the names of these drives to boot the system, either for the Tracor operating system or RT-11, indicates that the two systems share a common root.

Once one has collected data and wishes to transfer it the system must be rebooted into RT-11. This is inconvenient, but the only way to obtain network access, since no TCP/IP drivers were written for the Tracor operating system. The RT-11 system can be configured to automatically load the ftp software and set the default disk to be the data disk. After file transfer the system must be rebooted again to use the EDS capabilities.

The Process Software ftp program is hardware keyed. One must run an ID program on the EDS PDP-11, then call Process Software and report the numbers displayed by the ID program. The company then allocate a series of numbers that act as a key so that one may run the software on that particular PDP-11. This may sound tedious, but once one has entered the key in a specially named text file, it never needs to be entered again. I have used this program for nearly 5 years and it has performed flawlessly in that time. The Process Software ftp program is a little primitive when compared with ftp programs for UNIX hosts, PC or Macs. If run as a client, i.e. the transfer is initiated from the PDP-11, it does not support wild cards and thus the name of each file to be transferred must be entered. If run in server mode, however, one can issue batch commands from the remote ftp program and transfer large numbers of files with a single command. This is the mode that I always use. A schematic of the networked system is illustrated in figure 1.
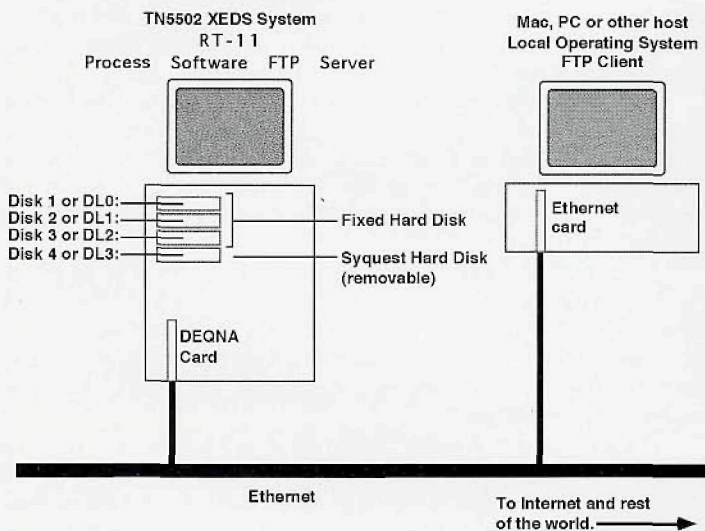
Although the files can be transferred anywhere on the Internet, typically we transfer data to either Macs or PCs. For transfer to Macs we use the freebie ftp client from Dartmouth College "Fetch". The current version is 2.1.2 and it is both 680x0 and PowerPC compatible (i.e. the program is a fat binary and contains native code for both types of Mac). For transfer to the PC we use LAN Workplace of DOS, which integrates with our NetWare software. Most file transfer is done to the Macs. Spectral data may be directly read into the NIST DeskTop Spectrum Analyzer (DTSA) program ($790 available directly from NIST in Maryland or from 4Pi Analysis in North Carolina). Images may be read into a variety of image processing programs, NIH-Image, Photoshop, etc., after conversion with a free utility called TiffMaker, written by Hal Estry who is in our laboratory at the University of Michigan.

If you require further information on networking PDP-11 based data acquisition systems I may be able to answer your questions. The best way to contact me is via email, with relevant information below. Opinions expressed in this document are my own and do not necessarily reflect those of my employers. ■

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Their phone number is: 800-722-7770

Exploiting the Binocular Head in Polarized Light Microscopy
Walter C. McCrone, McCrone Research Institute

Having been brought up on monocular microscopes I find the omnipresent binocular systems a luxury. To support this viewpoint I'd like to suggest some benefits you may not have considered.

Because I'm used to monocular viewing I sometimes use two different oculars, say 10X and 25X, in order to scan quickly to find an area of interest and then to examine the detail with higher magnification. Occasionally I use both oculars simultaneously and "concentrate" on either image to the exclusion of the other. A better way is to set the interocular distance at the extreme setting most different from your own interocular distance. By moving your head about a centimeter either way you can use either ocular.

A variation of this theme is very helpful when you are trying to find good crystals showing useful interference figures. I simply replace one ocular with a pinhole (thoughtfully supplied by the manufacturers with all polarized light microscopes - for reasons of habit only, I'm sure). The pinhole yields a small but very sharp interference figure without the Bertrand lens. With the ocular tubes set for normal binocular viewing one can observe each crystal and, superimposed on it, the corresponding interference figure. One can, by this means, scan a field of dozens of crystals in a minute or so to select a useful view. Only the crystal or area at the very field-center will contribute to the interference figure. For measurements of optic axial angle one then inserts the Bertrand lens for normal conoscopic viewing of the crystal located by the pinhole method.

Finally, stereo imaging is easy by changing the interocular distance a few mm so that each eye looks through an outer (properly stereoscopic) or inter (pseudo-stereoscopic) edge of the oculars. I can think of some other ideas but they seem a bit too far out even for me (e.g., having an analyzer over one ocular would give crossed polars with one eye to compare with the single polar view; a very tiny, about one mm, aperture at the eyepoint of one ocular would yield annular stop dispersion staining; a tiny one mm opaque stop similarly placed would yield central stop dispersion staining, etc., etc.). Still, one other practical idea is to insert a light meter in one ocular tube to record light intensity of fusion preps as they are heated to detect solid-solid phase changes and melting points you observe directly through the other ocular. ■

More Help???

Regarding this newsletter, we are continuing in our efforts to both increase and decrease the size of our mailing list.

As to increasing readership, and should you start to feel the publication of interest and value, we would appreciate it if you would route a copy to others in your organization with an interest in microscopy. All we need is name and proper address to start a no cost subscription. This request applies to both U.S. and "overseas" readers.

And we must remove those from our mailing list who either do not wish to receive a copy or are not receiving their copy due to a wrong address. A "?" following your name on the mailing address indicates that we are not certain if you wish to receive, or are receiving, a copy. Should you be in this category, and wish to continue to receive the newsletter, kindly complete the enclosed questionnaire.