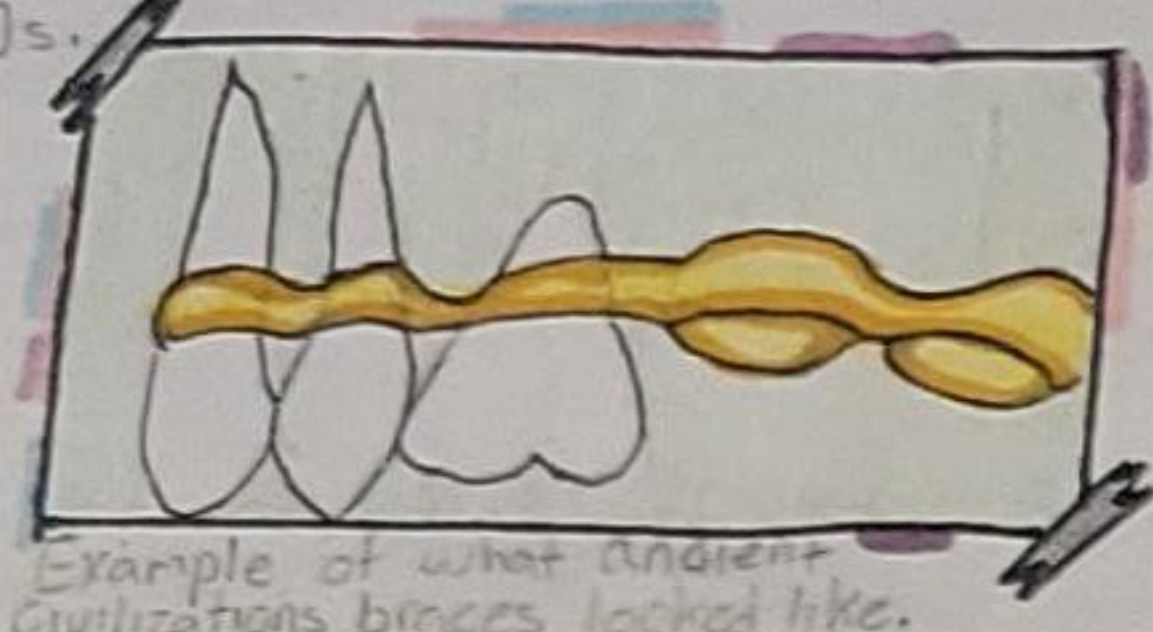


Richies Daily News

Topic - Braces and Minerals

History of Metal Braces

Braces were invented over 300 years ago. In fact, the use of braces dates as far back as ancient civilizations. Ancient civilizations used to wear braces made of gold metal and/or catgut. For example, ancient Egyptians mummies used to wear metal bands around their teeth secured by catgut which acted as the archwire. However, modern braces did not start to develop until the 18th century. The first form of modern braces were developed by Christophe Francois Delabaire in the 1800s. At that time dentist used materials like ivory, zinc and gold to create braces. This made braces very pricey and somewhat ineffective because gold would melt over time. Stainless steel bands were introduced in the 1930s, making braces cheaper and more reliable. Although stainless steel was more effective it did not become popular in orthodontics until the late 1900s.



Example of what ancient civilizations braces looked like.

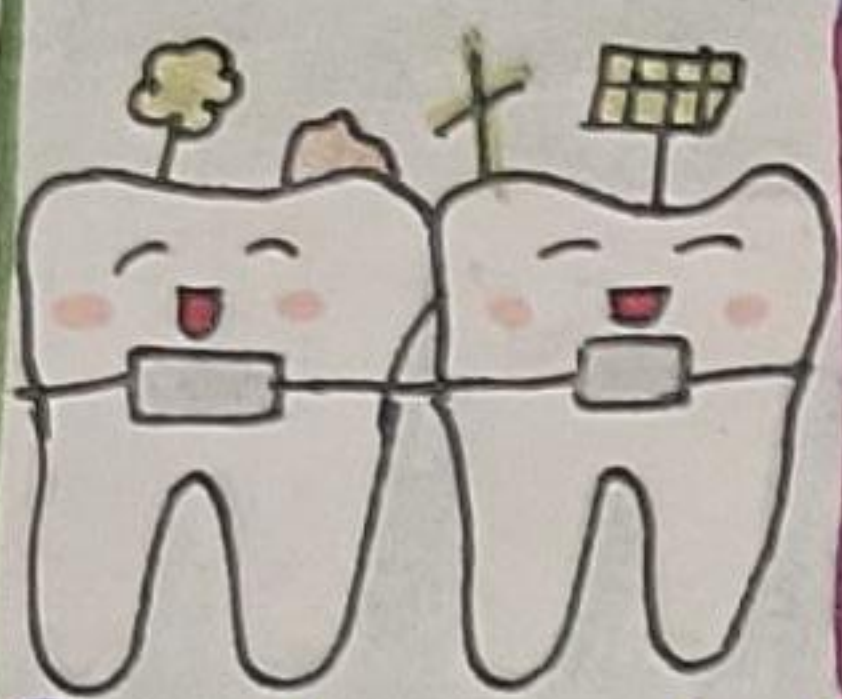
About Braces

Braces can...

