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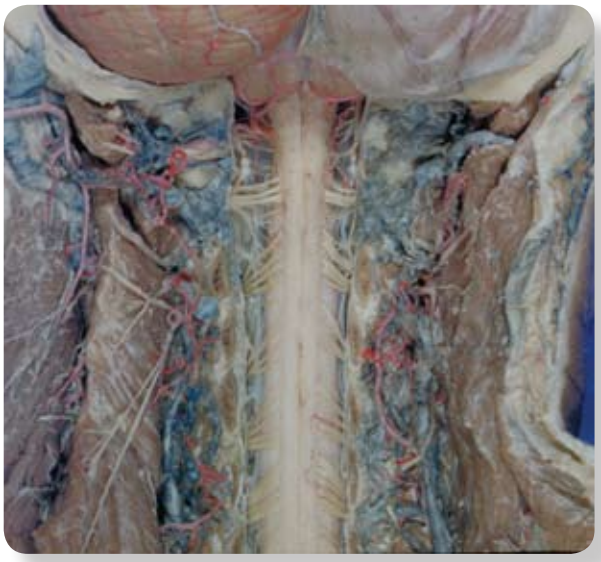

By removing the rear arches of the neck (cervical) vertebra and the fibrous covering (dura) over the spinal cord one sees the cervical spinal cord and its nerves. The blood vessels nourishing the cord and vertebral column and the origin of the cord from the brain are clearly shown.

Anatomical Library Created

W. PAUL BROWN, DDS

In the spring of 1998, Eric Herbranson, DDS, and I, both Bay Area endodontists, joined forces with the original intention of developing a library of very high resolution, digital anatomical models of real teeth to be used in research and teaching in dentistry. The project began within the Division of Anatomy at Stanford University.

At that time, a group of NASA computer scientists had formed the Stanford/NASA Biocomputational Centre and their task was to create surgical simulation programs for the NASA Mars trip. These simulations included programs for head and neck surgical planning. Our goals fit well into this program, and consequently

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IS IT OK TO TAKE OUT "Registrations are accepted on a first-come, first-served basis.? →

Our long-term mission is to create the first "clickable" human, something akin to Google Earth for the human body.

LIBRARY, CONTINUED FROM 307

NASA offered us their 3-D interactive surgical simulation software platform to use for developing the library.

At this point, giving the group the name "eHuman," we were joined by Bruce Fogel, DDS, an endodontist, and Terry Kessler, DDS, a general dentist. After two years of researching, experimenting, and going through the painful process of learning how to write an NIH grant application, eHuman received its first grant from National Institutes of Dental and Craniofacial Research.

Since then, the scope of eHuman's educational research project has greatly expanded. It has since received 10 NIH grants for $4.7 million and has a staff of 22 people creating content for medical and dental education. The digital anatomical programs that have been developed are now used worldwide. In the United States, they are used by 80 percent of all dental schools and many medical schools. eHuman currently is developing a server-based haptic-enabled dental simulator to completely replace the typodonts and mannequins used in preclinical dental school skill laboratories.

Of enormous importance in the development of our long-term goals was the fortuitous discovery, in its anatomy lab, of shelves and shelves of dusty boxes. These boxes contained booklets of View-Master sets of discs of anatomical dissections called the Bassett Collection. Next door to our lab was the office of Emeritus Professor Robert Chase, MD, an anatomist and a former head and neck surgeon. Chase, an enthusiastic educator and the curator of this collection, introduced us to the spectacular contents and its colorful history.

The quality of the dissection and the quality of the images were simply astounding. Just as remarkable was the fact that this collection, although very well known by anatomists, was not widely used. Some of the images had been licensed for textbook use and a few schools use it with the View-Master in its original form.

The history of the collection is worthy of repetition. Beginning in 1948, Bassett, as associate professor of anatomy at Stanford, known for his meticulous dissections, invited William Gruber, the developer of the View-Master stereoscope, to photograph his work. For 17 years, Gruber traveled back and forth between his home in Washington state and Stanford where, using a two camera set-up, he would photograph the dissections in stereo.

In 1962, Bassett published *A Stereoscopic Atlas of Human Anatomy*, with 1,547 color stereo views of dissections of every region of the human body. They were compiled on 221 View-Master reels tucked inside the back cover of the hardbound volumes. The original photographs, taken on Kodak's highest resolution film, are now archived in the Lane Library of Stanford's Medical School.

The atlas was an immediate success and the images became an important source for medical and dental students. Even the University of the Pacific had an Atlas until it was stolen. Despite its success and importance, the atlas eventually went out of production. Bassett died in 1966.

The raw images and annotations in their analog traditional form while spectacular are difficult to use, consequently five people from our research group have worked full time on the collection for more than a year and transformed it into an interactive, Web-based experience. The digitized images now have Bassett's annotations attached to the images with Chase's voice reading the annotation with correct pronunciations.

The new computerized format, with a quiz built on every page, is appropriate for all students studying anatomy on any level of complexity, including dental and medical students, nurses, physical therapists, and chiropractors.

This classical dissection image shows structures in the neck, oral cavity and cranium. When viewed in stereo, it gives anatomy students an understanding of anatomical structure relationships.

While cadavers are still used by most anatomy departments, the eHuman Bassett program will immeasurably augment anatomy education. Think "Body Worlds," the traveling exhibit of preserved human bodies viewed by millions, but much larger, with more detail and geared toward providing an encyclopedic volume of information about the anatomy of the human body.

Our long-term mission is to create the first "clickable" human, something akin to Google Earth for the human body. The annotated Bassett Collection online, an important component of the mission, is available now for the global medical, health care, educational, and consumer communities. A demonstration of the Bassett programs can be seen on www.eHuman.com. An Internet connection and standard browser is all that is required to access this information. An iPhone version will be available through the Apple stores later this year.

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