profit organization comprised of C64, 64C, C128, and 128D users interested in sharing ideas, programs, knowledge, problems and solutions with each other. Membership dues are pro-rated, based on a January to December year.

Anyone interested in computing is welcome to attend any meeting. Out of town members are also welcome, but may be charged a small (\$5.00) mailing fee for newsletters. Members are encouraged to submit public domain software for inclusion in the CUGS DISK LIBRARY. These programs are made available to members. Any member is entitled to purchase DISKS from our public domain library for a nominal fee. Programs are 'freeware', from computer magazines, or the public domain. Individual members are responsible for deleting any program that he/she is not entitled to by law (you must be the owner of the magazine in which a particular program was printed). To the best of our knowledge, all such programs are identified in their listings. Please let us know if you find otherwise.



Table of Contents



Obligatory Stuff	1	Editorial	1
May Agenda	2	President's Message	2
Pocket Helper	3	New Low Prices	3
RS-232 and You	3	Secretary's Report	5
June Agenda	5	Scratch 'n' Save	5
Experts List	6	TeleReview	7
New Club Disks	7	BBS Listing	8



Editorial

by Jarrett Currie

The June **Monitor** will be put together by our assistant editor, Shaun Hase. Shaun has recently purchased a new computer and is dying to try it out on the newsletter. As much as I enjoy doing the **Monitor** each month, it becomes too easy to fall into a rut and have the newsletter look the same each month. I look forward to seeing how Shaun expresses his unique tastes in our newsletter.

Next month we will hold the last meeting before the summer break. This is the time of year that many of the executive begin pondering about who will succeed them in the fall's executive elections. Many of our current executive members have been in their present positions for several years, and at the last executive meeting, some of these people expressed interest in stepping down. But, I seriously doubt that any of them will stray too far away.



For any of you who are interested in helping with the **Monitor**, I encourage you to contact any of the club's executive and tell them of your interests. If you have little publishing experience (and who does?), don't let that sway you! I will certainly be around to act as

mentor, and if there are no volunteers to be nominated for the Editor, I will let my name stand. As the assistant editor, you will be able to acquire all the skills you will need to

be the full-fledged editor in the following year. Imagine the fame and the glory!

The club also has the necessary hardware to allow you to put the **Monitor** together. In addition to the computers, monitor and disk drives you have seen at the meetings, the club also has a Panasonic printer and several graphics disks that the editor can use to print the newsletter. Also, if you are so inclined, the club has agreed to purchase GEOS and GeoPublish for the use of the new editor, or his assistant. So if you thought that you couldn't help out because you were hardware or software poor, then think again!

Being on the executive, especially as the editor, gives you the envious opportunity to know where the club is headed, and what the club plans on doing, often several months in advance. The executive members usually meet monthly and the meetings are never dull! Our most experienced club members usually volunteer their time for the executive, and as such, the meetings are a great way to learn about Commodore computing. I don't think I have attended a meeting where I didn't learn some new way to use my computer more effectively or enjoyably.

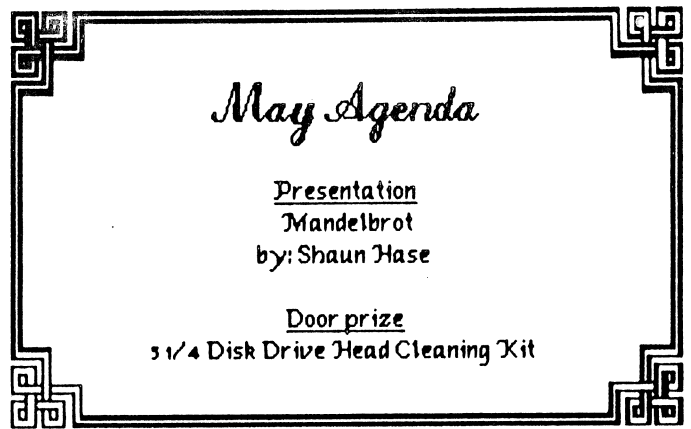
Before I close this month, I would like to address a somewhat touchy subject that was raised at the last executive meeting. As any of you that have submitted a letter to a newspaper editor, or an article to a magazine are aware, the people who organize the publication reserve the right to edit the submitted material for content and length. Unfortunately, I must exercise this right in producing the **Monitor** as well. I have been the editor for two years, and in that time I have never missed the opportunity to include in the **Monitor** any article that was submitted to me. However, the club does pay to have the **Monitor** copied, and there are time constraints that prohibit the **Monitor** from exceeding its current size. As a result, articles are often reduced in size in order to fit. Consequently, I must rely on my judgement in deciding what parts of the article will be cut, and what will be published. I apologize to any of you if I have detracted from the meaning of your submissions.

