

WALLRUS ON THE SUN WORKSTATION

HISTORY OF Wassp IN WELSH WATER

All Wassp studies, prior to 1987, were carried out using main frame Wassp on a Data General mini computer. This had the following disadvantages:-

- (a) Updates of the software needed considerable modification before it would run correctly. This was done by a person who has now left the company and all his modications were kept in his head!.
- (b) The input of data/editing was very difficult with the editor being "field free" i.e. it was not known when, how long, and what data type was required. There was also no on-line error checking.
- (c) On-line and day time batch running was causing considerable problems for other users on the system. The Wassp package is very demanding on cpu time, and despite a time sharing system, response times were excessive and to some users the computer appeared to have "gone down" and several complaints were received.
- (d) Graphs and flow survey data comparison were difficult even with W.W. I.T. personnel involvement.

The Data General as well as Wassp ran the payroll, (weekly/monthly), expenses, word processing and work planning systems. Rapid or instant response was therefore required and it was therefore advantageous to remove Wassp and similar packages from the Data General computer.

MicroWassp

Some two years ago it was decided to purchase MicroWassp to run on an Intel 386 (16 MHz, 640K main memory, 40M hard disk, ms-dos) micro computer with a maths co-processor. This removed the immediate pressure for studies on systems less than 299 pipes. It became apparent very quickly ,however, that something bigger was required for the larger and more complex models that were now requiring analysis. The emergence of Wallrus and it's ability to run on workstations such as the Sun made this an obvious combination to purchase.

The Sun System

All Sun systems are designed as a workstation with access being made available for other users in different parts of the office. The Sun 3/60 (3mips, 8M main memory, 400M hard disk, unix) purchased by Welsh Water does not operate like this but rather as a big, stand alone micro computer. There is an ethernet link between the Sun and the Intel using Sun software called pcnfs. This permits the transfer of data files between the two machines or permits the Intel to act as a terminal for the Sun. With this link, large Wallrus runs can be compared with flow data using the Gurvil package. Wallrus on the Sun 3/60 is run via Sunview, though it can run without, but Sunview permits concurrent running of models.

Wallrus/MicroWassp Comparison

For the basis of comparison a 1 in 1 year storm of 15 minutes duration on catchments of 10, 50, 100, 150, 200, 250 and 299 pipes were used. The simulation time was taken to equal the number of pipes. There were no ancillaries and the only output hydrograph was at the terminal pipe. The run times were taken off the Wassp or Wallrus print except for the 10 and 50 pipe model when the time between the start of the simulation and when the main menu reappeared. The results are shown in figure 5. This shows that the sun is 600% faster for the smallest model and a minimum of 40% faster.

