

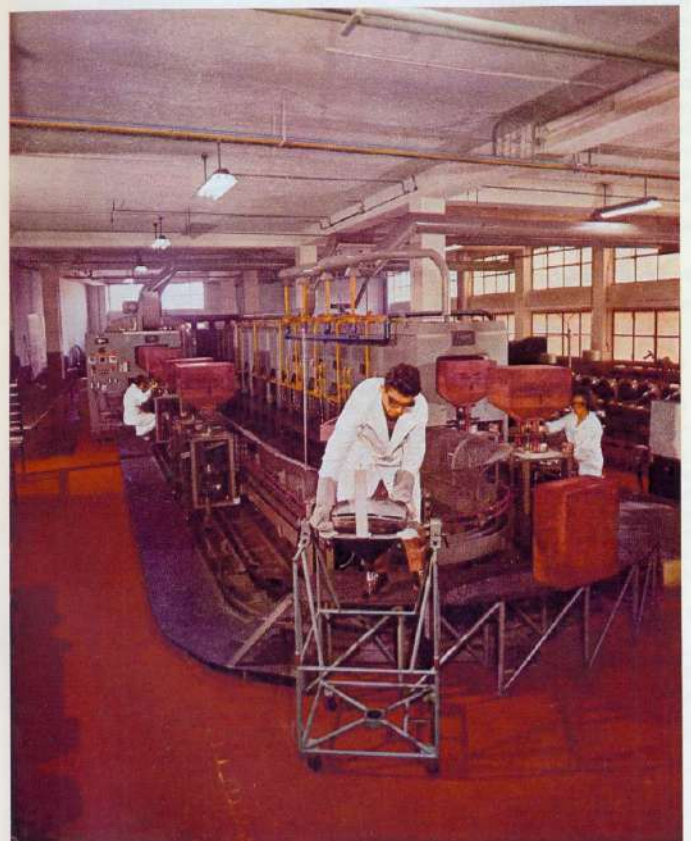


TUBE COLLECTOR

TUBE COLLECTORS ASSOCIATION
"HISTORY • PRESERVATION • APPLICATION"

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TUBE COLLECTOR
TUBE COLLECTORS ASSOCIATION, INC.
 PO Box 636, Ashland, OR 97520, USA



The Tube Collectors Association is a nonprofit, noncommercial group of individuals active in the history, preservation, and use of electron-tube technology. *Tube Collector*, its bulletin, appears six times per year.

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To join TCA: annual dues is \$20.00 (in North America; \$25.00 elsewhere), to the address above. Please make checks payable to "Tube Collectors Association." Payment by PayPal is welcomed, to tca@jkasystems.com. The membership year runs January-through-December. Those joining after February receive the year's back issues of TCA publications. Multi-year memberships are offered: in North America, \$37 for two years or \$54 for three; elsewhere, \$49 for two years or \$73 for three.

Articles on tube topics are invited. Editorial correspondence should go to the editor at tubelore@jeffnet.org or 102 McDonough Rd., Gold Hill, OR 97525.

Renewals: changes of address, and other membership business should go to Bob Deuel at tca@jkasystems.com or PO Box 636, Ashland, OR 97520.

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FRONT COVER: A continuous oven for baking-out TV picture tubes before exhausting, sealing-off, and getter-firing, at the Fabbrica Italiana Valvole Radio-Elettriche (FIVRE), ca. 1957.

Photo: Giuseppe Vulpetti

REAR COVER: A Telefunken ad from 1928 celebrating the 25th anniversary of the company.

Image: Bengt Svensson

MICROPHONICS FROM THE EDITOR



2011 MEMBER MEETING

Our 2011 event will take place on the afternoon of Thursday, July 7, at the Causeway Bay Inn (formerly Holiday Inn), Lansing, MI. The Michigan Antique Radio Club has invited us to meet just before their long-running and successful "Extravaganza" event on Friday and Saturday.

We expect to follow the general format of the 2009 meeting, held at the same place: talks, a state-of-the-Association report, and tube-trading. See the description in *TC* for Oct. 2009, pp. 5-7.



