

Thirty Years of Ham RTTY

-- from the Model 12

to the microprocessor

Amateur radio teletype got its start in 1946 soon after the two meter amateur band was opened.

I remember getting word that 2½ meters was open along in September 1945. I

was teaching radio and radar at the submarine base in New London at the time, and it took but minutes for me to dash up to the lab and put a rig on the air and start making ham contacts. The

next weekend I drove home to Brooklyn and picked up my homemade battery transceiver... built pre-war out of *Radio* magazine. How many of you have seen copies of *Radio*? It was the *class* magazine of the 30's and made us all wonder what was wrong with QST.

Ten meters was opened, as I recall, along about late November 1945, and the 2½ meters was changed to 2 meters in December 1945. Within weeks W2BFD was going hot and heavy with his audio frequency shift radio teletype up on 147.96 MHz and slowly gathering a group of interested pioneers.

The equipment in those days was a Model 12 Teletype machine with good strong electromagnets for each of the five pulses of the Baudot code and one whopping magnet to make the selected key print. Signals were sent serially and converted to parallel with a mechanical distributor on the keyboard. The whole works made a terrible racket and a lot of radio hash.

My own interest in RTTY was sparked in 1948 when I heard a peculiar tweedling of

tones on the high end of two meters. It turned out to be John Williams and a dozen or so other RTTY amateurs hunting and pecking away at each other.

Within a few weeks, I had my own printer and had put together a tone generator and demodulator, complete with autocall circuits, and was joining in the fun. I also tried it out on 11 meters and made quite a few good contacts with W6s, including W6NRM, one of the more important RTTY pioneers. On 80m I had to use make-break keying since FSK was not yet permitted, but even so quite a few contacts were made, even out to California.

The two meter distances between stations were such that beams were required to make most of the contacts... and that meant that many operators were unable to copy what was going on. John solved this by setting up a repeater on top of the Municipal Building in downtown Manhattan. I won't soon forget the project as I was the one who climbed out on that copper roof one midnight in the middle of a snowstorm to set up the antennas. In case you wonder how I managed to hang on to the steep roof (you can see it as you drive across the Brooklyn Bridge or the Manhattan Bridge), there are little pegs sticking up, and these provided hand and foot holds. If it hadn't been the middle of the night I'd never have made it... one look down and I'd have had it.

The repeater made it possible for all of the RTTY gang to talk with each other. Most of us were using automatic circuits which made it so messages could be left for us when we were not present. Often I would leave my machine on short start, which would permit it to copy everything on the channel, and I would come home after a day or two away to find maybe fifty feet of rag chewing and gossip piled up on the floor.



The old Model 12 "warhorse" Teletype machine... the printer that got amateur radio teletype started back in 1946.

Some stations were set up for automatic roger. This was a neat little circuit which would turn on the other fellow's rig and send back a couple of bleeps to let you know that your message had been copied. It wasn't exactly legal, but it was a good pioneering effort. It is a pity that the FCC has historically made it so difficult for amateurs to experiment and pioneer things. One wonders what might have been developed if amateurs had been permitted to have their head. Considering the resistance of the FCC to pioneering and their molasses-like acceptance of change, it's a wonder we've done as well as we have!

Speaking of resistance to change, we started to work toward getting the FCC to permit FSK on the low bands in 1950 ... it took several years before FSK was finally permitted. In all fairness to the FCC, the time it took was not so much a result of their slowness as the bitter fight put up against RTTY by the ARRL. The League countered every effort of RTTYers with legal efforts to stop them. Fortunately for the RTTY group, the ARRL was in very poor favor with the FCC. Despite their massive efforts, the ARRL racked up quite a few years when every single petition they put in was refused by the FCC and every one the ARRL fought was accepted.

This was the period when the Novice license was set up (with extreme resistance by the ARRL), and the Tech license. The chairman of the FCC was a ham and he was well aware of the attitude of ARRL HQ toward the hobby ... and he was determined to help amateur radio progress despite Budlong and Segal.

The ARRL didn't get a friendly reception in Washington until well after the uprising against Budlong and Segal led by Mort Kahn W2KR, when Budlong found himself suddenly "retired" and Segal replaced by Booth.