Use Of Sunview

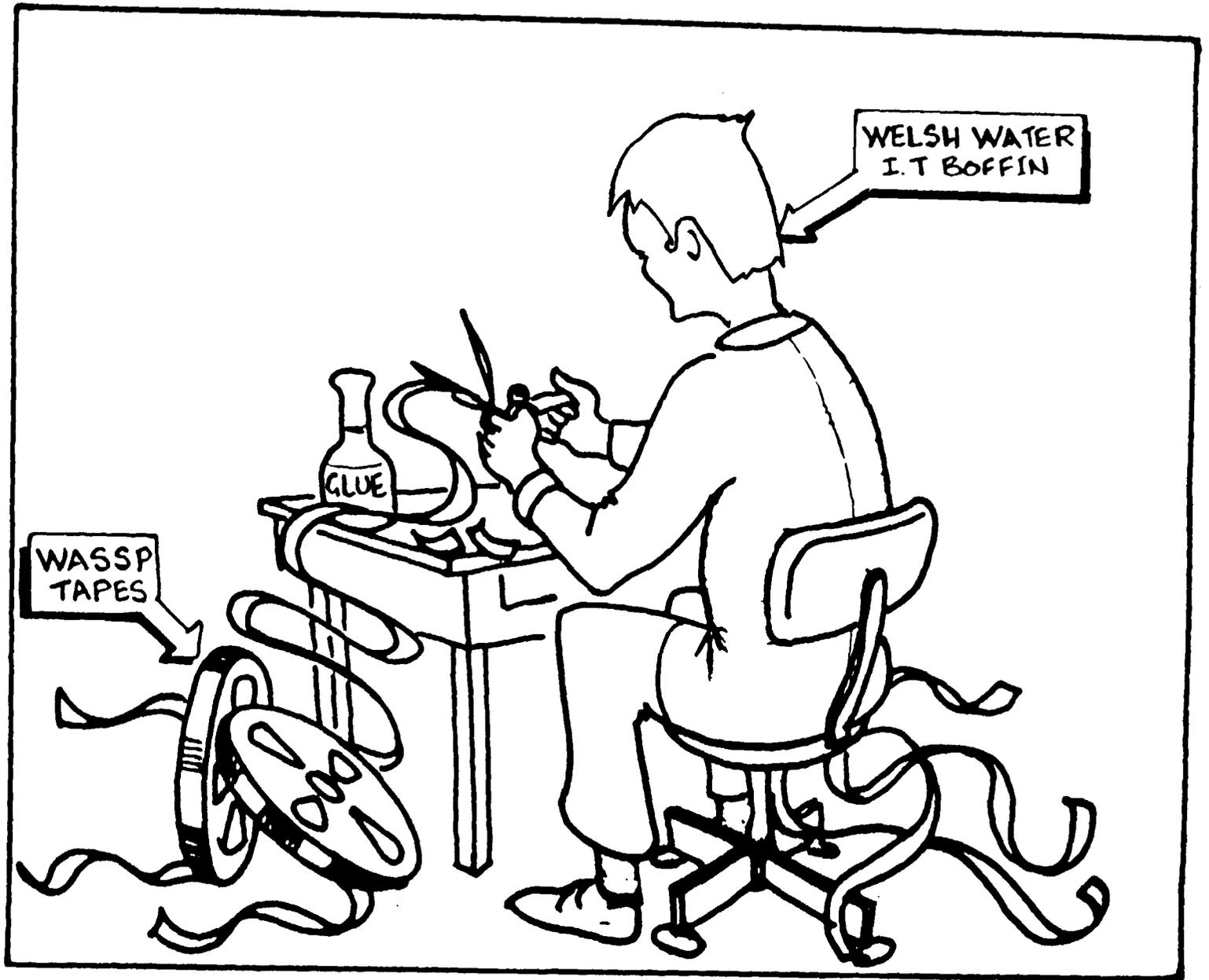
As mentioned earlier Wallrus is run via Sunview. This is basically a series of windows that can be opened, closed, moved forward, back and around the screen as necessary. An optical mouse is used to control an arrow which, when placed in the required window, will permit commands to be accepted in that window and no other. This does not mean, however, that a program which is running in one window stops just because the arrow is not in that window.

Using this method Wallrus can be run concurrently using different data files and from different sub-directories. Figure 6 shows runs for the same catchment data but using 3 observed storms of varying durations. Each was run on its own and the cumulative total found. All 3 runs were then run concurrently and this revealed the remarkable fact that the run time was 20 minutes shorter. It has been estimated that up to 8 to 10 runs could be carried out in this way.

Conclusion

The system has been operational for some 9 months and despite a problem with obtaining a new version of the Sun operating system, the Wallrus/Sun combination has proved very worthwhile. The Unix version of Wallrus permits very large models (2000 pipes, 75 ancillaries, etc) to be constructed without the need to split the model up. This gives Welsh Water the ability to build large models with the minimum of problems and give quicker turn round of computer runs.