Last month Michael Rodgers submitted an article to the executive about SID programs. Michael painstakingly printed the article, adorned it with graphics and anticipated that it would be published in the **Monitor** as it was. He also included a disk containing the article in the event that I needed to convert it to GEOS. Unfortunately, I was unable to attend the executive meeting, and received only the disk, missing the graphics and the hardcopy. Sorry Michael.

From the CUGS BBS:

"How many programmers does it take to change a lightbulb?"

"None! That's a hardware problem!"



PRESIDENT'S MESSAGE

by Barry Bircher

This month's presentation will see Shaun Hase doing a presentation on a complicated mathematical graphic generating program. A complicated set of mathematical rules discovered by a mathematics genius made this program possible. A fellow by the name of Mandelbrot discovered an area in mathematics that are in one sense devoid of any real rules and regulations. This is one area that has truly fascinated me since I first saw it. I don't want to take too much away from Shaun's presentation, but I just had to say a few things about it. The math I know is set up and follows a strict set of rules. The Mandelbrot set/formula is beyond my understanding as it uses imaginary numbers. I'm not too bad at algebra and can understand how variables are used in algebra and on computers, but imaginary numbers?

From what I understand of it, an imaginary number is a number that really does not exist, at least with our current rules of math today. That $2+2=4$ and that the square root of 4 is 2 is pretty well straight forward, but what is the square root of -4? And what number would be contained in the variable "A" in this equation $2+A=-4$? Well, most of us would say -6. In this case we would be right, but now if we made an arbitrary rule that "A" must be a positive number, then what number would it be now? My cousin is an engineer and has to solve these kinds of questions. They don't have any real answers, but they are able to use these imaginary numbers in quite a few problems and come up with something else more real. I have been told that the Mandelbrot set contains many of these type of calculations. Mr. Mandelbrot discovered that a certain set of imaginary numbers (the Mandelbrot set) produces some rather interesting graphics. The rest I'll leave up to Shaun to show and demonstrate.

The last few meetings have been fairly successful. Everyone got a chance to ask questions and get a few answers. Failing an answer, we were able to at least steer the member in the right direction. The last few meetings have also been difficult ones due to the location of the meeting room. When we first started at McDonalds, the seating

capacity and the general area was very good. However, the last two meetings have been dampened by distractions and such. I have asked for your (this means you) input for ideas on a new meeting room in the past. If you know of a place that would be a nice location for a club meeting then please, by all means let a senior club member know about it (eg. an executive). The club is willing to pay a REASONABLE price for a suitable room. The executive have all voiced their concerns and most of us agreed that we must spend a little money to get a suitable room. This is on a 6 month to 1 year trial basis. We want to do this to allow the club to grow and mature into a bigger and better club. But, all this is in vain if we cannot find a place that will not cost the club an arm and a leg to get.

The club on the whole is doing very well. I hope that the next few meetings will give everyone a chance to talk, walk, ask questions and have a good time at these meetings. After all that is why we are here.

Until next time, Adios Amigos.

POCKET HELPER

by Norm Wood

Ever been working on your POCKET PLANNER spreadsheet and having just about finished the project, the bell rings ... MEMORY FULL!

