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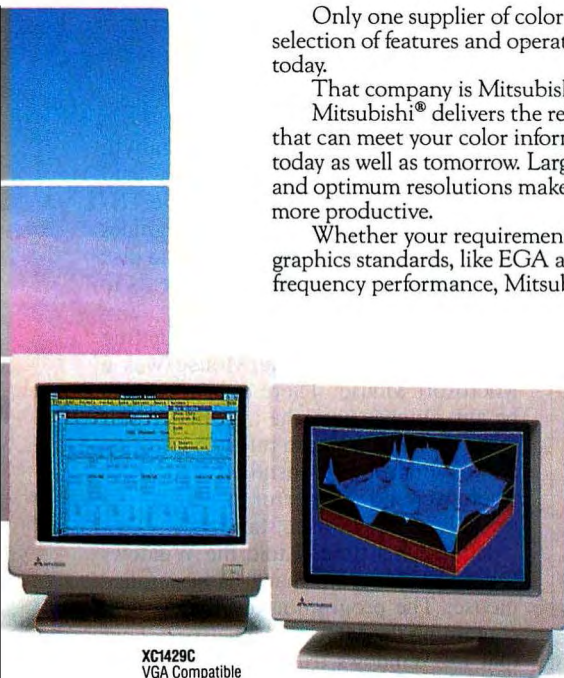
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Mitsubishi Model	Screen Size (inches)	Horizontal Scan Frequency (kHz)	Mask Pitch (mm)	Compatibility/Resolution							
							VGA			1024 x 768 (48 kHz)	1280 x 1024 (64 kHz)
				NTSC	CGA	EGA	Std.	Ext.	Apple Mac II		
Diamond Scan 14 (AUM1381A)	14/13V	15.7 ~ 36 auto-tracking	0.31	•	•	•	•	•	•		
Diamond Scan 16L* (HL6605TK)	16/15V	30 ~ 64 auto-tracking	0.31				•	•	•	•	•
Diamond Scan 20A (HA3905ADK)	20/19V	15.7 ~ 36 auto-tracking	0.31		•	•	•	•	•		
Diamond Scan 20L* (HL6905TK)	20/19V	30 ~ 64 auto-tracking	0.31				•	•	•	•	•
XC1429C	14/13V	31.5	0.28				•				
XC1410C	14/13V	22 or 15.75	0.40		•	•					
XC1430C	14/13V	22 or 15.75	0.31		•	•					

*Microprocessor-enhanced programmable display settings

XC1429C
VGA Compatible
640 x 480 pixels

XC1410C/XC1430C
EGA Compatible
640 x 350 pixels

And Value.

MITSUBISHI ELECTRONICS

CHAOS MANOR

sockets, but nothing would be harmed.

I got out the chip extractor. Mine is labeled "Burndy," and I probably got it at Radio Shack. It sure beats using a screwdriver. There was only one problem. One of the chips came out smoothly and easily, but the other is mounted extremely close to one of the bus sockets. It's so close that the chip extractor can't get a proper grip, and for that matter, you can't even get a screwdriver under the end of the chip closest to the bus. Eventually, I pulled the chip out, but in doing it I broke off a pin.

Nothing for it now: either the new BIOS chips worked, or this machine was dead. I got out another chip tool, bent the pins to the proper angle—all chips apparently come with the pins spread out too far for insertion—and stuck them in. On with the power switch.

The machine came right up. QEMM-386 loaded properly. All of Alex's strange little tricks to pack high memory worked fine. We were in business.

Video
The Northgate 80386 comes with a 16-bit VGA board and a Princeton Graphic Systems' Ultra-14 monitor. The video is *fast*, considerably faster than what I'm at present getting from either Big Cheetah or the Zenith Z-386. The colors are bright. I somewhat prefer the Zenith ZCM-1490 Flat Technology Monitor—which works quite well with the Northgate 80386's VGA board—but there's really very little difference. It's hard to complain about the video output of the Northgate 80386.

I don't really have a way to measure it, but compared to the Z-386 with an 8-bit Video Seven VGA board or Big Cheetah with a vanilla VGA, the Northgate 80386 is noticeably faster on graphics images. Empire, which is all graphics, is almost twice as fast on the Northgate 80386 as on my other machines. So is Windows, once you get that working.

TrackerMouse
One of the things I saw at Comdex in Chicago was TrackerMouse from Penny and Giles Computer Products. This isn't really a mouse; it's a small trackball device set onto a stand that includes, of all things, a small solar-powered calculator. Why a calculator in your mouse? Why

not? It costs little more to add it, and it's often very convenient to have a calculator handy.

However, the real feature of Tracker-Mouse is that it's small: the trackball is more the size of an extra-large marble than the orange-size things you generally see. The case, calculator and all, is low profile, standing not much higher off the table than your keyboard.