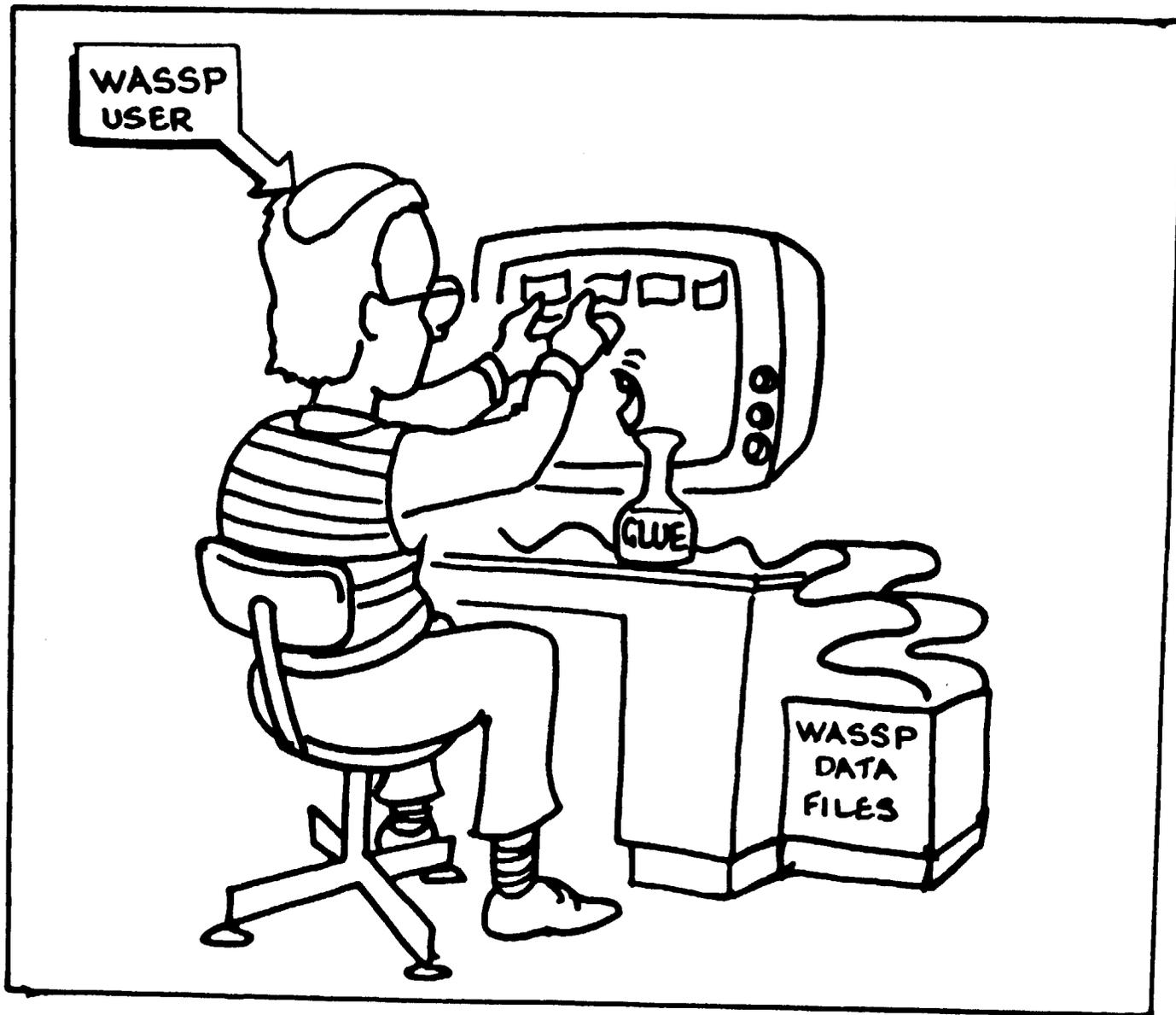
JOHN DICKINSON
WELSH WATER
S.E.DIVISION
NELSON
MID GLAM
NOVEMBER 1989



WELSH WATER
I.T BOFFIN

WASSP