- Fix dental imperfections
- Relieve dental pain.
- Make chewing easier.

Types of Braces include....

- Metal
- Ceramic
- Self ligating
- Lingual braces
- Clear Aligners.



Sustainability of Metallic Braces-

- Materials used are often recyclable.
- Old braces can be melted down to form new materials.
- X-rays used in treatment can leak radiation into the environment.
- Some mining used in production of braces can damage the environment.

Mining Sustainability

Several materials used in braces are from open-pit or underground mining. These types of mining may scar habitats and pollute the air.

Making mining more sustainable

- Adopt practices from "Towards Sustainable Mining Initiative."
- Use solar or wind energy in order to reduce greenhouse gas emissions.
- Reusing or selling materials in order to reduce waste.

Say What?!

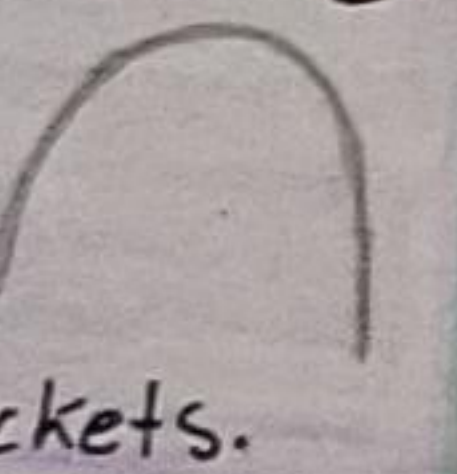
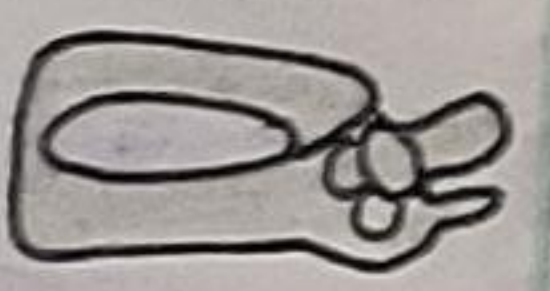
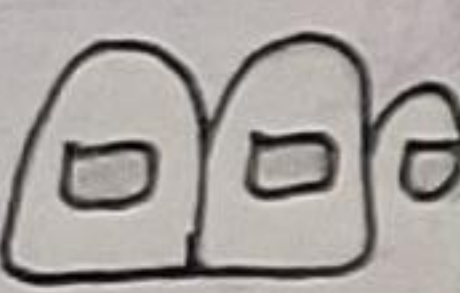
- Canada is a part of "TSM"
- The Sudbury basin in Ontario is one of the richest Nickel deposits.
- Canada has one of the most sustainable mining industries
- Canada recycles approximately 7 million tons of steel per year.

Digging

Deeper into Braces

Braces consists of...

- **Brackets**
 - Made from stainless steel.
 - They are bonded to teeth.
- **Bands**
 - Variant of brackets.
 - Normally used on back teeth.
 - Not always necessary in treatment.
 - Made from stainless steel.
- **Elastics**
 - Made of rubber.
 - Provides tension in jaw.
- **Wires**
 - Help align teeth.
 - Made from Nickel-Titanium in earlier stages of treatment.
 - Made from stainless steel in later stages of treatment.
 - Run through the bands and/or brackets.



Ligatures

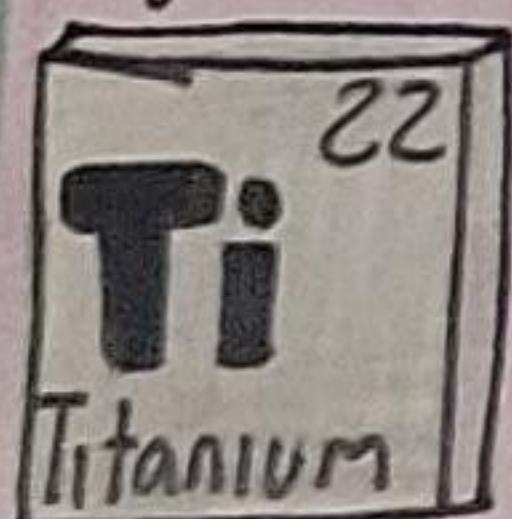
- Often made of elastic or metal.
- Secures archwire.
- Placed over archwire.