"Can you send over the same serviceman, please?"
Radio News, March 1940

"VALVE AND TUBE SUPPLIES" TRANSFERS TO "ASK JAN FIRST"

Rod Burman has transferred his inventory of tubes to Jan Philipp Wuesten. He continues to offer books, tube-data-on-

disc, and battery replacements. Wuesten is currently in the process of sorting out the tubes but should end up with an improved product line. Burman's old Web address, www.valves.uk.com, now becomes automatically translated to www.askjanfirst.com/rod. He continues to offer Adri de Keijzer's RCA HB-3 manual on CD-ROM and CV specifications on DVD, Keith Thrower's "Classic Years" book, and the Vyse-Jessop *Saga of Marconi-Osram Valve*.

GEORGE MIRAM

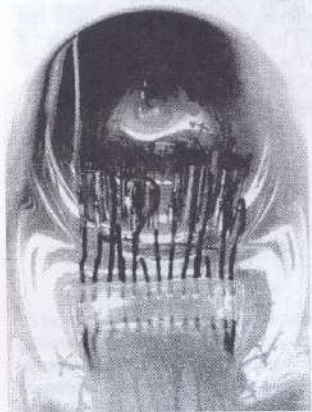
We are advised of the death of George Miram, a leading expert in the design of electron guns for high-power klystrons at Varian-Eimac, Calabazas Creek Research, and other organizations since 1963.

ELECTION TIME

Please exercise the enclosed Board ballot!

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Detail of the press

Radtke traced out the pinouts. In the quad type two of the filaments are wired out individually, with a common wire for the pair. The other two filaments are paralleled. In the triple version the filaments are brought out individually, sharing one common lead.

THANKS

To Messrs. Laing and Radtke for use of their photographs. - Ed.

REFERENCES

1. K. R. Thrower, *History of the British Radio Valve to 1940* (Ropley, Hants, England: MMA International Ltd., 1992, p. 129.
2. K. R. Thrower, *British Radio Valves - The Classic Years: 1926-1946* (Speedwell, Caversham, Reading, England, 2009, pp. 251-252.
3. -, Radio at the British Industries Fair," *Wireless World*, Feb. 27, 1929, p. A20.

RCA TUBE SUITS SETTLED

Radio Industries, Oct. 1931

Samuel H. Darby, Jr., of the law firm of Darby and Darby, recently announced that an understanding has been reached for the settlement of all of the anti-trust law suits instituted against the Radio Corporation by radio vacuum tube manufacturers who were not operating under license of the patents of the Radio Corporation of America. This understanding is with reference to actions brought against the Radio Corporation for alleged violation of the Clayton Act, by reason of the so-called "Clause 9" license agreement between the Radio Corporation of America and radio receiving set manufacturers.

The companies who joined in the understanding with the Radio Corporation are: DeForest Radio Company, Mellotron Tube Company, Vesta Battery Company, The Van Horne Company, Schickerling Products Corporation, Gold Seal Electrical Company, Universal Electric Lamp Company, Republic Radio Tube Company, Mutual Electric Lamp Company, Continental Corporation, The Sunlight Lamp Company,

Marvin Radio Tube Corporation, Radex Corporation, Globe Electric Company, Arcturus Radio Tube Company, Duratron Radio Tube Corporation, Gold Seal Manufacturing Company, Supertron Manufacturing Company, Cleartron Vacuum Tube Company, Diamond Radio Tube Company, and Poughkeepsie Gold Seal Company.

The settlement will include among its terms the acquisition of licenses under the patents of the Radio Corporation by active companies involved in the settlement, including the DeForest Radio Company, Gold Seal Electrical Company, Arcturus Radio Tube Company, Republic Radio Tube Company, and Diamond Radio Tube Company.

The arrangement will be very advantageous, not only to the parties, but also to the radio industry as a whole, because not only will disturbing litigation be satisfactorily terminated, but practically all important tube manufacturers will be licensed on equal terms under Radio Corporation patents with result that the industry should rapidly become stabilized.

F. I. V. R. E. Fabbrica Italiana Valvole Radio Elettriche

Abel Santoro, LU8DXI

The electron tube factory FIVRE (Italian Radio Electric Valve Factory), located in Pavia, Italy, was a company of the FIMM group.

