

Although it's very complex, it doesn't seem insurmountable. We've been doing it by hand, and that part is not bad. The interesting thing is getting the die off the board. There are 16 die on a 1 inch board and you don't want to throw away the whole board because the die are expensive. The die is attached to the board with a very soft gold lead. What we have is a very large gold ball bond on the die. This a 3- inch diameter wire which is gargantuan compared to most wire, which is a fraction of a mil. We have this huge wire for a reason. We cut it off with a mechanical notcher at ball bond time and this becomes the mechanical assembly process. These aren't really wires, they're posts. The aspect ratio is 7 to 1. They're 21 mils long and 3 mils in diameter, so this is a very rigid post. The assembly process is simply to put this die with 52 of these posts on it into the board, and then put it in a hydraulic press and squeeze it. The soft gold wire, which is about 6 mils longer than the board thickness, is then crumpled into the barrel. That way we get a very good electrical connection to the board and it's very simple. When it comes to removal, you just grab the die with a small pliers and give it a twist. The soft gold wire shears off, you can poke out the remaining pieces, and you're all ready to add another die. It seems beautifully simple. It works most of the time--not all the time because sometimes you just can't get that stick of gold out of the barrel of the board. You damage it in the process, but it's a pretty good percentage.

Q: Is there any work on the CRAY-3 project now in Chippewa Falls?

A: These last 2 weeks we've been packing up the equipment that is there and shipping it all to Colorado. I think the last truck arrived in Colorado today so the equipment has moved. There were about 180 people working on the project in Chippewa Falls and they were all offered the opportunity to move to Colorado. I thought we did a good job as a company because we figured out the cost of living difference, which was 15 percent, and offered them all automatic raises of 15 percent. We offered them per diem of 60 days while they looked for a house, and we offered to buy all the houses of the technical people so that they didn't have any financial loss. I'm telling you all this because the amazing thing is that there were only about 15 people that wanted to move in spite of that. That was a little surprising, but in a way it's all right. We weren't supposed to be robbing