'VIRTUAL' MUMMIES — UNWRAPPED BY THE CLICK OF A MOUSE

COMPUTERS CAN ALSO CREATE 'VIRTUAL' MUMMIES WHICH the exhibition visitor can 'unwrap' on screen.

The method used has its roots in medical technology. In medicine, the aim is to produce as accurately as possible an internal image of the patient in order to improve diagnoses, to plan operations more effectively, and to train medical students. For over twelve years, in the Institut für Mathematik und Datenverarbeitung in der Medizin in Hamburg University's teaching hospital at Eppendorf, a working group led by Karl Heinz Höhne has been conducting research into techniques of three-dimensional reconstruction of the anatomy of live subjects. The work is now so far advanced that the group can already produce 'virtual bodies' which one can investigate on screen just as an anatomist or surgeon might do in real life. Naturally, it is all the same to the computer if the reconstructed object is a real patient or a mummy. The obvious next step is to examine mummies in just this way, as was done in the case of the female mummy from the Kestner-Museum, Hanover. The picture quality in a mummy scan is even somewhat better than with living subjects, because there is no risk involved in using high levels of radiation — and of course the mummy stays absolutely still!

What looks like magic is achieved as follows: X-ray-assisted computer tomography produces a sequence of cross-sections of the mummy. The sequence is stored as data which then yields perspective views of the hidden anatomy, as illustration 121 shows. The head of the mummy can be viewed from whatever direction one wants, and different components, such as the various layers, can be taken away or replaced. So the mummy can be 'unwrapped' on screen without injury. Since the pictures are taken by X-ray, the original colour is lost, so the colours on the screen are artificial. The method developed in Hamburg stores information about the mummy in such a way that it can be retrieved as it relates to the pictures on screen. For example, a user can click on a particular point on the image and receive information and an explanation of the area in question.

These processes are of course extremely costly to develop and operate. The computer must consult ten million items of date in order to construct a new image, and in order that the user does not have to wait too long the computer must be extremely powerful. The programme used in this exhibition is therefore a simplified version that allows the user to call up pre-calculated image sequences. This version will run on ordinary personal computers, so that in future even the layperson can carry out 'research' into mummies.

Of course, unwrapping a mummy by computer does not have the mystery and excitement of a real unwrapping, but its accessibility and non-destructive method are certainly advances. A virtual mummy can now even be examined on the Internet: http://www.uke.uni-hamburg.de/mumie.

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121 Part of the 1996 Hamburg IMDM computer programme, which uses a 'mouse' to open up or rewrap the mummy