Well, if you have Version 2 of POCKET PLANNER, you have the option to dump the HELP messages by hitting CONTROL H and you then you have considerably more memory to work with. But, what if you need to refer to the HELP screens at some time prior to completing your current project? You could, of course, save the file you are working on, reload the master program, check out the HELP message, then carry on with your spreadsheet. Wastes alot of time, doesn't it? There is a better way. Simply print out the HELP messages on your printer and file them for future reference. Here's how you do it:

Load the POCKET WRITER program into your computer. (It will have your printer file on it.) Now, put your POCKET PLANNER disk in the drive and get a directory listing. Using the cursor, load each HELP file onto the screen one at a time, and print them out using the normal print method. You can follow the same procedure for POCKET WRITER and POCKET FILER as well.

NEW LOW PRICES

For the first time, CUGS public domain disks may be purchased in quantities with great savings.

If you buy this many disks	You pay only this much per disk
1-4	\$3.00
5-9	\$2.50
10-19	\$2.00
20-49	\$1.50
50+	\$1.00

RS-232 AND YOU

by Barry Bircher

In the next set of articles, I want to explain the RS-232, what it is, and what to do about it. Near the end of the series, I will be showing you how to make an RS-232 interface.

I have been involved with telecommunications for well over 4 years now and have enjoyed BBSing (Bulletin Board Systems) all over Regina. When I first started out, things were not too clear as to how they work. The subject of RS-232c came up many many times in conversations. My first modem was a 300 baud Master modem that plugged right into the user port of my 64 (leftmost port to user). Using RS-232 was just something other people had to worry about. There were a few terminal programs around and I picked one that would work with my modem. The most scary part of BBSing is setting up your terminal program and logging on to a BBS and finding out that the terminal was set up wrong. I look back at that now and realize that there is no reason to fear BBSing.

In order for a computer to be of any use, it must be able to communicate to the outside world. The most common input output (I/O for short) method is the keyboard (input) and the screen (output). But how does the computer communicate to other things like a printer or a modem? There are a few ways for Commodore computers, the most common is the serial cable (called something like RS-442). But this is usually limited to Commodore computers. What if you don't have a Commodore compatible Printer or Modem? How can you hook them up to your computer? Here is where RS-232 comes in.

I wanted to upgrade my second modem (a 1670, 1200 baud) to a 2400 one. Commodore didn't make a direct-connect 2400 baud modem (or any 2400 baud

modem for that matter) so third party modems were the only answer. When you buy a third party modem, you soon realize that the connectors on the modem do not look like anything that would fit on any Commodore computer. Also, you will soon learn that not only are the connectors wrong, but also the voltages are at the wrong level (eg. +/- 12 volts for true RS-232 as opposed to 0-5 Volts available on the user port). Even though Commodore has RS-232 capability, it is not DIRECTLY usable. Because most third party modems require true RS-232 to connect it up to any computer, I needed to make a Commodore RS-232 to true RS-232 interface. This meant I would need to learn more about it. Oh, yes, you can buy the interfaces, but they are asking too much for one and I enjoy making things rather than buying them (especially if it will save some money).

How is RS-232 used by other equipment?

In the case of printers, RS-232 is usually wired directly to them via a cable. Any data sent are interpreted to be printed or are sent as control characters such as line feeds, carriage returns, etc. Most printers today are Centronics parallel rather than RS-232 serial.

Computers use RS-232 mostly to communicate to a modem via a cable. The status lines may or may not be used depending on what the modem is used for. Data received by the modem via phone lines is passed on to the computer via RS-232. As well, the computer can send data out to the modem by RS-232. If we were to forget the fact that the computer is talking to a modem and think of the computer talking directly to another computer, we can have a better understanding how RS-232 can be of use to us. We have in effect two computers communicating together over a single pair of phone lines. We can also directly connect two computers together using RS-232 (using what's called a null modem cable) and transfer files to and from them. They don't have to be the same model or even the same make of computer. As long as each talks RS-232, you can communicate to ANY other computer. The modem allows us to use Sask Tel's lines and we can contact any computer hooked up to a phone line and communicate to it. Kind of boggles your mind, eh!