The end of the TrackerMouse cable is a 9-pin plug suitable for AT serial ports, but just in case you've got a machine with DB-25 connectors, the company supplies an adapter. All quite elegant.

Installing TrackerMouse is simple: just plug it into a serial port and transfer the software to your hard disk. The driver goes in CONFIG.SYS. Tracker-Mouse is supposed to emulate a Microsoft Mouse, and in general it does, but see below.

Using TrackerMouse is an odd experience. The buttons—two of them—are on each side of this calculator-size box. Thus, you tend to use your thumb for the left button, middle finger for the right button, and forefinger for manipulating

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Annals of Rome $34.95
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19808 Nordhoff Place
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Inquiry 1031.

APX-4200 .... $4450
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5025 Centennial Blvd.
Colorado Springs, CO 80919
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Chaos in the Classroom $49.95
  site license....................... $100
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TaxView $119
SoftView, Inc.
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Camarillo, CA 93010
(805) 388-2626
Inquiry 1036.

Northgate 80386 .... $4248
Northgate Computer Systems, Inc.
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(800) 548-1993
Inquiry 1037.

QuickBASIC 4.5 .... $99
Microsoft Corp.
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P.O. Box 97017
Redmond, WA 98073
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Inquiry 1038.

SIMNON $695
Engineering Software Concepts
436 Palo Alto Ave.
Palo Alto, CA 94301
(415) 325-4321
Inquiry 1039.

TrackerMouse $169
Penny and Giles Computer Products,
Ltd.
35 Reynolds St.
Attleboro, MA 02703
(508) 226-3008
Inquiry 1040.

the "thumbball." I think I'd find it simpler to put both buttons on one side of the TrackerMouse box, so that the thumb would be used for guidance; but I'm not sure.

I experimented with TrackerMouse for about an hour, testing it with various programs; eventually, I fired up Empire, since it's completely mouse-driven. You *can* play Empire without a mouse, but it's sure not easy. Anyway, because it's mouse-intensive, it's as good a way to practice using a mouse as any.

I didn't have any problems; indeed, it was simple enough to use that I'm seriously thinking of stowing TrackerMouse in the kit with my Zenith SupersPort 286 portable; I don't often need a mouse on the road, but then I haven't really thought about it much. TrackerMouse should work just fine, once I transfer the driver to a 3½-inch disk.

I don't think I'm tempted to change to TrackerMouse for everyday use. It does get easier to use with practice, though, and it takes less room than a normal rodent. If you're a mouse hater in a world that's increasingly moving to mice, you might want to investigate trackballs, and this is a pretty good one.

Compatibility
Back in the early days, you tested system compatibility with Flight Simulator; if that ran, almost anything would. Nowadays, the acid test is Windows.

I didn't want to install full Microsoft Windows on the Northgate 80386 because I'm not sure I have the latest version; but I had something nearly as good: TaxView with the Windows run-time package.

Installing Windows, whether the real thing or just the run-time package, is te-

dious. There are five 1.2-megabyte disks; you insert the first one, log onto the floppy disk drive, and type INSTALL. After that, the program guides you through screen after screen and disk after disk. The whole process seems to take forever.

I went through it the first time, letting Windows think TrackerMouse was a Microsoft Mouse. There didn't seem to be any glitches until the installation was over; then the program informed me that it was improperly installed and died. There were no other error messages, and my only remedy was to start over.

I did. This time, I told the Windows INSTALL program that I had a strange mouse. The program asked for the disk containing the MOUSE.SYS driver. I put that in. Windows trundled awhile, then asked for its own disks back and continued with no problems. Ten minutes later it was done, and it wouldn't work. No error messages, just "It don't work, Turkey!" (Actually, it says "Windows Improperly Installed!," forces you to click on "OK," and dies, but the effect is the same.)

I now had a genuine quandary: was it the mouse, the Northgate 80386, or MS-DOS 4.01 that was causing the problem? It was simpler to change mice than operating systems. Since I'd recently received an update of Microsoft's MOUSE.SYS (many previous versions do *not* work with Windows), it seemed reasonable to install a Microsoft Mouse and have done with it. Then I started the installation process all over again.

Ten minutes later I was done, and this time it worked. There was TaxView in all its glory, and with the Northgate's 16-bit VGA video driver, it was *fast*—blindingly fast compared to Big Cheetah with his 8-bit VGA.

I make no doubt that the Logitech Mouse would have worked as well (since that's what I have on Big Cheetah); but the Penny and Giles MOUSE.SYS needs some revision before it will work with Windows.

First Report
Next thing was to test the Northgate 80386 for speed. I'm not a big fan of benchmarks, which I think are misleading; but people do like numbers. The Northgate 80386 has a Norton SI of 17, meaning that it's supposed to be 17 times as fast as a standard IBM PC XT. For the hard disk drive, the Coretest throughput index is 6.5, which compares favorably with any machine I have except Big Cheetah with his Distributed Processing

continued