Here's Wayne in 1952. Watching are Faye Emerson, Bill Halligan, Skitch Henderson, Conrad Nagle and Herb Sheldon.

Insiders, well aware of the utter contempt ARRL HQ had for their sheep-like members, found things somewhat improved under Huntoon (Kahn's protégé). Hopefully someone will someday write a true history of amateur radio and put ARRL in its real perspective.

In the late 50's when the Model 15 printers started becoming available at reasonable prices, the Model 12s were retired. The Model 14 strip printers never got to be very popular ... hams wanted pages of paper, not strips.

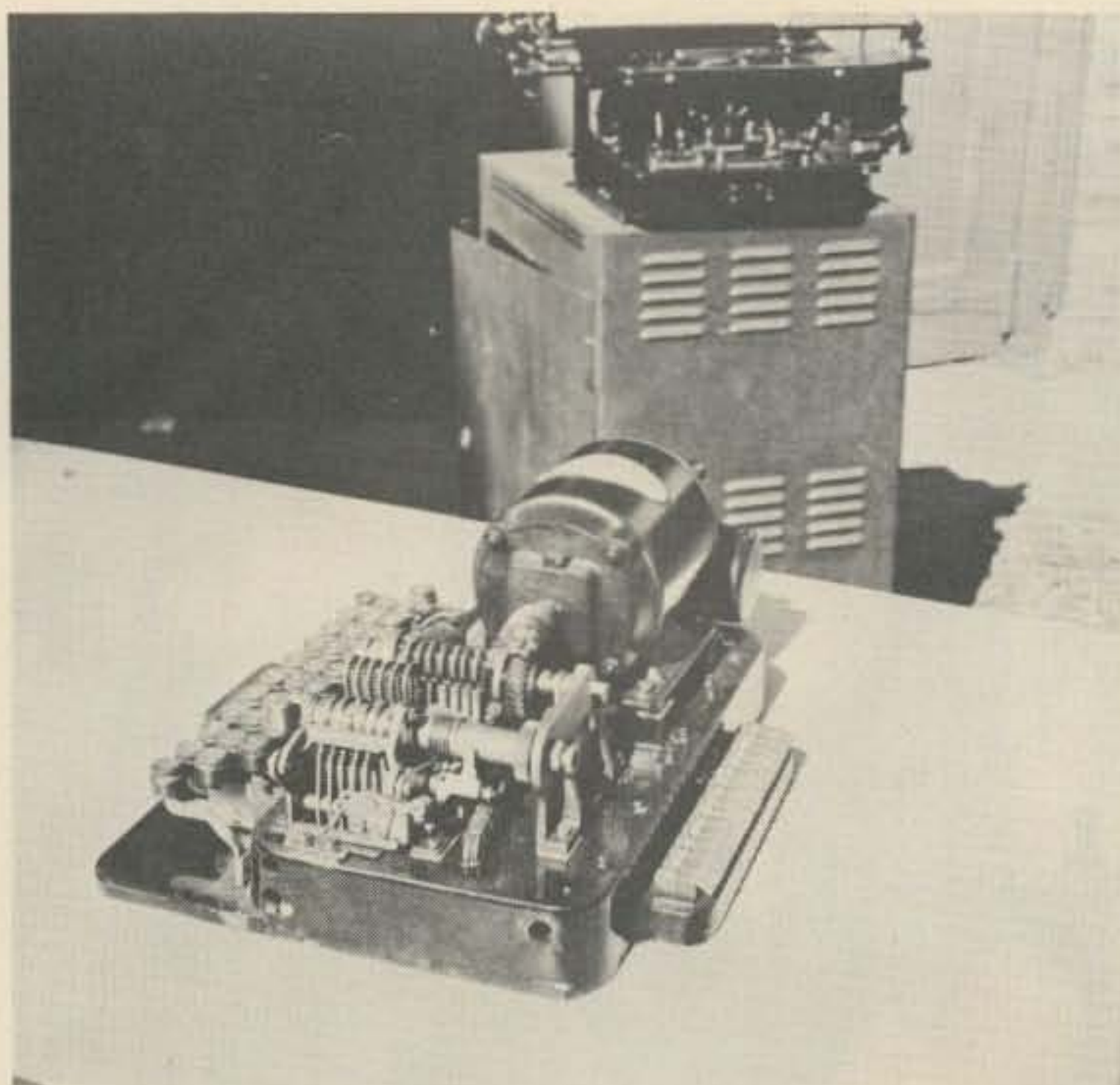
When the FCC finally

released rules permitting FSK on the low bands, they were already out of date and extremely inhibiting to experimenters. A goodly percentage of the RTTY crowd was experimentally minded, more interested in technical developments than in rag chewing. The rules stipulated 850 Hz frequency shift at a time when amateurs were getting ready to change from this age-old standard to much narrower shifts. New filter techniques and detectors made narrow shifts practical. Years later the FCC finally okayed narrower shifts.