Most good terminal programs have terminal settings that affect how the computer communicates to the modem. Usually they put those settings under "RS-232 parameters" or something similar to that. As I looked around my terminal program, I realized that I would have to learn something about RS-232, first to make the interface, and then set it up properly to talk the same language that other terminals want to see. At first I was a little overwhelmed by all the settings you can change. There was baud rate, odd/even/no parity settings, full duplex, half duplex, start bits, stop bits and byte length. A little knowledge goes along way to solve some problems.

What is RS-232c, baud rate, and communication parameters like, parity bit, stop bits, byte length and all that weird stuff anyway?

RS-232c is a communications standard set up and defined by the computer industry to intercommunicate with other computers and peripherals (modems and printers mainly). The RS-232c stands for "Recommended Standard" number 232 and the "c" means the third revision or update. Most people just say RS-232 and leave out the "c". There are many other RS-xxx kinds of standards that are still in use today. Each are different and do the job quite differently and with varying results. RS-232 is more or less a standard here to stay for telecommunications.

RS-232 can communicate to and from the computer at the same time, allows handshaking and is fairly fast. 19.6 Kbaud is not at all unusual (about 1960 characters a second). RS-232 sends data over one wire (plus ground) and receives on another. RS-232 digitally either pulls the line high (+12) or pulls it low (-12). There is nothing in between. So how does it send data over a single line? RS-232 does it by serially sending bits (high or low). When 8 bits are sent, the receiving terminal reconstructs the 8-bit byte. The process continues until all bytes are sent. In this article I hope to shed some light on this not-so-well-known communications standard.

Baud Rate? Start and Stop bits?

Baud rate or Bit Per Second (BPS) is how fast the RS-232 is to send or receive individual bits. Computers almost always think in terms of 8 bits, and most modems and printers require 8 bits. So you think (in the case of 1200 baud) that $1200/8=150$ bytes would mean the RS-232 is capable of sending 150 bytes of data per second. Well, the math is right but in order to send a byte (8 bits) serially (one bit at a time) over a single wire (plus a ground) we need a way to tell when the byte starts and when it stops. This is where the start and stop bits come in. A start bit is simply another bit the RS-232 sends ahead of the data to tell the other end that a byte is coming. The stop bit, again is just another bit (or 2) that the RS-232 sends after the byte to tell the other end that it was the end of the data byte. You can select either 1 or 2 stop bits. One stop bit is usually the norm. So actually, a 1200 baud modem has to send at least 2 additional bits along with the 8 bits of data with a total of 10. So actually only 120 bytes are sent per second rather than the anticipated 150.

Parity bit?

Communication over wires in this manner can have errors such as line noise. So one of the first methods of checking whether the byte was sent properly was to use a parity bit. This bit (if used) can be added to the data byte. It is used by the receiver to check to see if the right number of set bits was truly received. It is error prone, so it usually is not used in telecommunications (set to None). However there is a very small percentage that do use it and it must be set the same way (Even or Odd) at your end as well as on the receiving end. Terminal programs check to see how many bits in the byte to be sent are set (that is high or 1) then depending on whether you want even parity or odd parity, it sets the parity bit to reflect the even or odd number of set bits. If we want even parity, then the parity

RS-232 RS-232

bit will be set high only when the number of bits is even. In the case of odd parity, the opposite is true. The parity bit will be set only if the number of bits is odd. This is a very simple way to check if the byte sent contains the right parity. The problem with this method is that it is not really checking if the byte was sent properly but only if the byte received has the right number of set bits.

At the other end, when a byte is received it is checked. If it has odd parity when we wanted even parity, then we can safely say that the byte was received wrong and request it to be sent again. Of course by now the astute reader will have noticed that both ends will have to be set for the same parity check or none of the bytes will get sent through. The problem with using parity is that it can theoretically catch only 50% of the errors. What if 2 bits got scrambled? There is a 50/50 chance that the parity check will fail. Anyway that is enough about parity. Usually most people opt for no parity.

7 bits or 8 bits?

