

when germ-free environs will be needed to perform bone marrow transplants in man, among other uses.

I might add an aside to this local story which is not medical, but which shows how quickly a good idea spreads. We understand that industry had adopted the laminar-air-flow clean room in many manufacturing processes. I am told, for instance, that all color television tubes are now being assembled in laminar-air-flow rooms and that the integrated circuits for all the nation's pushbutton telephones are being made in Willis Whitfield's ultraclean rooms.

Another innovation to come out of an AEC laboratory, our Argonne National Laboratory, is a small, portable hemodialyzer—an artificial kidney—now under extensive testing. Should this device live up to expectations, it would revolutionize the treatment of kidney patients by making widely available a convenient, inexpensive replacement for what heretofore has been a costly and confining treatment of limited availability.

The National Institutes of Health, which is supporting refinement and clinical testing of the device, reports that dialysis treatments now run between \$5,000 and \$25,000 a year.

Finley Markley, an associate physicist in the High Energy Facilities Division of AEC's Argonne National Laboratory, was aware of the cost caused by the complexity of the procedure and thought he knew a way to improve it. Markley had put together many apparatuses for high-energy physics experiments that required bonding materials to form an airtight seal without using clamps and gaskets. He used this expertise to produce a device about 8 by $1\frac{3}{4}$ by $1\frac{3}{4}$ inches, which may be further reduced to the size of a package of cigarettes. The tubing is bound together by epoxy resins, eliminating the need for clamps and precision seals. Connected to the patient via a permanently implanted artery-to-vein shunt, the new dialyzer is pumpless, has a priming volume one-tenth that of conventional dialyzers, and is compact, lightweight, simple to use, and disposable. Its ultimate cost is expected to be no more than \$15 per unit and possibly as little as \$5 per unit. It should be possible to use this unit in conjunction with an inflatable vinyl tank and deionized water at home or on vacation, giving a potential for freedom that today's kidney patient does not have. Preliminary clinical tests have been very encouraging thus far. A long-term test with two patients is now under way. As I have said, if this device continues to perform up to expectations, we may have