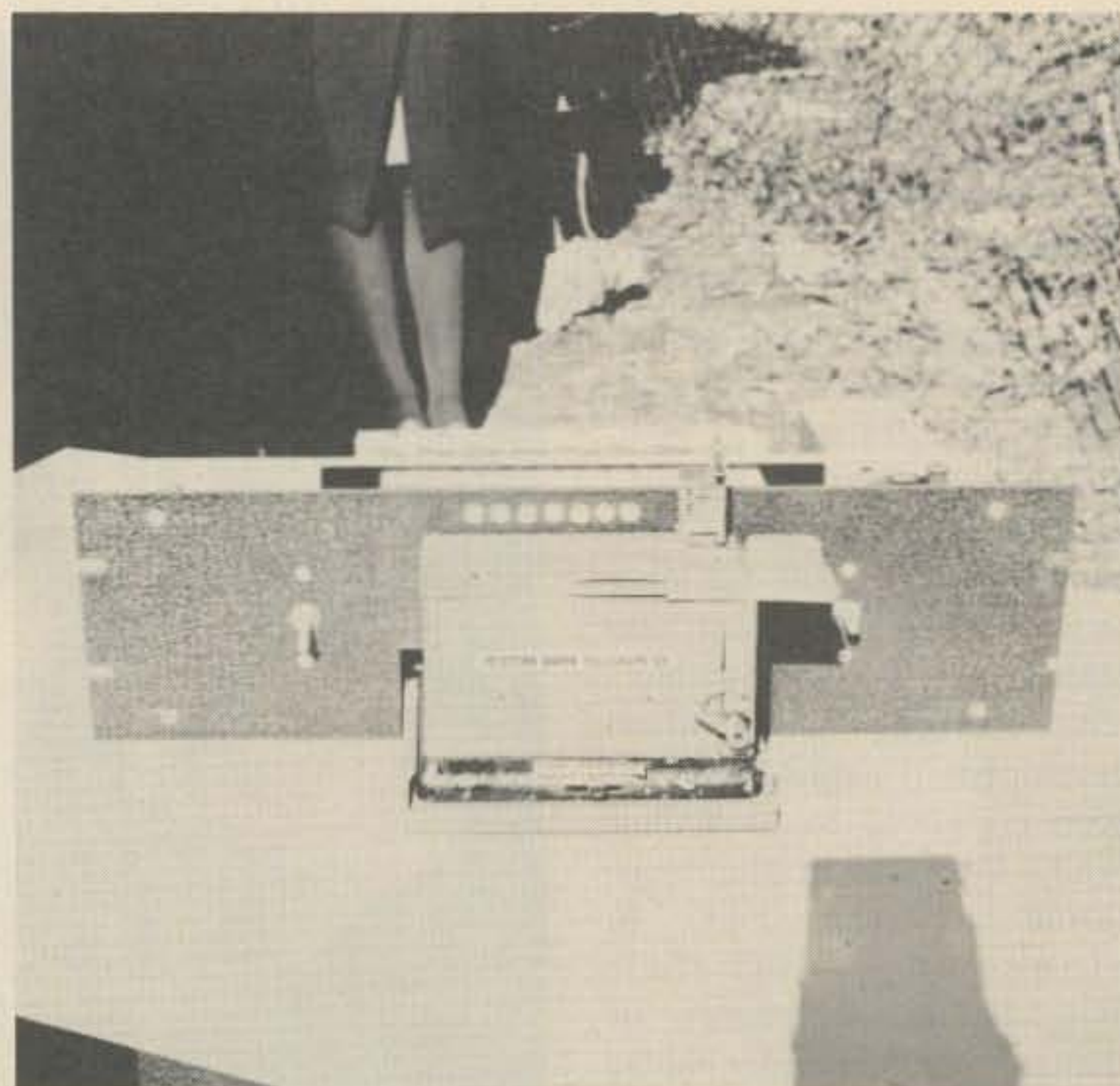
The requirement for Morse

Code identification of the RTTY station, which the FCC eventually admitted was not needed, irritated RTTY purists. Some retaliated with RTTY simulated Morse call-signs, others with very high speed CW, and some by ignoring the whole thing as much as possible.