In 1891 the Industria Elettromeccanica Italiana, a group which produced small electric motors and transformers, was founded by Mr. Ercole Marelli. On October 8, 1919, was founded the Fabbrica Italiana Magneti Marelli (FIMM), an association between Fabbrica Italiana Automobili Torino (FIAT) and Mr. Marelli's company. FIMM was intended to produce electrical components for vehicles and aviation engines.



The FIVRE factory building in Pavia

In 1922 this company began production of electrical equipment for engines. In November, 1929, by an accord between Mr. Giovanni Agnelli (president of FIAT) and Mr. Antonio S. Benni (president of the Ercole Marelli operation) was founded "Radiomarelli," a company with some 600 workers, located in Milan, which began manufacture of several models of radio receivers with the Radiomarelli trademark.

In this period the Managing Director of the science and research laboratories of this company was Enrico Fermi (*apparently not the Nobel-winner Fermi - Ed.*). It was thought desirable to make valves for the Radiomarelli receivers in Italy, thus reducing imports of these devices. Therefore, in 1932 was created the tube factory Fabbrica Italiana Valvole Radio Elettriche (FIVRE), which belonged to the Magneti Marelli group.

This factory, located in Pavia, began manufacture of American-designed tubes under license from the Radio Corporation of America (RCA), and with technical assistance and machinery supplied by RCA. (Later the machinery of this factory was modernized and made in Italy). Valves of European types were produced under a commercial agreement with Tungstam.

In 1935 the production of valves was some 500,000 per year, and in 1936 were produced 980,000.

FIVRE made a series of valves in purple glass, the "Serie Viola." Between 1930 and 1935 Radiomarelli attached to the valves used in their radio receivers, a sticker with the shield of the company inscribed: "The best in radio." The red square with a letter inside indicated the function of the valve. These stickers were applied to Arcturus Blue, Radiotron, FIVRE serie-viola, and FIVRE clear-glass valves.



View of the oxide-filament section

Later in 1938, a factory to make transmitting valves was opened in Firenze. This same location began to produce black-and-white picture tubes for television sets in 1952. Color tubes came later. In 1976 FIVRE extended the product line to monochrome data displays for both the civilian and military markets.

FIVRE made valves with the trademark "PARKER," which were sold in Argentina, and I think, in some other countries of South America. The company closed down definitively in 1992.

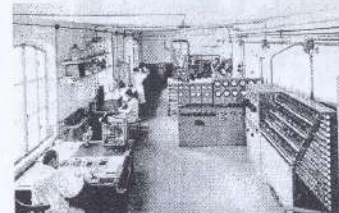
Acknowledgements: To the Italian gentlemen Dottore Marco Manfredini, Mr. Alessandro Depaoli, Mr. Carlo Bramanti, and Mr. Berti Benis.



Drawn profile machine. The wall poster encourages working in silence.



Another view of the filament section. The poster reads "Put initiative in your job and improve your position."



Receiver valve section, physico-chemical research and measurement



Partial view of the mounting department



The FIVRE factory in Firenze



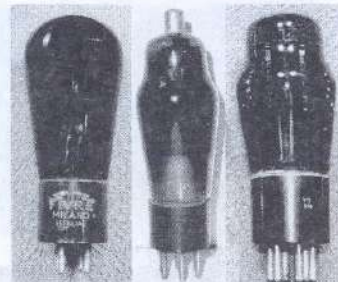
Storing getters in glass containers



DUE CASE MONDIALI

IN DUE OPPOSTI EMISFERI
ACCOMUNATE NEI DOMINI DELLA SCIENZA
PER IL DIVENIRE DELLA RADIO IN ITALIA

Ad about the RCA - Magneti Marelli collaboration (translated: "Two houses in two opposite hemispheres of the world united in the domains of science for the future of radio in Italy")



Examples from the Serie Viola in violet glass



FABBRICA ITALIANA VALVOLE RADIO ELETTRICHE

FIVRE ad, showing mostly US-originated tubes



Magneti Marelli logotype



Fabbricate le une in America e le altre in Italia le valvole Radiotron e le valvole Fivre differiscono solamente nel nome: la loro qualità è assolutamente identica!