TAPES

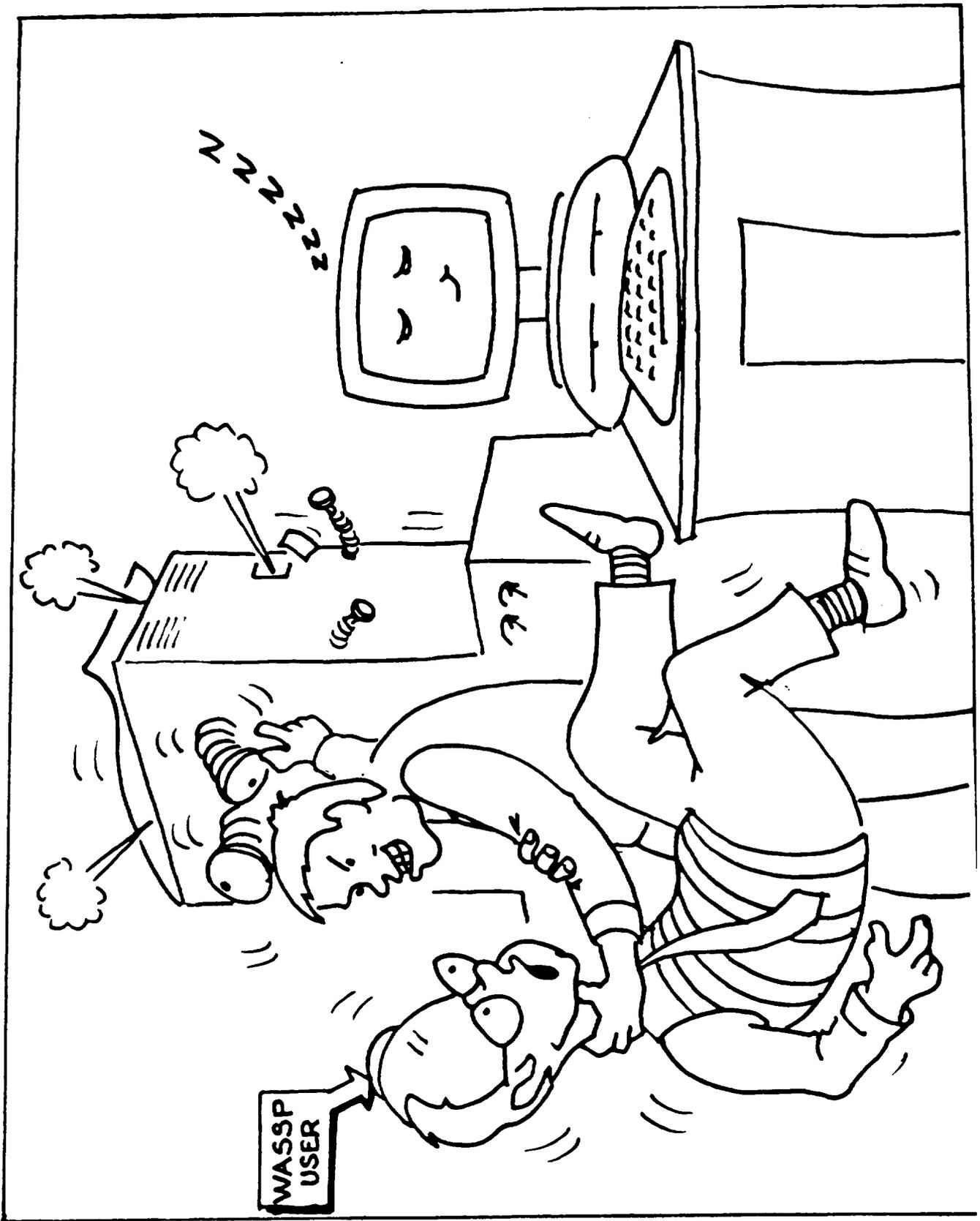
GLUE



WASSP
USER

GLUE

WASSP
DATA
FILES



**COMPUTER:-INTEL 386
MATHS CO-PROCESSOR**

