

THE STORY OF THE JAMES MILLEN MANUFACTURING COMPANY, INC



by Alan Douglas

The story of Jim Millen, his work with National and later his own company, has been covered before (*CQ*, July 1967, pp. 2631) but it would take a dozen such articles to do justice to the subject.

In 13 years he transformed the old National Toy Company into the country's foremost ham or commercial radio manufacturer, but when National's backers tried to freeze Jim out of the profits (by paying themselves high salaries to reduce profits to be split) he knew it was time to form his own company. To guard against similar problems in the future, he became a banker himself, and indeed is still active in that profession.

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JAMES MILLEN

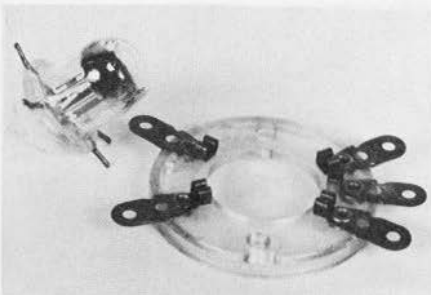
14 De Koven Street
Forest Hills, L. I.

This ad from the March 4, 1922 New York Globe, and one in Radio News classifieds in March 1922, were Jim Millen's first ventures into radio merchandising.

It was a good time to be in electronics; the industry was small enough so that many engineers and executives knew each other personally. As an illustration of how the industry was run, among those who played the game like sportsmen, Jim tells of a request from RCA for his company to build their service oscilloscopes.

He needed a \$100,000 loan to set up production lines, which was out of the question through formal channels. But RCA arranged to sell CRTs to Millen who would install them in the scopes and sell them back to RCA at the same price. Millen's invoice to RCA was paid

within ten days, but RCA allowed him six months to pay their invoice. Result: a \$100,000 interest free loan!



In 1939 Jim visited Tom Mason of Stamford, Connecticut, who was molding bottle caps in his garage, of newly-developed polystyrene plastic. With minor changes in the molds, the caps became acorn tube sockets!

Similar arrangements could be made for an RCA license, which 'formally' cost \$100,000, far too much for a small company to pay. But Millen could license RCA to use some of his lesser patents for \$90,000, and pay them their \$100,000, in effect getting the license for \$10,000.

In May 1939, *QST* carried a notice of the new James Millen Company, and in October their first ad and catalog appeared. Succeeding catalogs featured a rapidly-expanding line of mechanical components, all soundly engineered — some have survived unchanged for forty years — but this was just the tip of the iceberg.

What really paid the company bills was the subcontracting work for firms such as RCA and GE. They found it far cheaper to have Millen make equipment than to set up their own production lines. It might be service scopes for RCA, two-way police radios for GE, wartime gear for MIT's Radiation Lab, or marine radar for Raytheon.

Sometimes the products were fully engineered and ready for production; more often Millen would receive an electrical prototype and would do all the mechanical design themselves. As new components were designed and tooled-up, they would appear in the catalog. Subcontract work accounted for perhaps three-quarters

of Millen's total output, and kept the amateur activities afloat.

Millen's approach to ham equipment was to take electrical designs originated by others, and to adapt them mechanically for commercial production. Their first venture was a tunable heterodyne filter, used in the headphone line outboard of a receiver, adapted from a September 1939 *QST* article and made under license (given gratis) by its author Dr. Ray Woodward. In January 1941 *QST* published a description of Henry Rice's clever VFO called a "Variarm", and shortly Millen had a commercial model going.



The Millen Variarm ECO (Electron-Coupled Oscillator) was ingeniously designed and worked well, but owners often sent them back to the factory to have the oscillator tube changed, a tricky procedure.

