TUBE COLLECTOR

TUBE COLLECTORS ASSOCIATION

"HISTORY • PRESERVATION • APPLICATION"

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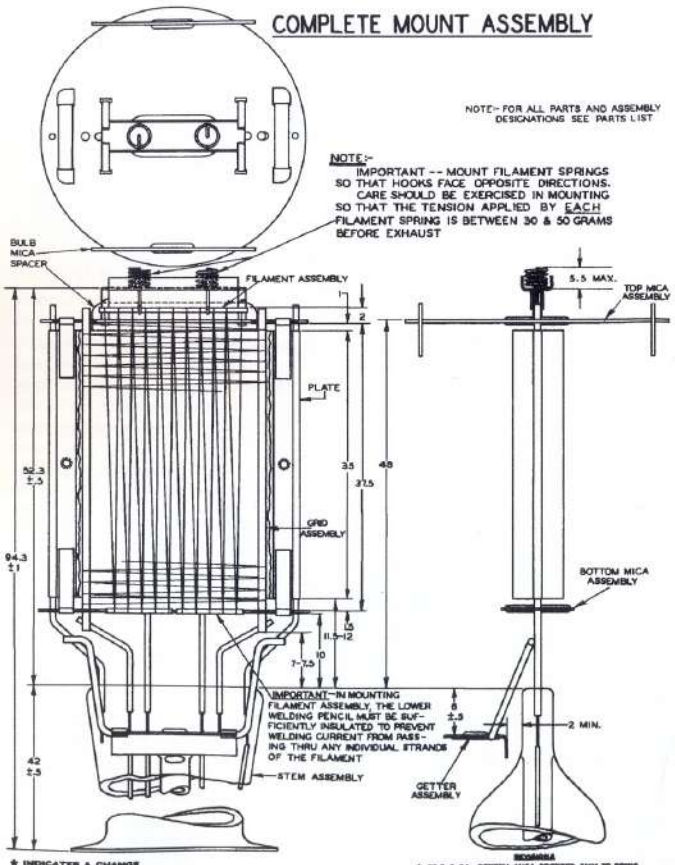
COMPLETE MOUNT ASSEMBLY



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.

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, $38 for two years or $56 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**.

FRONT COVER: The mount drawing for the now-eBaygenic "single-plate" 2A3 audio triode, with its 20 filaments. This original version carried a reputation for being hard to make in terms of equal tension on the filaments, and was soon superseded by new designs. The note about the tensioning springs testifies to this difficulty

Image: RCA Standardizing Notice 3-1-2A3, Sept. 13, 1934, in the Dowd-RCA Archive, a holding of the AWA Museum.

REAR COVER: A sales promotion urging radio users to take their tubes in for periodic testing. The art, adapted by *Radio and Television Retailing* magazine from RCA's RC-12 manual, was probably also offered as a store-display poster.

Image: Radio Service Shortcuts, 1940.

MICROPHONICS FROM THE EDITOR

2009 MEMBER MEETING

This is being written while we're ramping-up for this month's event. A full report will appear in the October issue, with election results, awards winners, and the rest.

THE DIRECTORY: HELP US OUT!

Each June, *Tube Collector* presents a directory of TCA members. Just afterward, a few members report that their listings, typically their email or Web-site addresses, are out of date. Well, folks, we don't have a TCA Bureau of Investigation to spy out such changes as they occur. If your address, or telephone number, or whatever, changes, please report the update to the Association post-office box or to tca@jkasystems.com. It'll be a service to everyone!

BOOK REVIEW

WHERE DISCOVERY SPARKS IMAGINATION - A PICTORIAL HISTORY OF RADIO AND ELECTRICITY

By John D. Jenkins. *Introduced 2009. 8-½" x 11" format, hard-bound, 204 pp., $34.95 from Antique Radio Classified* (www.antiqueradio.com), *Amazon.com, Barnesandnoble.com, and the Museum store. (If bought there, proceeds go to support the Museum.). ISBN 978-0-9794569-0-9.*

The American Museum of Radio and Electricity in Bellingham, Washington (www.americanmuseum.org) displays an extraordinary collection of artifacts from the "pre-history" of electricity to "modern" times. It comprises six galleries: "The Dawn of the Electrical Age (1600-1800)," "Electricity Sparks Invention (1800-1879)," "The Wireless Age (1880-1920)," "Radio Enters the Home (1920-1927)," "The Golden Age of Radio (1928-1950)," and - of particular interest to the TCA audience - "The Jones Gallery (1903-1980)." Developed by organizers John Jenkins and Jonathan Winter, the collection is housed in about 12,000 square feet of space. It conducts a good deal of community outreach via a low-power FM station with locally produced programming, an amateur station, and educational programs for students. Besides static displays, it offers hands-on experiences like operation of Tesla coils and an original Theremin.

