Editor's Corner

There are impressive developments in progress that are almost certain to affect the materials community. I am referring to recent research that appreciably modify some of our current physical concepts and cherished biases. Toward the end of the last century, it is reputed that many physicists were dejected and held the view that their future was limited to adding more significant figures to the universal constants. The changes that we have seen in the present century have given lie to this gloomy pessimism. Outstanding examples of large scale changes can be cited in the nuclear field, in aerospace developments, and in the electronic industry. Materials people have been essential contributors in all cases.

The invention of the transistor has probably had a more far reaching effect on domestic life in technically developed countries than any other single invention. Very few homes are without a television set, and other devices such as VCR's, FM and AM radios, CD players, microwave ovens, home computers, and other devices are legion. Many materials contributions have been made in developing these devices, but the most basic was Pfann's recognition of the applicability of zone refining for purification of the component materials. Without the development of zone refining, it is likely that things would have been far different.

I was fortunate enough to be in the right place at the right time to see some of the early burgeoning in electronics. I can remember the initial reports of the discovery of the transistor and how our physics department exerted extraordinary efforts to obtain one for testing and experimentation. Things developed rapidly and it wasn't long before the physicists were asking me to make alloys of semiconducting intermetallic compounds. When commercial applicability of the transistor became obvious, I was lucky enough to be retained as a consultant by a firm that became very big in the field. On my first visit to their plant, I was appalled. They had just begun production. To do this, they had taken the techniques then current in research laboratories and replicated them *n* times. However, this crude approach did not last long. Within two years everything had been automated with components moving from operation to operation via pneumatic conveyors in a sterile environment with the workers in white gowns and masks. At the end of the line the transistors were graded, sorted, and marked by a robotic measuring device.

At the present time, we seem to be on the verge of another gigantic 'breakthrough.' Three 'hot' areas are currently being explored. These are gravity*, high-temperature superconductivity (above 80 K), and electrolytically driven fusion. Any one of these could have important effects on our future. Though one can never be certain about the future, a betting man would lay better than even odds that one or more of these areas will be successfully developed. In such development, the materials professional is certain to play a role.

J.F. Smith
Editor
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*See May 1989 issue of National Geographic.