The company who is organizing the meeting today is one of the leaders in terms of innovative processes for producing Titanium. Other details on that can be found in the book that I mentioned earlier. One process which we, at the United States Airforce, have been interested in, is the Albany-Titanium process (fig. 12).

It is a process in which fluorination is followed by a reduction in a Zinc-bath, by Aluminum, and finally a distillation step to produce a Titanium powder, or sponge, or even an alloy powder which does not contain the remnant Sodium or Magnesium salts that the Kroll or Hunter process do. It is still an experimental process, and only small amounts of material have been produced at this point.

Melting of Titanium is an area where a lot of work has been done in the last few years particularly because of the concern with defects, in particular the socalled Type-1 defect which is an alpha-stabilized defect (particularly stabilization with the elements Oxygen and Nitrogen) (fig. 13). Because of this, there has been a lot of attention paid to other techniques beyond the consumable electro-techniques including those shown in fig. 14 particularly Electron-beam and plasma-techniques although it is recognized that with either one of those techniques the melting of Titanium will be more expensive than with the Vacuum Arc Remelting technique.
There have been other techniques investigated such as Inductoslag sligh techniques developed at the Bureau of Mines in Albany, Oregon, and more recently commercialized by the Duriron Company in Dayton, Ohio. This technique probably being more applicable to small castings rather than the production of Ingots.

I will not cover welding or corrosion today but as I said those are also covered in the book that I mentioned earlier and which is available from the Titanium Development Association.