The artifacts on display, and celebrated in the book, include a remarkable depth of collection, from European, British, and North American sources. The apparatus includes electrostatic generators; static-electricity capacitors; voltaic piles and early electromagnets; original and repro telegraph gear dating from the 1830s (a printing telegraph, dial telegraphs, Cooke & Wheatstone sets); early electric generators, motors, and lamps; induction coils and electro-"therapeutic" apparatus; lab equipment, early telephones, Marconi and American wireless gear (including a recre-

IN THIS ISSUE

PHILIPS ARGENTINA

Abel Santoro

I. A BRIEF HISTORY OF PHILIPS & CO., OF EINDHOVEN, HOLLAND

At the first International Electricity Exhibition in Paris in 1881, a young man 23 years old was fascinated with the incandescent electric light. The son of Frederic Philips, an enterprising merchant, and possessed of a fortune estimated at that time to be half a million guilders, Gerard Philips (Fig. 1), was born in Zaltbommel on October 9, 1858.

After attending secondary school in Arnhem, he enrolled at the Delft Polytechnic in 1876, as a student of civil engineering, but in his fifth year there, he moved on to mechanical engineering, attaining the Engineer degree in 1883.

In November, 1884, Gerard moved to Glasgow, Scotland, which was then the world center of shipbuilding and the place of the most advanced techniques for an innovative engineer.

Gerard here found a job as a mechanical engineer at a shipyard. With the idea of the incandescent electric light ever in mind, he read a series of 23 articles published in the journal *The Electrician* about incandescent lamps, which developed in him a strong professional interest in electrical engineering. In these magazines he saw the step-by-step manufacture of an incandescent lamp, explained in detail.

In the autumn of 1886, Gerard became an evening student at the Glasgow college and at same time enrolled at Glasgow University, which was headed by the physicist Sir William Thompson, the greatest electrician at that time. Gerard Philips here acquired many experiences in the practical aspects of electrical engineering, about to play a great role in his future.

On return to Holland, and with money from his father, on April 27, 1891, Gerard bought a suitable factory building (Fig. 2) in Eindhoven. This factory had a fairly new steam engine and boiler, and was constructed entirely of brick, with a size of 18 by 20 meters.

On May 15, 1891, Philips & Co. was founded. The factory was large enough to accommodate 60 workers and met the need for space until 1896, when the first extension was built.

In the early years of the company, the representation of the name Philips was formed by the initial letters and by the words Philips & Co. (Fig. 3).

The production of lamps in 1892 was 11,000, growing to 45,000 in 1893, which was exceptionally small in comparison with the other lamp factories in the Netherlands. Philips & Co. was the fifth entrant into incandescent-lamp manufacture there. Figure 4 shows an advertisement of Philips & Co., appearing in the journal *The Electrician* in 1893.

In December 1894, Anton Philips (Fig. 5), Gerard's younger brother, who had high commercial talent, began a race between Gerard the manufacturer and himself the salesman. In the Fall of 1898, Anton Philips used a range of postcards showing Dutch national costumes as marketing tools (Fig. 6). By 1899 the annual production of lamps had increased to 1,800,000, instead of the 100,000 for 1895.

By 1910, Philips had 2000 employees and was the largest single employer in the Netherlands.

In 1911 Anton bought the necessary equipment and technology to produce metal filaments with drawn tungsten wire, making the first Philips lamps with tungsten filaments (Fig. 7) that year.

With Anton's salesmanship the company continued to grow, manufacturing progressively newer types of lamps.

II: FROM INCANDESCENT LAMPS TO RADIO VALVES

Gerard Philips started physical research at Philips & Co., to make the company less dependent on external knowledge and foreign patents. On October 23, 1913, he put an advertisement in the *Nieuwe Rotterdamsche Courant* for a physicist who was to set up a research organization within the company. The ad attracted an excellent experimental physicist named Gilles Holst, 28 years old and a 1914 recipient of a Ph. D. de-

Fig. 1. Gerard Philips

Fig. 2. Original factory in Eindhoven

P & Co. *Philips & Co.*

Fig. 3. Early logotype.

PHILIPS & CO.,
EINDHOVEN. HOLLAND.
INCANDESCENT LAMP MAKERS.
PERFECTION IN ALL DETAILS. QUICK DELIVERY.
FIRST-CLASS ANGLO-AMERICAN REFERENCES.

Fig. 4. Philips advertisement, 1893

Fig. 5. Anton Philips

Fig. 6. Postcard for Philips lamps

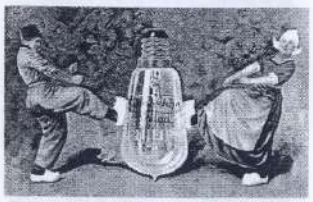


Fig. 7. Promotion for drawn-wire lamps. Bulb reads "Getrokken Draad / Philips"

gree. Holst became the founder of the Philips Research Laboratory "Natuurkundig Laboratorium" / Physics Laboratory (Fig. 8), later abbreviated "Natlab." Gerard Philips, highly pleased with Holst's work, visited the laboratory every Saturday morning.