It was RTTY that got me into publishing in the first place. I found myself working in a spot with a mimeo machine in 1951 ... they were rather rare at that time ... and within days the first issue of the "Amateur Radio Teletype Bulletin" was in the mail to those amateurs I



The Model 12 keyboard plugged into the big heavy table. It is dominated by the motor which drives the transmitting and receiving distributors. It was very noisy.



Punched tape drive. This is unusual in that it was built in about 1952 and had an electronic distributor instead of the usual motor driven mechanical job.

knew to be interested in the subject. I put this out monthly until I took over as editor of *CQ* magazine in January 1955.

As interest in the "Bulletin" grew, I shifted to offset printing, cramming as much as possible in the pages. By 1952 my column on RTTY started in *CQ*, and it was this that eventually led to

my becoming editor. My enthusiasm for RTTY and other technical innovations has been apparent in the pages of the magazines I have edited down through the years.

So here we are thirty years later ... the Model 12s are long gone, Model 15s are considered too old for most use, Model 28s are popular and

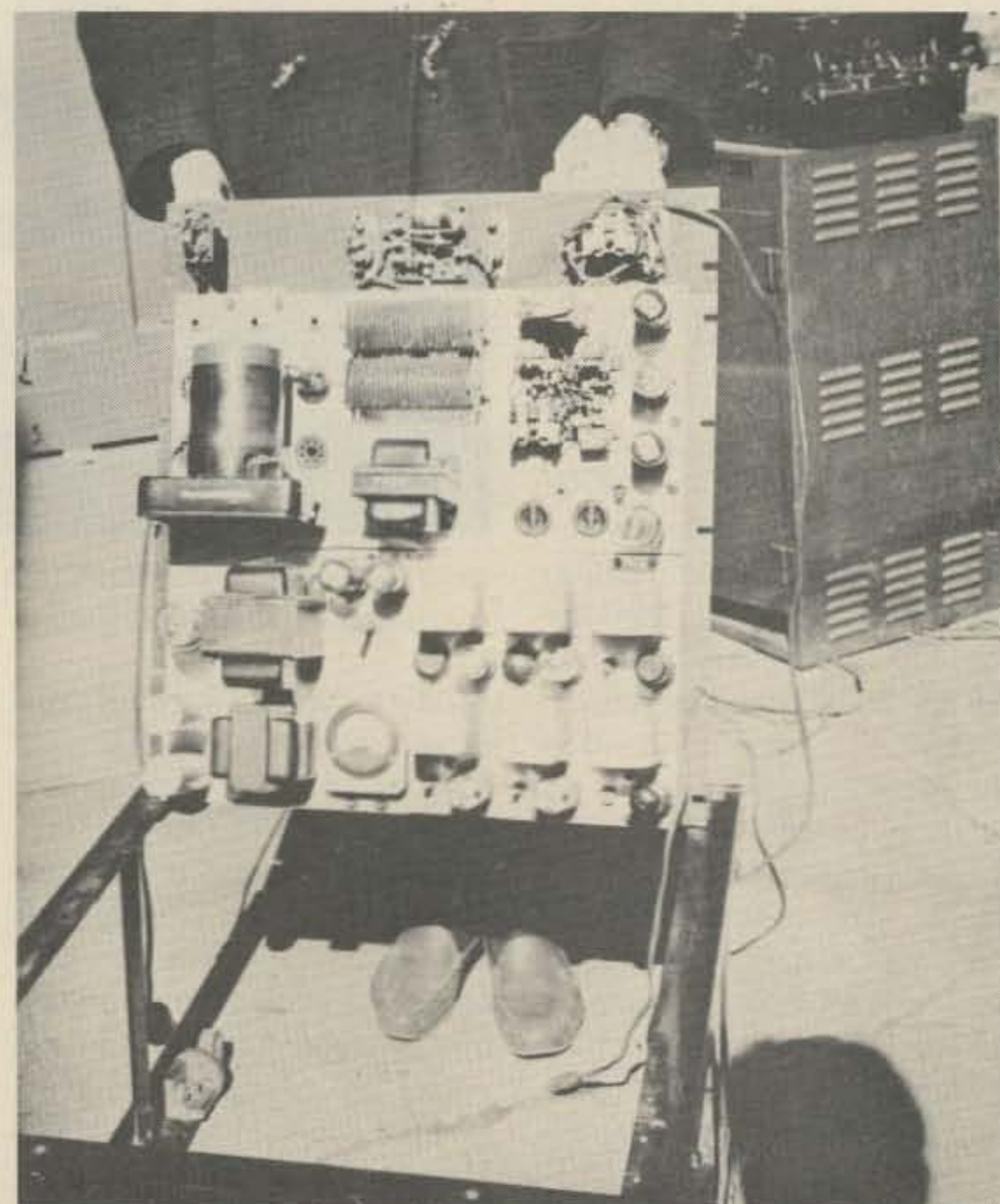
many amateurs are using Model 33s and 35s, which cost about as much in today's

