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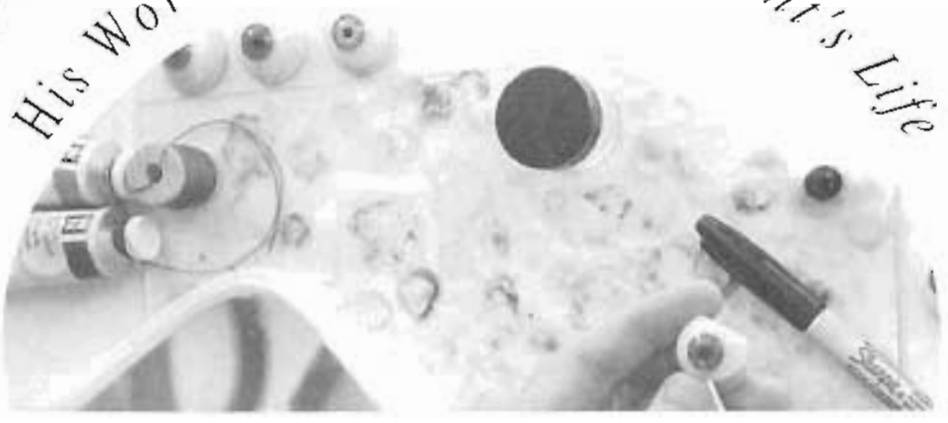
Ocularist's Creations Wondrous

His Work Transforms a Patient's Life

Your child keeps drawing increasingly intricate crayon masterpieces, full of movement and vivid color. When you hang these works of art on your refrigerator, you think to yourself that one day your baby may be an:

- ❑ artist
- ❑ architect
- ❑ ocularist

Ocularist? This health care profession not only requires the skill to work one-on-one with patients whose illness and treatment can be very traumatic, but also demands the artistry to paint very detailed



reproductions of eyes, ears, noses and other facial elements.

Put simply, an ocularist makes artificial eyes and other facial prostheses. There are only about 250-300 ocularists in the whole of the United States — a ratio of about a million people to one ocularist, according to Michael Hughes, the ocularist who pays a weekly visit to UVa from his base office in Northern Virginia.

"It's very hard to get into this field," says Hughes, "probably because you never hear of it. I didn't grow up thinking, 'Gosh, I want to make artificial eyes.'" In fact, Hughes went to Penn State to train as an illustrator. "I loved art — particularly anatomy," says Hughes, linking together two fields that most people would consider unrelated.

After graduation, Hughes decided the life of a starving freelance artist wasn't for him. He had heard of a graduate program that accepted only one candidate every two years to learn how to make ocular and facial prostheses. The program was run by the Dental Department at Temple University. Hughes applied and was a finalist for the top slot, but lost out to an applicant from Louisiana. However, as luck would have it, that person decided to quit the program after only two days. "Maybe they didn't have Cajun cooking to his liking up in Philadelphia," jokes Hughes. "Luckily, they called me."

The Temple program has since closed down and, as far as Hughes knows, there's only one program in the country that trains ocularists — at the University of Chicago. So Hughes suggests that "if a young person wants to get into (the field), he or she would need to apprentice with someone. Usually, every city has one person (who does this work)."

After working a number of years with an ocularist in Philadelphia, Hughes hung out his own shingle in Vienna, Va. He started working at UVa while still in Philadelphia, and has since added a stop in Richmond to his busy roster.

Many of Hughes' patients are children or seniors. A high proportion of them are seeing Hughes because they had ocular tumors. Depending on the kind of tumor or injury, a patient's eye might be intact, but not "normal" looking, or the eye might have been removed. In cases of ocular cancers, complete removal, known as enucleation, is often recommended.

Ocularist Michael Hughes, reflected in mirror, puts his knowledge of anatomy and his skills as an artist to work on an artificial eye.

Once a patient has healed from the surgery, Hughes begins the process of fitting the artificial eye or scleral shell (a thinner prosthesis that fits over an existing eyes. The process is similar to having a mold of your teeth taken at the dentist's office: a cream paste is used to take a mold of the eye socket. Hughes then makes a cast of that mold, duplicates it in wax, and, using a process called the lost-wax technique, makes a replica of the person's eye out of acrylic. "They're not glass eyes anymore," Hughes notes, adding, "A lot of my older patients have a glass-eye story to tell, but plastics are very nice. They can look real." He gestures toward a tray of astonishingly real-looking artificial

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Kickoff event next week will feature talks by two prominent physicians.

ROBERTS REMEMBERED

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Cancer claims the life of Dr. Robert J. Roberts, chairman of the Department of Pediatrics.

Take a Chance on Mini-Med School

The highly popular Min-Med School is turning to a lottery system this year to select its 139 participants. The seven-week series returns next month with lectures by professors from UVa's School of Medicine.

Now in its third year, the free series has become so much in demand with the public that waiting lists far exceed the actual enrollment as much as a year in advance of the course. To give everyone an equal chance to attend, a lottery will be held March 1 from among all applicants.

The series, which presents highlights from the medical school curriculum, is held on Thursday evenings, 7 to 9, from March 27 through May 8 in Jordan Hall. There will be one change in the curriculum this year. Dr. Steven Meixel's lecture on hypertension will take the place of Brian Duling's lecture on circulation — at least for this .....

