Dentistry

By Ron Ucovich, Docent USS Hornet

When you enter the Dentistry Department, the first room on your right is reception. If you have a toothache, this is where you make an appointment to see the dentist. If you are enlisted personnel, you may get an appointment, but no matter how much pain you are in, you will have to wait until all drop-in officers are taken care of first.

The next room is treatment room #1. That small silver tray on the right is for disinfecting dental instruments. The tray was filled with isopropyl alcohol, which is different from the rubbing alcohol that you buy at the drugstore. Isopropyl alcohol has an acidic, pungent odor and is something you would not want to put in your mouth, but it is a very effective germicide. Rubbing alcohol, on the other hand, contains about 40% water, and colorized and perfumed to be more user-friendly.

Treatment room #2 has some interesting artifacts. The black box on your right with a capsule on the top is called a ***Wig L Bug Amalgamator.*** It was used for mixing the amalgam used to make silver fillings. Liquid mercury was mixed with powdered silver, tin and copper. These ingredients were placed into the little capsule, and the amalgamator shook the ingredients vigorously. The mercury was the binding agent, but after the amalgam was mixed, the excess mercury had to be removed so it was not swallowed by the patient. Now, you had a soft putty which was quickly packed into the cavity where it soon hardened into a solid filling. The circular cotton pads next to the amalgamator were used to squeeze the mercury out of the wet amalgam.

At the back of the room is a device used to test nerve sensitivity. The machine has a dial so you can increase the electric current to test how sensitive your nerve is. On the other side of the room, next to the door, you will see a ***Radiosurg Electronic Scalpel.*** This is a surgical scalpel for doing root canals. It was a hot iron that could cut an incision and cauterize the wound at the same time. This surgical instrument sounds very crude and primitive, but if you think about it, we use the same method today to do root canals, except today, we call the tool *laser.*

In treatment room #3 you will find an instrument cabinet on your left. In it you will see an assortment of dental picks, scalers, and excavators that were used to remove plaque before the invention of ultrasound. Notice that on the top shelf you will see instruments with wooden handles. These, of course, had to be disinfected with alcohol, because they would be destroyed if they were sterilized in a hot autoclave. On the opposite side of the room we can see an autoclave, typical of the ones used 60 years ago. It works like a toaster oven, and sanitized all your metal instruments with hot, dry air.

Notice also, the box containing **asbestos fiber,** used for making casting rings. Casting rings were used by dentists to make inlays, crowns, bridges, and dentures. When melting gold or silver, asbestos dust was inhaled and imbedded into lung tissues. Many years later, we learned that asbestos dust could lead to mesothelioma cancer. Asbestos has since been banned from the dental industry.

Dentists sometimes use the word *calculus* to refer to plaque. Yes, it's the same word we use in advanced mathematics. It comes from the Latin word meaning "little rocks," similar to the calcium that builds up on your teeth. Before the slide rule, ancient mathematicians used pebbles to solve difficult numeric problems, much like ancient Chinese used an abacus. The words calcium, calculate, and calculator, all come from the Latin word for "pebbles."

Up until the 1950s, dental chairs were always white, which seemed to look more sanitary than darker colors. During the 1950s, the dental industry decided that a soft color would make the room look a little warmer and more relaxing. They chose this muted green as being the most soothing color for the dental chair. Now, the chairs can be painted in any color, but green surgical drapes, towels, gowns, and scrubs are still common today. The spit basin is a relic of the past, now replaced with a suction tube, which for our younger patients, goes by the name *Mister Thirsty*.

In the early 1900s, cocaine was used as an anesthetic before any painful dental work was performed.

During WWII, Novocaine (brand name) was used as a local anesthetic, but since it caused allergic reactions in many patients, scientists came up with alternative drugs which were more user-friendly, and they all were called by the generic name, *Novocain.*

During the 1960s, the dental industry experimented with using nitrous oxide to relax nervous patients. At that time, it was called *laughing gas,* and it was thought to be totally harmless. Over the years, however, doctors have discovered that long-term exposure, (especially to the dentist), can cause permanent damage to the respiratory, neurological, and immune systems, and although it is legal to use, the dental industry has discontinued its use.

Treatment room #4 was used to take measurements, make plaster impressions of the teeth and gums, and do all preliminary preparations for making false teeth. The art of making prosthetic teeth is called *prosthodontics,* and we have all the equipment

necessary to do that right here on the ship. Also in this room you can see what the dental records look like. Dental records are kept in triplicate: one for the dentist, one for the patient, and one for the morgue. If the patient were to meet a catastrophic demise, his dental records may be the only way to make a positive identification of the body.

The X-ray room was used to take dental X-rays, and the dark room behind it was for developing them. Madame Curie was a French physicist who dedicated her life to the study of radioactivity. It is ironic that she died at the age of 66 from radiation poisoning. Notice that the walls of the X-ray room are covered with lead laminate, ostensibly to protect dentists from a similar fate.

Originally, false teeth were made using human teeth that were harvested from cadavers. Very expensive teeth were carved of ivory from elephant tusks. Contrary to popular belief, false teeth were never made out of wood. George Washington's legendary teeth are on display at the George Washington Estate Museum in Mt. Vernon, Virginia. They really do look like wood, but in fact, they are made of ivory. George was fond of drinking port wine, and over the years, his teeth became stained. They acquired wood grain lines from thin fractures in the ivory, and gave the teeth the overall appearance of polished mahogany.

During the 1800s, false teeth were made out of porcelain. In the 1900s, Bakelite was used, and by the 1930s they had developed acrylic plastic. By the year 2000, a 3-dimension replica could be made of your teeth, all computer-cut by a laser beam. And today, false teeth can be electronically copied by a 3-D acrylic printer, much like a Xerox machine paints words onto a blank sheet of paper.

When you take visitors to prosthodontics laboratory, just give them a quick description of the artifacts in the room.

You use an ***impression tray*** to make your initial plaster cast of the mouth.

From the first impression, you make a cement mould called a ***stone***.

If you are making a partial plate, you use the ***color wheel*** to match the false teeth with your real teeth. You also match the gum color to your own color.

You select the new teeth from the **tooth file**, which is on top of the refrigerator.

You set the new teeth onto the ***stone*****,** and you hold them in place with warm wax.

The ***Bunsen burner*** is used to soften the wax.

The ***articulator*** is that metal jaw that holds your dentures and opens and closes like your mouth does. You use it to measure your ***bite registration.*** You check to see that your top plate aligns with the bottom one, and that your front teeth have a correct overbite, and that your molars grind together properly.

The ***injection flask*** is final mould where the temporary wax is melted away and replaced with acrylic plastic.

The **kiln** is for dental work requiring gold or silver.

The ***grinding wheel*** is used to grind away the excess plaster from the plaster impression.

The well basin in the countertop is a **centrifuge** to spin your final denture plate against the stone and get a good, solid fit.

The **refrigerator** against the aft bulkhead is for storing molding wax, and medications such as nitrous oxide, and ether.