Jim Millen had intended, from the beginning, to make an amateur receiver, but not until the war's end was he in a position to do so. He had

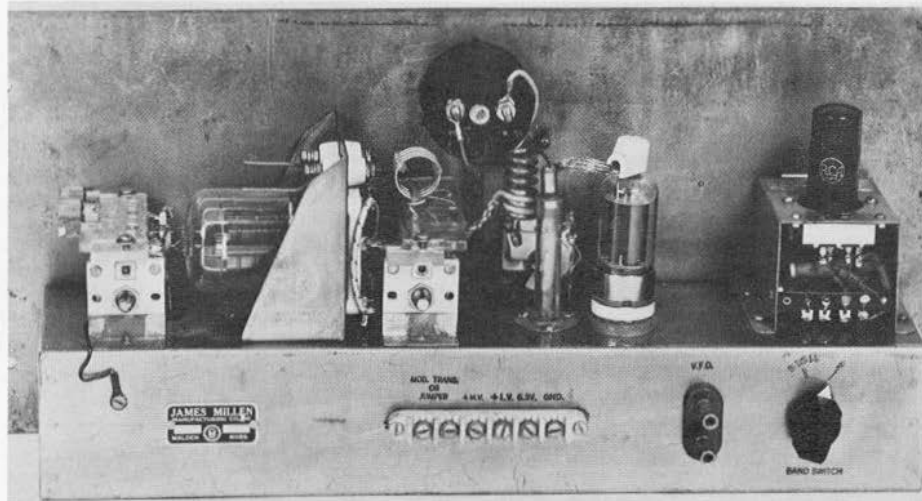
an elaborate design ready, a receiver incorporating every feature a ham could want: direct frequency readout, ten ham- and general-coverage bands, motor-assisted tuning, motor-driven bandswitching, etc etc.

It appeared in the early 1947 catalog, as a "custom-built" model, but it must have been apparent, some time before, that it was not a profitable venture: no ham could have afforded it. Only one prototype was ever finished.



The Millen 90711 ECO (December 1948), successor to the Variarm but still using a similar vernier control.

A "cheaper" model was under design at the same time, using a more traditional approach, with sliding coil catacomb (like the Millen-designed pre-war National models) and band-set-bandspread tuning condensers. This model DFP-201 is pictured in some detail here because it is absolutely typical of Millen's design



The 90810 2, 6 and 10M transmitter dates from October 1947; the 829B amplifier subassembly remained in the Millen catalog at least through 1963.



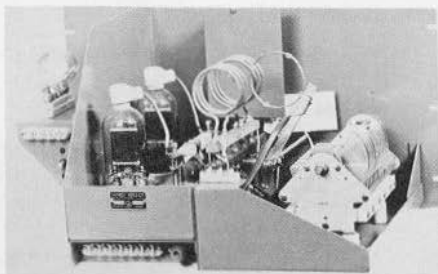
DFP (Designed For Performance) 201. Dial pointers are not shown (they were apparently never installed in this prototype). Bandspeed or general-coverage ranges are selected by interlocked push-buttons on either side of the bandswitch knob, that engage the mechanical detents on the bandset shaft.

philosophy, that a sound mechanical design was the foundation on which the electrical design would be built.

Millen unveiled the DFP201 (and the 501) at a Chicago trade show in May 1947, and put it in his catalog, but it was soon obvious that even this "cheaper" model could never be sold; their no-compromise design philosophy made it far too expensive. The few prototypes that were completed were said to have cost \$2100 apiece to build. Both models were immediately withdrawn, and revised catalogs printed.

Through the 1950s and 60s new ham equipment appeared in Millen catalogs, side by side with mechanical components; some of it is pictured here.

After 38 years it was time to pull the plug. Their antiquated factory building was in the path of urban renewal, and massive renovations would have been needed to meet new OSHA safety regulations. Jim suffered a heart attack