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Ocularist

eyes, saying "These are all hand-molded and hand-painted."

This is artistry, indeed. Hughes sits down in front of a patient and, using the intact eye as a model, matches all the complex colors of an iris, estimates an average pupil size, adds fine capillary lines and whatever other details are needed. His creation will trans-

a patient whose ocular tumor did not qualify her for the Collaborative Ocular Melanoma Study (COMS). Coordinated by Jonni Henofer, R.N., CRNO, the study has two "arms" — one for patients with large tumors, and one for those with medium-size tumors. Of those with large tumors, half receive preoperative external beam radiation and the other half don't. The medium-size tumor patients either get an I-125

"This," explains Henofer, "is where Michael Hughes came in. 'Dr. Conway said 'Let's get Michael to make me a scleral shell to lift her lid up, so we can go ahead and deliver the radiation to the melanoma and spare the lid.' So Dr. Conway drew this little diagram and said, 'Make me this!'"

"Dr. Conway does this all the time," she notes, "if he dreams up an instrument or wants a machine repaired."

Individuals wishing to attend can send their name, address and telephone number by March 1 to Mini-Med School, Box 382, School of Medicine, UVa, Charlottesville 22908. Past participants have ranged from high school students to senior citizens.

The program coordinator is Jerry Short, Ph.D., associate dean for medical education. The Mini-Med School is supported by an educational grant from Pfizer Inc.

The topics for the 1997 session will be:

- **March 27** Anatomy — "The Faces of Anatomy," Barry Hinton, Ph.D.
- **April 3** Aging — "Know Old With Me," Diane G. Snusta, M.D.
- **April 10** Hormones and Cells — "The Ups and Downs of Blood Sugar," David L. Brautigan, Ph.D.
- **April 17** Cancer — "When Good Cells Go Bad," Michael J. Weber, Ph.D., and Charles E. Meyers, M.D.
- **April 24** Hypertension — "The Silent Disease," Steven A. Meixel, M.D.
- **May 1** Tour of a Research Laboratory, Erik Hewlett, M.D.
- **May 8** "AIDS 2001: The Odyssey of an Expanding Tragedy," Brian Wispelwey, M.D.

form the life of the patient by making his or her loss almost unnoticeable. For those whose injuries are more traumatic, Hughes is able to create facial prostheses, including noses, ears and eyes with surrounding skin tissue.

Hughes is often impressed with his patients' resilience.

"It's tough enough to be in a car accident or have a BB-gun injury," he says. "You'd be amazed and impressed at how strong most every patient is — especially some of those who undergo extensive surgery ... They are really inspiring. One woman is a pilot for an airline and she's had an artificial eye since she was three. (She sees it as) just another thing to take care of on the road of life."

One of the things Hughes likes best about working at UVa, he says, is the chance to be part of a team, to have "a lot of interaction with colleagues, different opinions, a lot of sharing." He repeatedly stresses the superb skills of the physicians in the Department of Ophthalmology with whose patients he most often works. They include Dr. Brian Conway, the department chair, and Drs. Sara Kaltreider, Steven Newman and James Tiedeman.

One particularly interesting project Hughes was drawn into at UVa involved radioactive plaque (which sits on the tumor and destroys it with radiation), or are randomized to having an eye removed. Consequently, many of the patients Hughes fits with eyes are participants in the study.

Describing the unusual case that did not meet the criteria for the COMS study, Henofer says, "One patient had a ciliary-body tumor — anterior — right up front in the eye near the iris. And so we couldn't use the I-125 plaque because it would fry the cornea. It would be a nightmare. So Dr. Conway, who is such a voracious reader, knew there had been some cases in Italy where they had used gamma knife radiosurgery for these ocular melanomas."

The gamma knife, a radiosurgical technique pioneered at UVa by Dr. Ladislau Steiner, allows for exquisite precision. The "stereotactic" technique uses three beams of ionizing radiation to pinpoint and destroy an intracranial target without opening the skull (or eye, in this instance), and without damaging surrounding healthy tissue. Having decided to use this technique to attack the patient's tumor, the concern was that because it was so close to the front of her eye, one of the radiation beams might overexpose, or burn her eyelid.

Henofer portrays Conway as a kind of Renaissance man, bursting with inventive new ideas and scribbling diagrams for his colleagues to follow. This particular inventive idea saved the patient's eye, but not without some trial and error with the scleral shell.

After immobilizing the patient's eye with what are called "bridle sutures," and getting her into the huge contraption (a helmet within a helmet) that comprises part of the gamma knife, Drs. Conway and Steiner decided that the first scleral shell wasn't thick enough. They had Hughes make a second one in "a very bizarre shape," according to Henofer. The second scleral shell lifted the patient's eyelid out of harm's way, and the procedure went forward. After the one-day treatment, the patient's tumor receded over time (the expected effect of the radiation), and her vision and health now are normal.

"I thought this was a blast — this creative collaboration, with Conway drawing pictures," Henofer says of the collective effort to figure out how to make the procedure work. "And I'll tell you," she says, "that's UVa for you — every day you've got some magic thing going on." ❑