We can control how many bits are sent for each byte. We can choose the full 8-bit byte or select 7 bits (2 stop bits usually). This means the usable space for our data has been reduced to 7 bits. This does not present a problem to printers or for data that does not use the highest bit such as ASCII text. This was a standard length when teletype machines were in heavy use. But for uploading (sending) or downloading (receiving) computer programs over the phone lines we need all the bits. So it is normally set to the full 8 bits.

Next month I will discuss in more detail about what the RS-232 is and what wire does what and why and on to making an interface.

*Till next month, telecommunications is waiting for you.

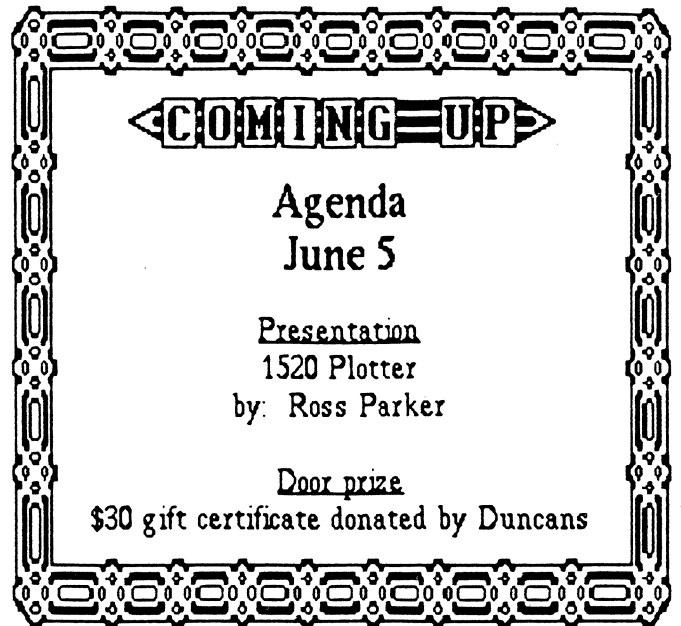
Secretary's Report

C.U.G.S. Executive Meeting

MINUTES

April 15, 1991
by Real Charron

1. Minutes of February 11, 1991 discussed.
2. Meeting Room Discussed: Ken and Garth to report on new facilities and cost at the next executive meeting.
3. 10th anniversary of CUGS in April, 1992.



Scratch 'n' Save

128 Library by Earl Brown

I suspect the implementation of quantity discount prices for disks introduced to our club this month will mean a greater turnover of 64 and 128 library disks. If alot of you members decide to purchase a quantity of fifty disks or more, then the library will be quickly depleted of popular selections. Bear with us, we'll supply the missing favorites as quickly as possible. We will either have them ready for the next meeting or earlier if you wish to pick them up from the librarians directly. If quantity purchases really become popular (and I suspect they will), then perhaps all the librarians will have to become prepared to do some backups and offering pickup points. We'll just have to play this by ear and see just what actually happens. However, the purchaser will be obligated to pay for the entire quantity order even when only receiving a partial order. It would be better advised for the customer to wait for the total quantity ordered to be made available before making payment. If you can't wait, we can make special arrangements to accept the total payment on a partial pickup of the order on the origination date with the balance being made available at a later date. You cannot, for example, pay for fifty, pick up thirty, and gradually pick up twenty more at your choosing. You must place an order for disks that are presently available in the library.

Since the library is backed up with a variety of different disk drives, and because some of these disk drives could become slightly out of alignment from time to time, it is wise that the purchaser not write any files on these backed up disks. If a particular program on one of these disks writes files (data or otherwise) to the disk, it would be wise to copy these program files to one of your own work disks, and perhaps avoid corrupting part or all of the original disk. We do get calls from time to time when members have come across this dilemma. As a matter of

EXPERTS LIST

fact, I have experienced this hazard on more than one occasion myself. Try to avoid it. By the way, this advice also holds true if your drive is the one that is out of alignment.

I've prepared three more disks for our library this month. The first (listed elsewhere) is a GEOS disk. For those of you that wish to write in the FORTH language, this GEOS disk is for you. Read the documentation and experience programs written in FORTH.