Natural Resources Used



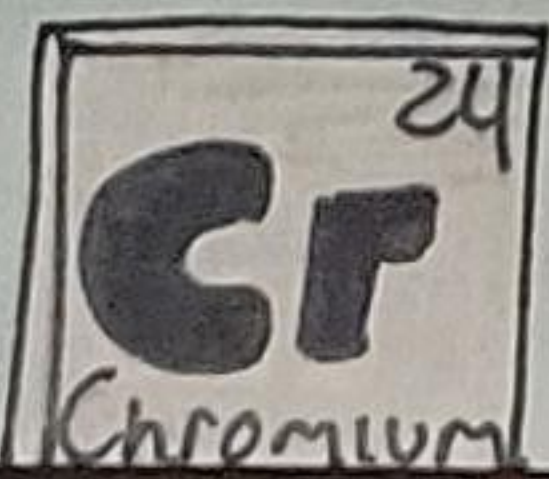
Titanium

Discovered in the late 1700s and one of the most abundant elements, titanium is a hard silvery gray metal. It is light, high strength and low corrosion. It occurs in minerals like limonite and rutile. Its lightness, strength and low corrosion makes it useful in many parts of ships, aircrafts and high performance objects. Canada is a top producer of titanium. Havre St Pierre in Quebec produces large amounts of titanium.



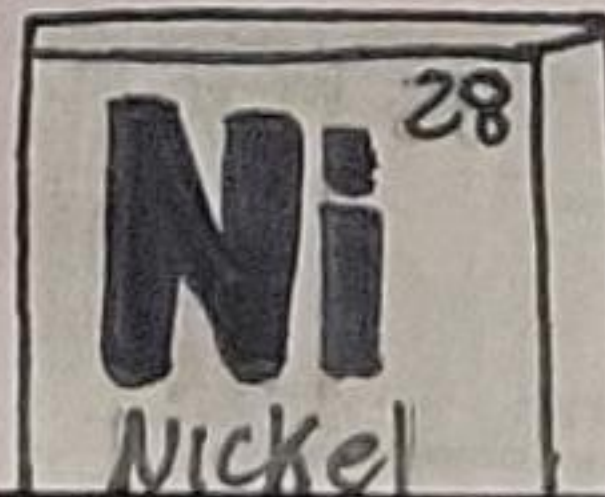
Chromium

Chromium is a lustrous, brittle hard metal and is often used to coat other metals to prevent corrosion. It was discovered by Louis-Nicolas Vauquelin in the 1700s. Chromium is used to harden steel, manufacture stainless steel and form alloys. It is critical when making stainless steel. Although chromium occurs in many minerals chromite is the chief ore. South Africa, India, Kazakhstan and Turkey are top producers of Chromium.



Nickel

Nickel is an abundant silvery-white element. Nickel mined for industrial use is found in ores such as garnite, limonite and pentlandite. It is used as a strengthening component in metal alloys and to make items like coins and batteries. Some of the largest nickel producers are Indonesia, Philippines, Russia and Canada.



Creating Eco Friendly Braces

- Taking care of braces means less materials will be required in treatment.
- Switching to digital x-rays because it produces less radiation and waste.
- Recycle braces and parts of braces.
- Practice sustainable mining.

- Hold mining companies accountable for not being environmentally safe.
- Close unregulated and illegal mines to reduce risk of unsustainable mining and companies that do not follow guidelines for eco friendly mines.
- Replenish the environment after operations close.

Stainless Steel

True stainless steel was invented in the early 1900s by Harry Brearley. It is an alloy of Iron, Chromium and Nickel. Stainless steel is very reliable. Nickel, Titanium and molybdenum are used to create corrosion resistance. Stainless steel is used in a variety of things. In braces stainless steel is used for archwires, brackets and bands. A pro of stainless steel is the fact that it can be recycled.

Word Mine

Braces	A R E C Y C L E M
Recycle	M E N N A T I T U
Mine	C S K B S E N C I
Titanium	L E I O L L P A N
Band	V C Y V A K A T A
Nickel	B A N D T C I G T
Dig	C R I H E I F U I
Catgut	E B C E M N E T T
Metals	

Mapping Resources