Agente esclusivo: Consorzio Generali Radiotroniche Soc. An. Piazza S. Giovanni 10 - Milano - Telefono 81.91.000

FIVRE ad (translated: "Both perfect - one manufactured in America and the other in Italy, the Radiotron valve and the FIVRE valve differ in name only: their quality is absolutely identical!")



FIVRE ad (translated: "Transmitting, receiving and special valves, of all types and power")



Valve box: "The brain of your radio."
The tube bears a tax-stamp decal.



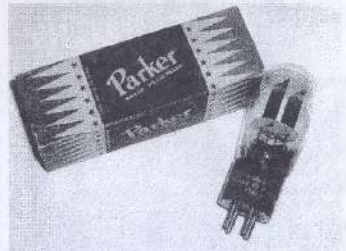
Carton for a 6AB4 / EC92



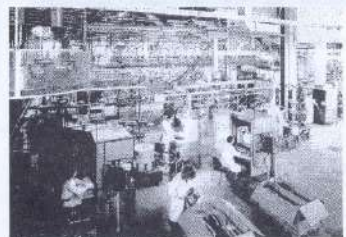
Sticker with the shield of Radio Marelli
(translated: "The best in radio")



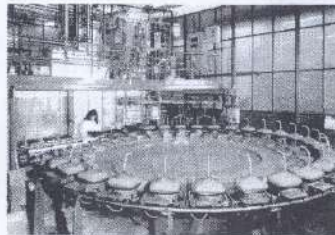
Valves with the shield sticker. The left one, in blue glass, has a glass-beaded mount that looks like Arcturus production - Ed.]



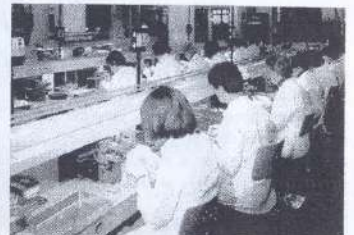
PARKER valve and carton



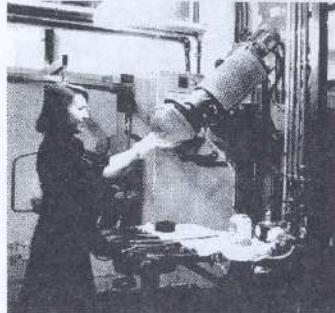
View of the FIVRE picture-tube factory



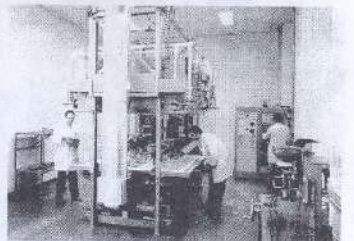
Setting the screen phosphor



Assembly of electron guns



Woman applying graphite coating inside the CRT



Evacuation pumps



Chemical laboratory



CRT bulbs entering the furnace (at right)

FIVRE NUMBERING PLANS

Transmitting tubes and thyratrons

- Example, 3 A 50
 3A, 3C, 3H, 3R: Power triodes
 4C: Power tetrode
 5C: Power pentode
 3G: Thyatron
 50: Plate dissipation (power tubes)

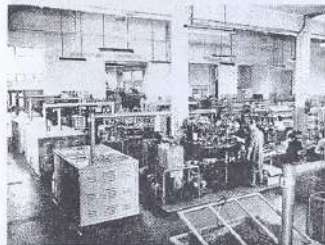
Italian Army types

- Example, 6 RV
 6: 6-volt heater
 RV: Voltage-amp. pentode
 R: Pentode
 T, TP: Output pentodes

From Gerhard Salzmann, *Röhrencodierungen der 20er und 30er Jahre* (Bochum: Verlag Dr. Dieter Winkler), 1988.

MORE ON F.I.V.R.E.

TCA member Giuseppe Vulpetti has provided some more details on FIVRE, in the form of a translation of a bulletin of theirs from September 1957 celebrating the 25th anniversary of the company's founding. It contained a number of photos of the Pavia and Firenze plants.