640K MAIN MEMORY

40M HARD DISK

SPEED 16MHz

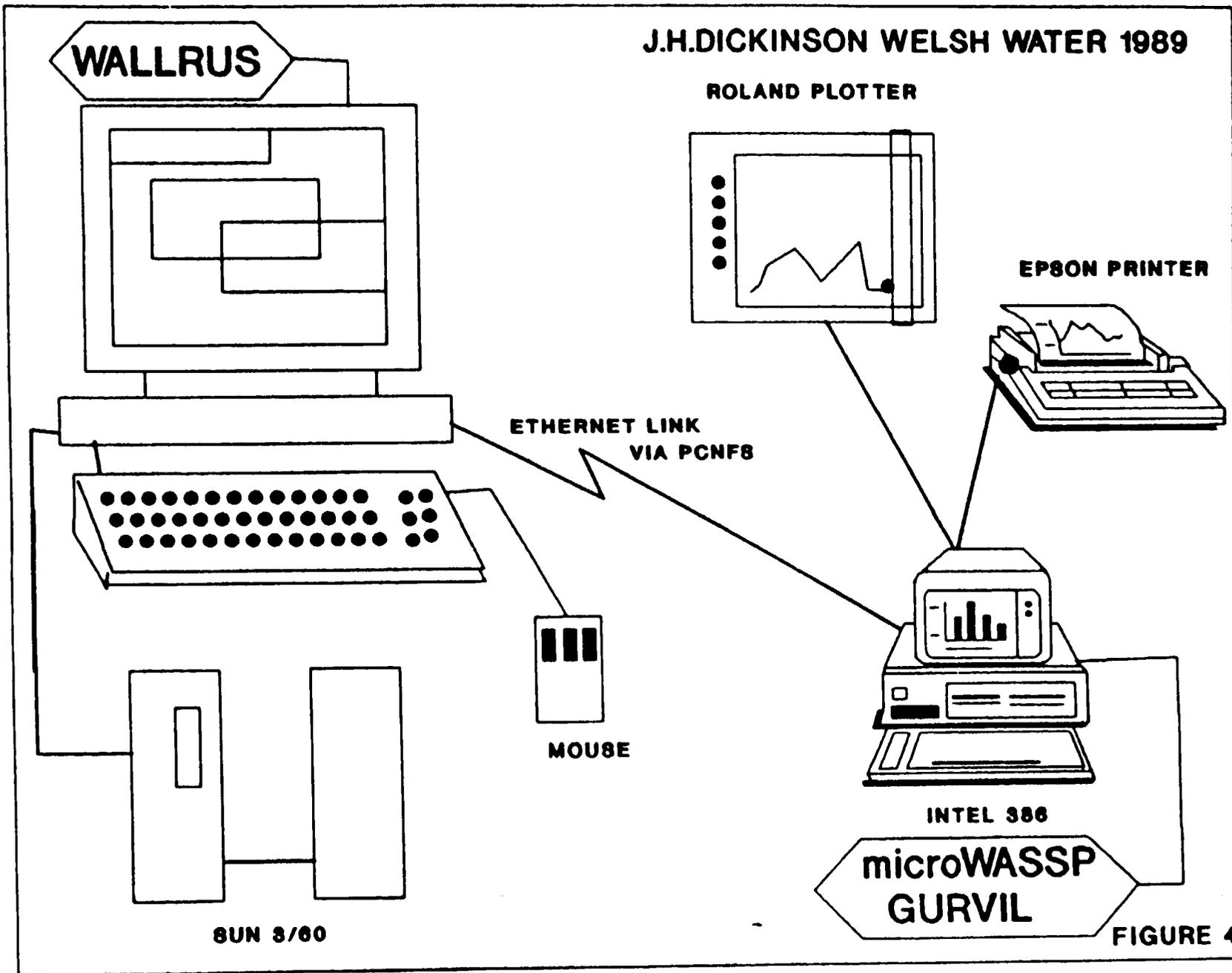
COMPUTER:-SUN 3/60

**FLOATING POINT
CO-PROCESSOR**

8M MAIN MEMORY