The second disk for the 128 is filled with HI-RES pictures created with the 80-column IPAIN program. You don't need the program to view these pictures, however, because there is a public domain viewer program included on the disk for your loading. Remember, however, in order to preview these pictures properly, your 128 must be equipped with the proper 64K video chip. All 128D computers come equipped with this video chip, however, none of the C128 computers have it. There are at least two American mail order houses that can provide shipment of this particular chip for the C128. I myself own a C128, so I can't view them unless I spend the roughly \$50 American and personally order one.

The final disk is BUSINESS 3 for the 128. Most of these programs are written for the 80-column screen. Some work in either 40- or 80-columns and a couple in 40-columns only. There is an accounts payable program available on this disk for the aspiring small business owner. It could prove popular to some of you, as AP programs are usually very hard to come by. Many of the programs are some sort of database and (as outlined at the beginning of this article) should be copied to work disks.

The people below have agreed to let their names be listed as "experts" in some aspect of C64/128 computing. If you've a question, these brave volunteers can likely answer it, or help you find an answer that works. If you have a skill at some computing process, consider listing yourself with our other volunteers.

Wordprocessing

Paperclip III	Shaun Hase	584 3371
Paperclip (to version E)	Jarrett Currie	757 2391
Paperclip (any version)	Ken Danylczuk	545 0644
Pocket Writer 2 & 3	Yves Desjardins	949 8526
Pocket Writer	Barry Bircher	543 8840
Pocket Writer	Real Charron	586 1843
Fontmaster II	Michael Rodgers	728 2595

Spreadsheets

Pocket Planner	Barry Bircher	543 8840
Better Working SS	Ken Danylczuk	545 0644

Databases

Pocket Filer	Barry Bircher	543 8840
Oracle (Consultant)	Ken Danylczuk	545 0644

Communication

Desterm 2.0	Barry Bircher	543 8840
Pro128Term	Jarrett Currie	757 2391
Library files	Barry Bircher	543 8840

Music/Sound

(Most)	Ken Danylczuk	545 0644
Stereo Sid Editor	Michael Rodgers	728 2595
Enhanced Sid Player	Michael Rodgers	728 2595

Languages

Forth	Ken Danylczuk	545 0644
Pascal	Ken Danylczuk	545 0644
ML (machine language)	Ken Danylczuk	545 0644
ML (machine language)	Barry Bircher	543 8840
BASIC 7.0 (graphics)	Shaun Hase	584 3371
BASIC (2.0-7.0, files)	Ken Danylczuk	545 0644

Graphics

Print Shop/Master	Ken Danylczuk	545 0644
Konla Painter/Printer	Ken Danylczuk	545 0644

Hardware

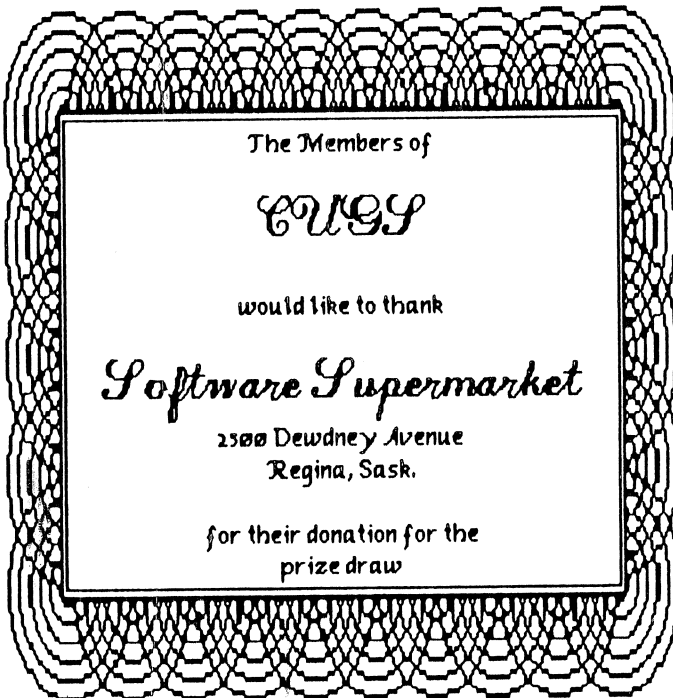
Disk Drive Maintenance	Ken Danylczuk	545 0644
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GEOS

