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Rapid Pulse

Optical fibres rely on the phenomenon of total internal reflection. Light introduced at one end of a column of transparent material will travel along it, being reflected repeatedly from the inside walls. Losses through the sides of the column will be extremely small. Thus red light from a source in the tank above could be led away efficiently by the stream of water. Similarly, signals in the form of a rapidly fluctuating light beam can be transmitted over great distances along an optical fibre. To achieve this result the purity level of the glass used must approach 100 per cent.

Coaxial cables, familiar from their use as connections to TV antennae, are composed of a single strand of heavy duty copper wire, surrounded by a screen of finer wire woven into a tube. These two conductors are insulated from each other

The experience of other countries is similar. In the United States, where cable television has long been established, there is still little use of the cable system to provide a two-way digital communications medium. Even where it is used, it seems to be for rather trivial purposes. In one well-publicised incident, audiences of Shakespeare's *Hamlet* were asked to vote on how the characters should be developed. Most of those who responded voted to stop the play!

In Scandinavia and Holland there has been a movement towards community-based inter-connecting home computers. Local electronic mailing and computer-based baby sitting networks are now being operated, and some communities even hold informal referenda on subjects of local interest. These social benefits have, unfortunately, been largely overlooked by proponents of the cable network systems in Britain. The benefits of communications networks will perhaps be felt most keenly by those members of the community who have little interest in buying even a very simple microcomputer for themselves. Once interactive cables are installed, there will be incentives for service industries such as the banks or the telecommunications service to distribute

terminals at little cost — or even completely free of charge, as in some areas of France, where the national telephone network has experimented with replacing telephone directories and the directory enquiry service with viewdata terminals.



Is A Picture Worth a Thousand Words?

It is difficult to determine the number of digital bits required to make up a colour television picture, but considering that the 9MHz bandwidth will allow transmission at 4.5 million baud, and that each whole picture is transmitted 25 times per second, simple arithmetic gives us a figure of 180,000 bits per frame. A thousand words, on the other hand, requires around 60,000 bits

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