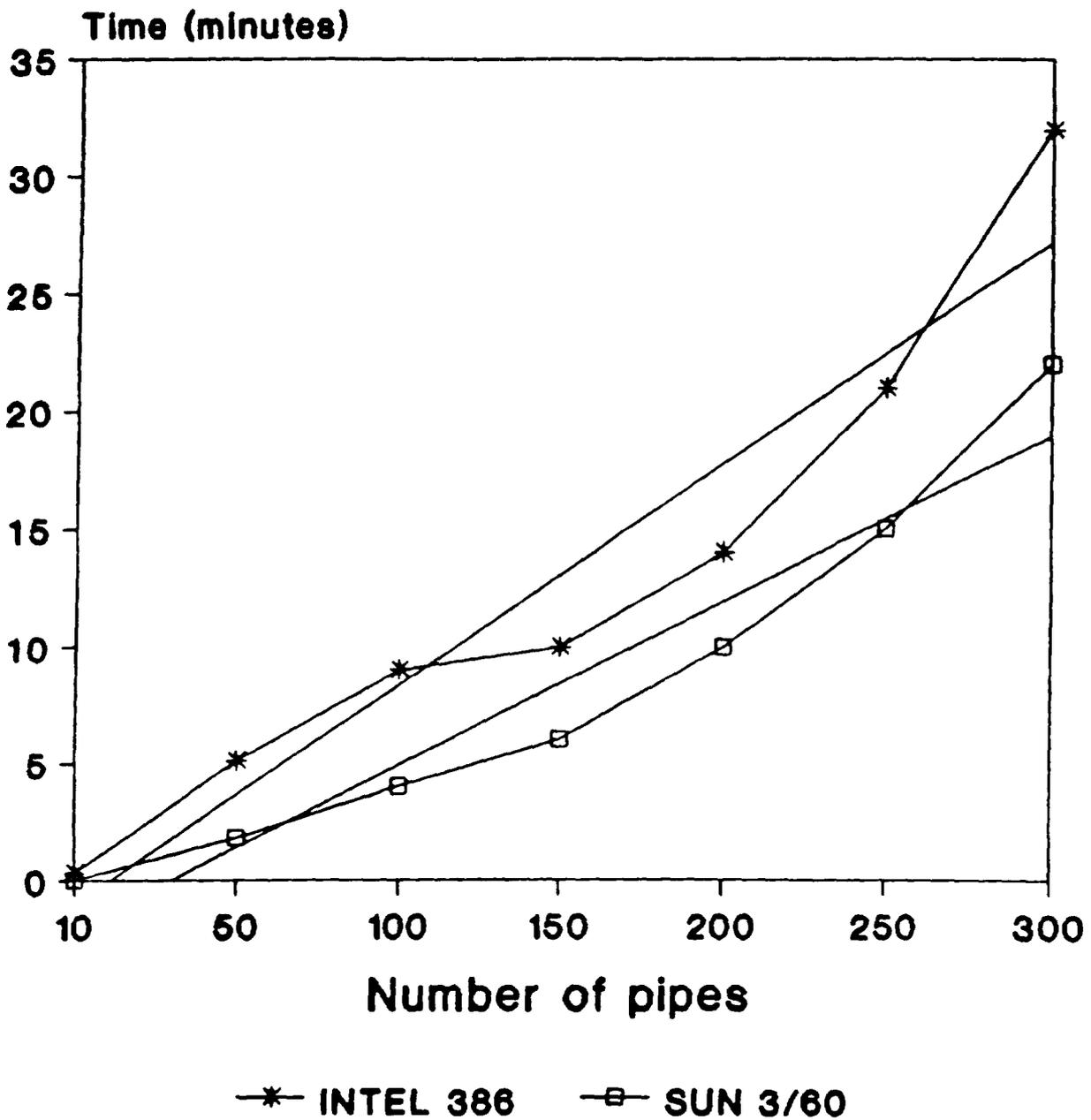
400M HARD DISK

SPEED 3 MIPS

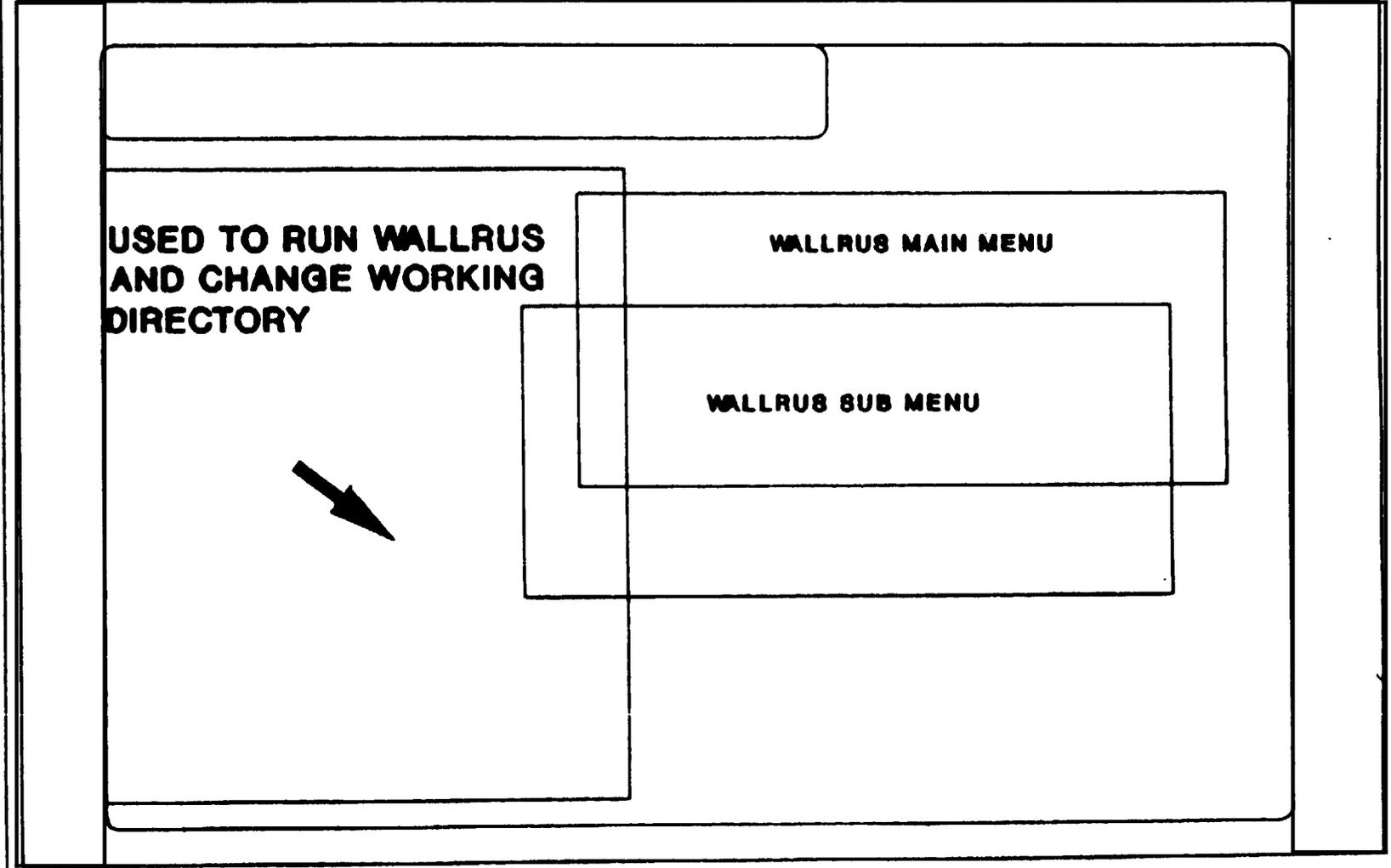


No OF PIPES	RUN TIMES (MINS)		SUN FASTER BY %AGE
	INTEL 386	SUN 3/60	
10	0.33	0.05	560
50	5.10	1.83	178
100	9	4	125
150	10	6	67
200	14	10	40
250	21	15	40
299	32	22	45