dollarettes as the Model 12 in 1946.

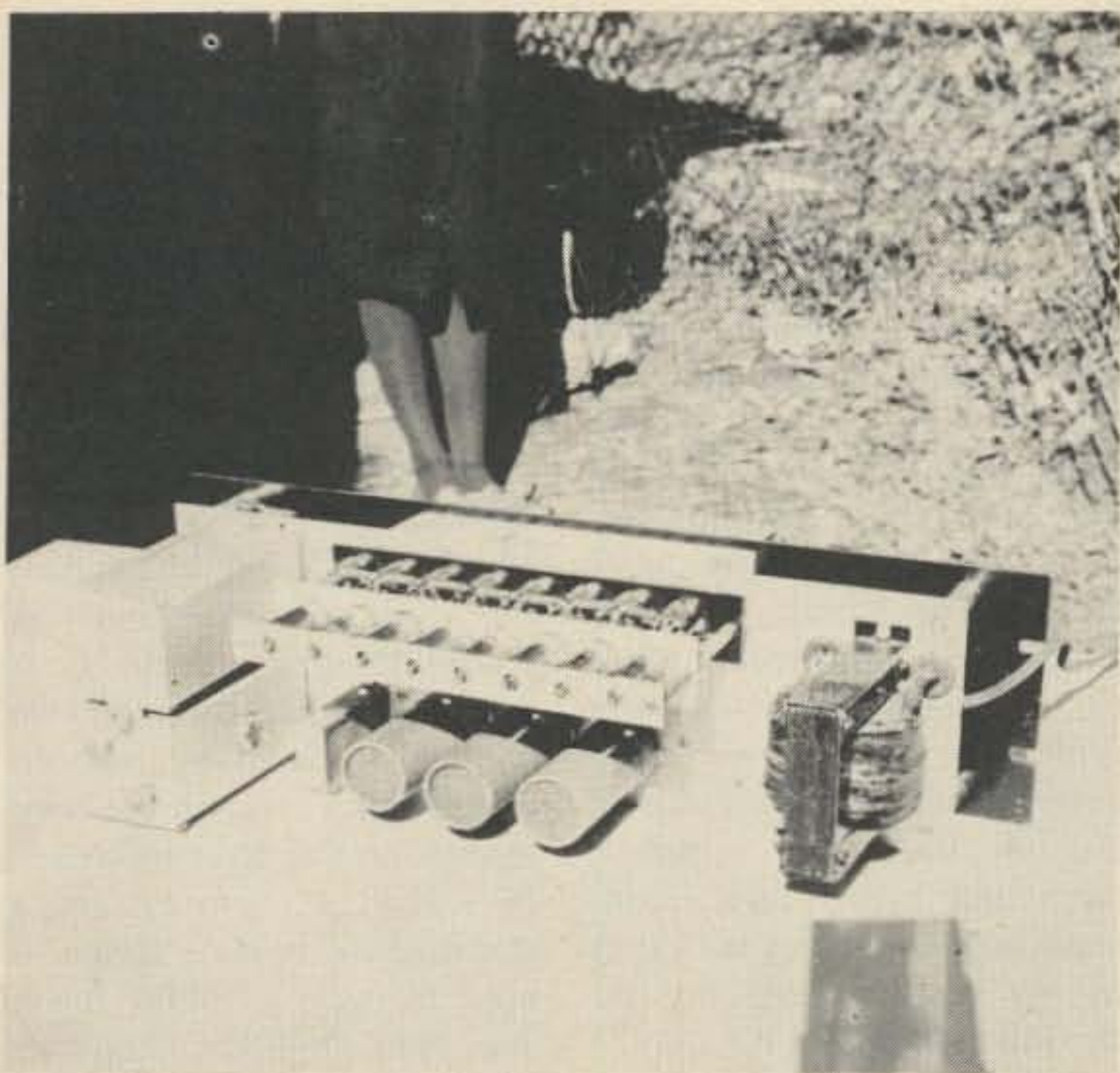
Even more popular now



The Model 12 was eventually replaced by the Model 15 (19) printer. Here is a photo of an operator using a Model 15 in the 73 ham shack in 1963 ... note key for Morse ID. We've always had nice operators.



This is the converter and control panel for the Model 12. Note the filters at the lower right ... three for the mark and three for the space tones of 2125 and 2975 Hz. Upper left is the polar relay for driving the printer magnets ... selenium power supply for the magnets ... autocall circuits on the upper right. This was designed and built by the grandfather of all RTTYers, John Williams W2BFD.



Back view of the electronic distributor showing plug-in tube module, power supply and AFSK tuned circuits.

are the video printing systems such as the HAL. A few amateurs are into generating RTTY or Morse via micro-computers and this seems to be the way things will be going in the foreseeable future. It costs less than a Teletype machine and is infinitely more flexible.

By the end of 1977 we should have several systems available for the lazy to buy

which permit you to type out your messages, edit them as you please, with often used paragraphs or even pages available in memory for instant recall ... and the ability to make contact via FSK of any shift, make-break ... and using any popular code such as Baudot, ASCII, or Morse (at any speed ... probably up to or over 100 wpm).



W2TLY, W2DXD and John Williams W2BFD.

It's quite possible that the RTTYers will be pioneering computer interfacing via radio, permitting exchanges of information, playing games, and a lot of things we haven't even considered as yet.

Oddly enough, RTTY, with its capacity for handling large amounts of traffic, has never been used much for this in amateur radio. Perhaps the same dichotomy which made ARRL HQ feel that they had to fight RTTY with every weapon at their disposal has been responsible. Traffic has, since the early days of amateur radio, been almost entirely an ARRL dominated function ... and the ARRL has never really come to terms with RTTY.