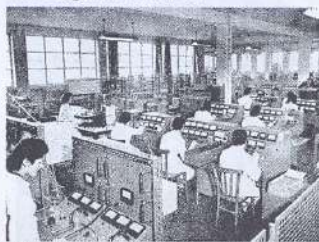


Exhausting and sealing-off receiving tubes in the Sealex department

This and later photos: Giuseppe Vulpetti

At that point the company had expanded its facilities (in 1954) and was making quartz crystals, power diodes, and transistors (both germanium and silicon). The facilities offered complete parts-forming capabilities, as well as a drawing mill for

specialty wires and ribbons for tube manufacture. It also made its own cathode coatings, basing cement, and other chemicals. Special production and testing equipment was being made in-house.



Production testing of receiving tubes

At that point the Pavia plant contained laboratories for electronic research, materials and physics studies, piezoelectric crystals, semiconductors, glasses, analytical and research chemistry, and electronic testing.

After WW II the company had formed agreements for technical exchanges with General Electric, apparently reducing or displacing the earlier arrangements with RCA. - Ed.

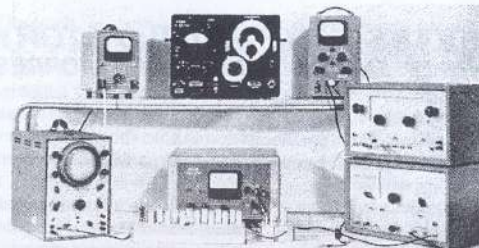
EDITORIAL NOTE

The 1954 issue of the Babani International Radio Tube Encyclopedia lists numerous octal tubes with American-style identifiers, pointing out FIVRE as their source. Most of these also appear in the 1957 Mikołajczyk Vademecum Lamp Elektronowych, again identified as FIVRE products. The types in question are as follows.

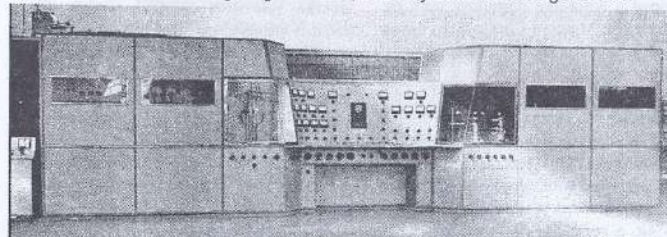
6AW4	Full-wave cathode-type rectifier	6EA7GT	Pentagrid converter
6AW5	Full-wave cathode-type rectifier (= EZ11)	6NK7GT	Pentode
6AY8G	Duodiode - power tetrode (= EBL1)	6PX8G	Output pentode
6BN8	Duodiode - pentode (= EBF11)	6PZ8G	Duodiode - output pentode
6BY8	Duodiode - beam power tube (= EBL1)	6TE8GT	Triode - hexode converter
6C9	RF pentode	12EA7GT	Pentagrid converter
		12NK7GT	Pentode
		12TE8GT	Triode - hexode converter

Equivalences with regular Philips types listed here are from the European Tube Manual issued by the U. S. Signal Corps - European Command in June 1947.

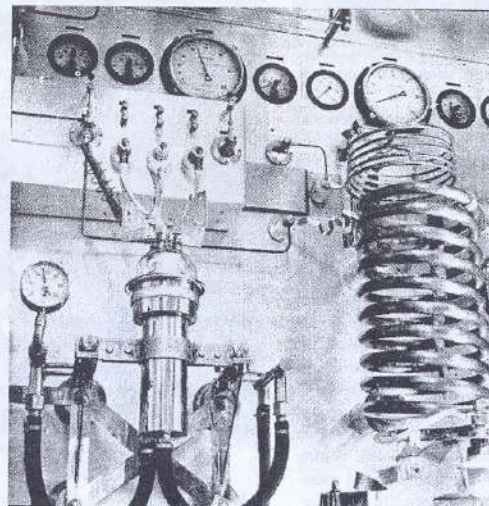
The FIVRE types do not appear in the Radio Manufacturers Association registration records. Some of these identifiers (6BN8, 6BY8, 6C9, 6EA7) were later reused for U. S. miniature types. - Ed.



Test bench for measuring noise figures of receiving tubes. Remarkably, all the equipment is American in origin: Hewlett-Packard meters, a GE 'scope, General Radio and GE signal generators, and Kay Electric noise generator.



Transmitting-tube test set at Firenze



RF power oscillator for testing power tubes, with water-cooled type in place