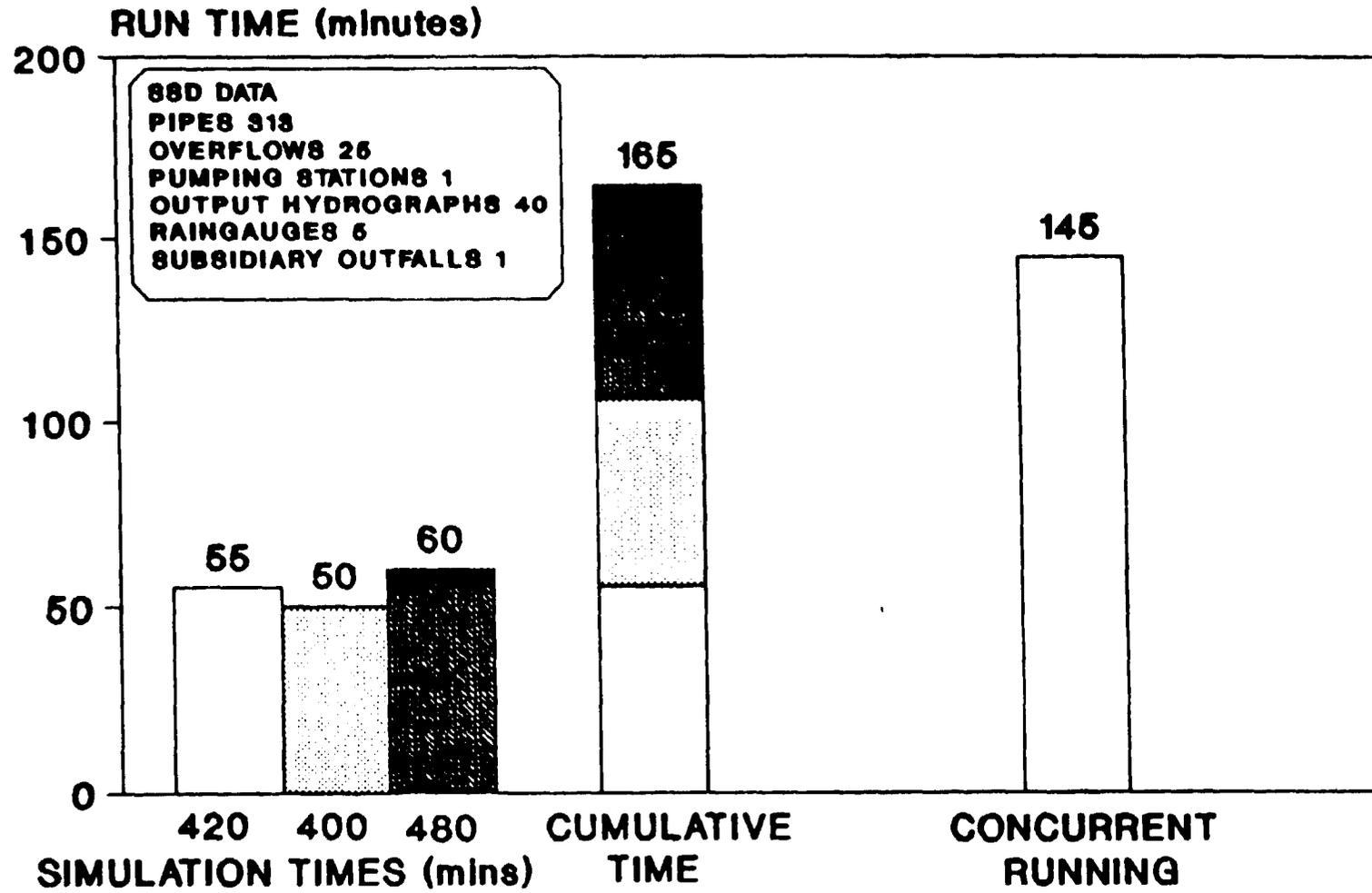
**WaPUG WORKSHOP NOVEMBER 1989
COMPARISON OF microWASSP ON INTEL 386
& WALLRUS ON SUN 3/60**



EXAMPLE OF SUN OPERATION USING SUNVIEW



SUN 3/60 WORKSTATION RUN TIMES FOR OBSERVED STORMS



J.H.DICKINSON WELSH WATER 1989

FIGURE 7

2.1 WALLRUS on the SUN Workstation - J. Dickinson, Welsh Water

Ron Chapman - WRc

I am a little surprised at your speed comparisons - we only found the SUN to be 25% or so faster.

Ans: This may well be because my tests only used a simple model.

Andy Brown - HRL

Relative timings are always difficult, there are so many variables. We carried out several tests and found that with the backwater flag set for about one quarter of the pipes in a system the run was 33% quicker when the flags were not set. The characteristics of the modelled catchment as well as the specifications of different machines all have an effect.