As far as I know, I am the only RTTY operator to ever make BPL using RTTY ... back in 1952 I set up my station on 42nd Street in New York and accepted messages for servicemen overseas at Christmastime. They were routed by two meter RTTY to DX operators and many thousands were sent to servicemen. This was all arranged by the local RTTY amateurs and the station was manned by volunteers for several weeks.

In all fairness to the League, it should be pointed out that RTTY never got to be simple enough for the uneducated amateur. It did

require a pioneering spirit that few of the traffic handling amateurs possessed. And the routine involved in traffic wasn't interesting to experimenters.

This may change as more and more RTTY equipment is made available which is relatively foolproof. One can foresee the ham station of a year or two from now with auto ID, auto search receiver, auto logging ... things like that ... and all spelled out by the built-in program so it tells the operator just what to do on the CRT.

There are more than a few amateurs who are so wrapped up in the past that they do not consider RTTY or computers as legitimate parts of amateur radio. Pity ... for not only are they preventing themselves from having a lot of fun, they are pressuring other amateurs and the magazines to preserve things as they used to be instead of looking to the future.

Needless to say (hopefully), I am most interested in what you pioneers are doing with RTTY and micro-processors in the ham field. There is no question in my mind that this is one of the most important developments in the history of the hobby. Don't forget to keep notes of your work ... and write articles so the rest of us can benefit by your work ... and enjoy. ■



Group of pioneer RTTYers at meeting on Long Island about 1951.