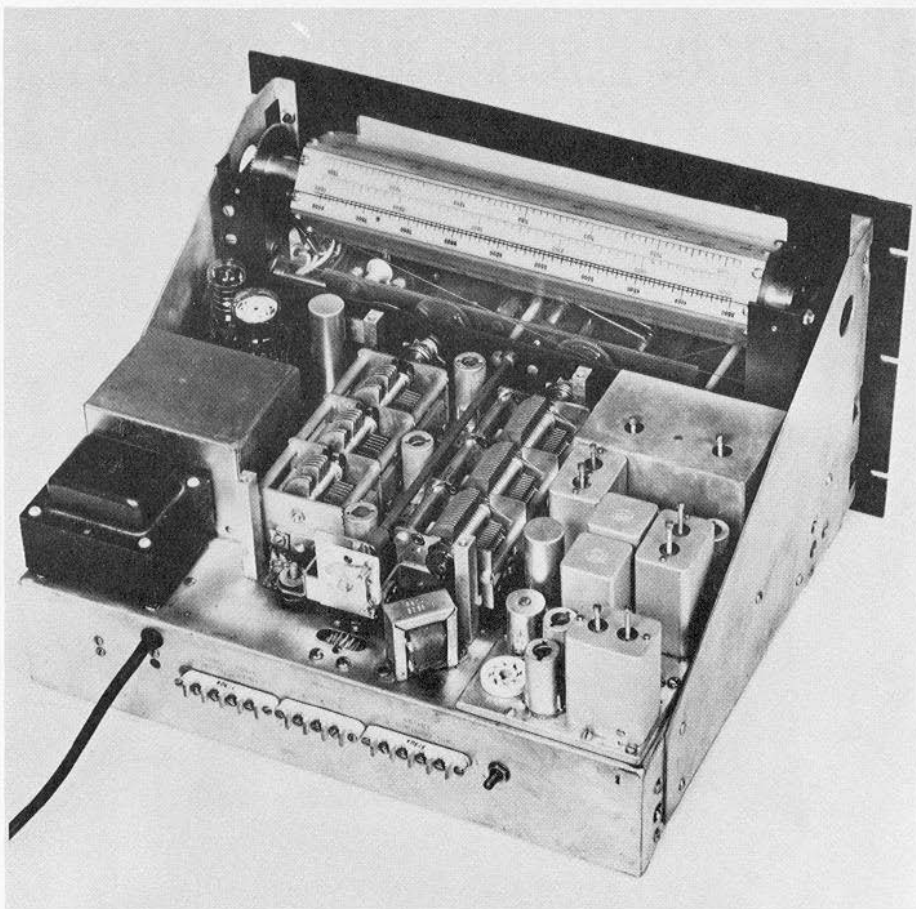


The 90881 500-watt amplifier (September 1948) worked fine until someone invented TVI.

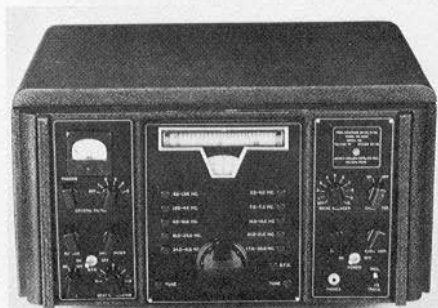
and had to reduce his activities, so in May 1977 the factory was closed. Jim retired to his farm and his banking interests. He feels lucky to have been in the electronics business when there was room for individual effort, and certainly the rest of us are equally lucky to have benefitted from his contributions.

OUR COVER The fabulous DFP-201

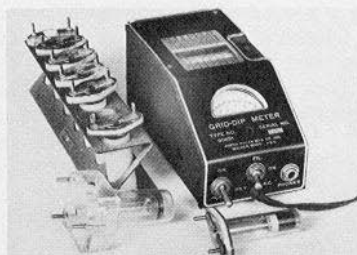
Top view, with drum dial removed, showing the two trains of anti-backlash gears that drive the bandset and bandspeed capacitors. Coupled to the left train are five precision detents that lock the shaft at the proper points for calibrated bandspeed, selected automatically by the bandswitch. The gearing to accomplish this, and to couple the bandswitch knob to the drum dial, is unbelievably complex.



DFP201 interior, with tuning-capacitor cover removed. The entire capacitor and drive train assembly floats as a unit on rubber mounts. The five-sided drum dial rotates automatically with the bandswitch and is internally illuminated.



DFP501. Dial readout, a combination of slide-rule and rotary, is similar to that of the Collins 75A series, which it preceded. Only a very slow tuning rate is provided; for rapid shifting a push-button motor drive takes over. Bandswitching is also motor-driven by push-buttons. Complete with cabinet, this pipsqueak weighs in at 107 lbs! (The 201 weighs 79 lbs.) This is a partially-completed prototype.



The 90651 Grid-Dipper (June 1949) was designed by Wilfred Scherer, W2AEF, who popularized its use among hams in a number of CQ articles.

My thanks to (naturally) Jim Millen, his production superintendent Gene Williams, and 30-year employee Mel Dunbrack, and to Tom Rutherford who salvaged from the factory much equipment that otherwise would have been scrapped.