GEOS 64	Jarrett Currie	757 2391
GEOS 128	Barry Bircher	543 8840

General

Super Snapshot (3, 4, 5)	Yves Desjardins	949 8526
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Qlink TeleReview

by RBAKER (04/15/91)

Accolade announced the release of Star Control for Commodore 64/128 computers, a new action/strategy game of galactic conquest from Paul Reiche and Fred Ford which was recently awarded Best Science Fiction Game of the Year by Video Games & Computer Entertainment magazine. Star Control combines elements of strategic challenge and energizing arcade action, and is cleverly designed in such a way that players who want only the excitement of starship-to-starship space battle can forego the scheming and precise, step-by-step planning preferred by strategic players. It is also available for Amiga and IBM PC and compatible computers and will be available in June for the Sega Genesis.

Star Control is set in the Earth's future where a star cluster is your battleground. Large though this star cluster is, it cannot accommodate all the alien races that make up Ur-Quan Hierarchy and those that comprise the Alliance of Free Stars. The Ur-Quan is an ancient and powerful force whose charter is to invade and enslave all other races in the galaxy. In self-defense, the Alliance has banded together and will not lay down its weapons until the Ur-Quan Hierarchy is vanquished.

Star Control is a one or two player game. In the one player game the computer opponent can be assigned one of three levels of skill - standard, good or awesome - which will affect the outcome of its tactical and strategic abilities. Each opponent chooses to represent either the Hierarchy or the Alliance and further selects ships from the four alien races that make up each side. From the Hierarchy, players may select such battle cruisers as the Ilwrath Avenger, the Androsynth Guardian and the Ur-Quan Dreadnought. From the Alliance, options include the Yehat Terminator, the Earthling Cruiser and the Chenjesu Broodhome. During the selection process, each of the 8 ships is displayed in colorful detail. And during battle, every ship possesses different handling characteristics, special powers and one secret weapon, all with their own distinctive sound effects.

If players want only to enter into combat they can select the Melee mode in which the Hierarchy and the Alliance ships war until all the ships on one side are destroyed. Full Game mode, on the other hand, combines both strategy and combat. However, human players who prefer to participate in one or the other can request the computer to make all the strategic decisions or enter into combat for them.

In the Full Game mode, players will need a fleet of ships to successfully make it across the star cluster to the opponent's home base. "Each ship has to be built, and the only way you can build a ship is with Starbucks that you earn by colonizing and mining the star systems that make up the star cluster," said Chris Bankston, producer of the Commodore version. "The more Starbucks you earn, the

more powerful ships you can build." As stars are settled, they can be mined by building automated mining machines, colonized by established alien outposts from which you can renew your crews, and fortified by building blockades that cannot be infiltrated by the enemy. If you land on a star that is already occupied by an enemy, you must enter into combat for control of the star. "The more starships you have at your disposal and the more powerful they are, the more chances you have of capturing your opponent's home base," said Bankston.

Star Control is beautifully rendered detailing each of the 8 starships. An automatic zoom mode allows you to view combat at close range, at the same time carefully watching your ship's crew and fuel gauges to determine when it's time to flee or move in for the final strike.

New Club Disks

CUGS Geos 17 #EG
brian's forth

12# GRAPHICS 4 #RD

paintviewer
ip.raytrace-1
ip.planet
ip.biplane
ip.nebula
ip.wiley
ip.hornet
ip.title1
ip.title2

12# BUSINESS 3 #WC

speedscript 128+
budget plus
runbase
address book 40
investment plus
chart v2.0
hamlog 128
memo file
address book 80
address bk.
ap ledger
envelope maker
calculator
all notes
amort.calc.
loan amortiz.
checkbook
data file 4.8
c128 filer

BBS List for Regina, Saskatchewan, Area Code 306, for April 1991

Name of System	Phone #	Baud	BBS Program Used	Sysop's Name	Code
Aladin's Cave	780-9800	1200	Wildcat 2.50S	Nelson Camp	I
Bar Room Inc.	569-1475	2400	Deus 0.3c	Rod Snaith	I
Billionaire's Boys Club	586-9571	2400	Wildcat 2.50S	Jason Horworko	I,\$
Bit Bucket	352-3236	2400	Fido 12t	Bart Ritchie	I,C
Buccaner's Den	352-2477	2400	Opus 1.14	Ryan Couse	I
C.U.G.S. BBS	543-7683	2400	EBBS 4.5	Barry Bircher	C
DataForce	585-7683	9600	RA 1.00+	Glen Caleval	I
Datapac 300	565-0111	300	Westbridge	None	S
Datapac 1200	565-0181	1200	Westbridge	None	S
Datapac 2400	565-6000	2400	Westbridge	None	S
Datareach	1-995-3333	2400	SaskTel	None	*
Dead Poet's Society	522-4834	2400	RA 1.00+	James Hendy	I
Double Check	525-0807	14400	Paragon 2.0858	Randy Coghill	Z,\$
Excalibur	949-8605	2400	EBBS V4.6	Yves Desjardins	C
Fernando's Retreat	585-0298	9600	Opus 1.13	Colin Campbell	I
Fringe BBS	586-3387	2400		John Alexander	I,A,C
GIF Heaven	545-6701	2400	RA 0.04a	Gabe Mahin	I,\$
Girk Dently's Holistic	789-9909	2400	Fido 12t	Richard Wolbaum	I
Glass Box	584-5485	2400	Remote Access	David Roll	I
Lab BBS	525-8620	2400	RA 1.00+	Yong Lim	I
Last Chance	569-0559	1200	DTJ-BBS	Ross Parker	C
Micro City (line 1)	584-0747	2400	MCBBS	Ron Ware	I,\$
Micro City (line 2)	584-0748	1200	MCBBS	Ron Ware	I,\$
Micro City (line 3)	584-2911	2400	MCBBS	Ron Ware	I,\$
Micro City (line 4)	584-2912	2400	MCBBS	Ron Ware	I,\$
Missing Link	775-1512	9600	PCBoard 14.5		I,\$
Mission Impossible	569-9705	1200	FFS-BBS	Kevin Hoffman	C
Polestar	586-1551	9600	RA 1.00	Bryce Eckstein	I
Pool Hall (I)	586-0922	2400	PCBoard 15	Roger Linka	I
Pool Hall (II)	586-8490	9600	PCBoard 15	Roger Linka	I
RAT III	949-6105	2400	BBS Express ST	Larry Sutton	H
Regina_FIDO I	777-4493	14400	Fido 12t	Ken Ganshirt	I,A
Regina_FIDO II	569-0271	9600	Fido 12t	Ken Ganshirt	I,A
Regina Public Library	347-0463	2400	VUCAT/GEAC		*
Scouts Own	777-4493	2400	Wildcat TD		I
Software Trader	584-3826	2400	Wildcat 1.03		I
Speed Zone	757-5519	1200	RA 0.04a	John Carrizo	I
Star Traders Inc.	545-0259	2400	Opus 1.14	Robert Gunther	I
Tee Wun Kay	779-1237	14400	Opus 1.14	Garry Ehman	I
The Q	584-2916	2400	LNA 4.00 (Bruce)	Robert Patterson	I
TTL Computer Concepts	522-3233	2400	RA 0.04a	Bjorn Meyer	I
Unibase 1200	789-0709	1200	Unix	Leigh Calnek	S
Unibase 2400	585-5216	2400	Unix	Leigh Calnek	S
U or R 2400	586-5550	2400	Deckserver Cluster	None	S
Xerox Service Centre	789-8464	14400	Opus 1.14	Greg Brekeridge	I

S-Commerical System Z-Amiga

I-IBM Board C-Commodore Board and/or Support

H-Atari Board A-Apple Board and/or Support

*7-E-1 settings

1-Datareach is local from every phone in Saskatchewan

ALL BULLETIN BOARDS run at 8-N-1 modem settings unless otherwise stated.