In 1917, in the middle of WW I, a German hydroplane landed in the waters of Holland, which was neutral in this war. Dutch Navy officials discovered inside the plane a radio receiver with EVN94 valves, made by Telefunken (Fig. 9). The military, very interested in it, contacted Gilles Holst about the possibility of making some copies of these tubes for experimentation, but Holst argued that Philips "did not see any commercial interest in the device," the only focus of Philips at that time being light bulbs. However, the military request to "N. V. Metaaldraadlampenfabriek Holland" (Metal-Wire Lamp Works Holland) to produce these tubes was successful, and at the end of November 1917 they made the first radio tube fabricated in Holland (Fig. 10).

The Dutch radio pioneer Steringa Idzerda founded in 1918 the "Nederlandse Radio-Industrie" (N. R. I.). Idzerda's idea was the fabrication of radio receivers for popular use, but he needed several hundred valves per year. For this reason he first contacted "N. V. Metaaldraadlampenfabriek Holland" which had made the valves for the military. However, this factory had confidentiality contracts with the military, so could not sell radio valves to Idzerda.

Seeing this, Steringa Idzerda urgently contacted Gerard Philips, who personally ordered Holst to make three-electrode lamps at the Natlab. The first experimental tube for Idzerda was made by Philips in 1918. This same year Philips began the mass production of the "Ideezet" (Fig. 11), and by end of 1918 had sold Idzerda over 1200 valves. Idzerda proudly put an advertisement about these new tubes in the magazine *Radio Nieuws* of January 1919, using the "Ideezet" name.

After this experience Philips moved its research into new markets such as other radio valves and X-ray tubes, with the Natlab growing continuously.

By July 1919, Philips had three versions of the Ideezet tube, the types A, B, and C; and later Philips made the "Zendlampe" (Fig. 12), a hard-vacuum transmitting tube. In the following years, the demand for radio valves increased strongly, which raised the interest of Anton Philips in this new device made by his company. He saw that the impressive sales justified the building of a new radio-valve factory. By the end of 1922, production had increased to 1,000 valves a day!

In 1920 Philips took over the company N. V. Pope Draad-en Lampenfabrieken of Venlo, which had produced incandescent lamps in Holland before Philips. Later, Philips sold valves with the Pope brand (Fig. 13).

In 1924 Philips bought half of the stock of the Mullard Radio Valve Co. Ltd. in England. Philips began production of "Philips-Mullard" (P. M.) valves in 1925 with the types PM3 and PM4. In 1927 Philips purchased the rest of the stock, and the Mullard Radio Valve Co. Ltd., became a wholly owned subsidiary of N. V. Philips. Valves appeared under the brand name Philips-Mullard (Fig. 14). Philips continued to use the Mullard brand in the UK until 1988.

In 1931 Philips purchased the French valve company "La Radiotechnique," making in this factory only receiving valves of Philips types, sold under the brand name Dario. Philips made in Holland valves which were sold in Great Britain under the same name (Fig. 15).

At the end of November of 1931 was born the "Radio Valve Development Department," a new valve production plant located in Emmansingel. This laboratory was known as "Buizenlab" (the Tube Laboratory).

In 1932 Philips acquired the German tube maker Valvo, which became another subsidiary. In the year 1936 Philips bought the small valve factory of Società Anonima Zenith, in Monza, Italy, transforming it in a large industrial complex, in which were made numerous valve types and cathode-ray tubes.

Fig. 8. "Natlab" Physics Laboratory

Fig. 9. Telefunken EVN94

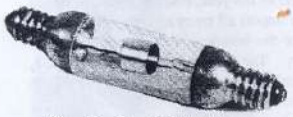


Fig. 10. First Dutch tube

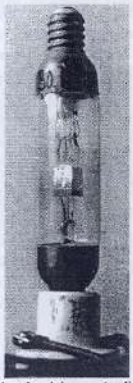


Fig. 11. An Ideezet - lighted!

Fig.12. Philips Zendlampe

Fig. 13. Pope carton

Fig. 14. "The experts"

Over the years the Natlab provided Philips with important inventions and patents. The first really important invention of the Natlab, was the "Pentode," devised in 1926 by Bernard Tellegen (Fig. 16). The pentode patent gave Philips a monopoly position on the European valve market. The first pentode made was the B-443S (Fig. 17).

In 1926 Philips had been represented by a logo with waves and stars (Fig. 18), later appeared on the packaging of the old Philips radio valves (Fig. 19). The waves symbolized radio signals, while the stars represented the ether of the evening sky through which the signals would travel. In 1930 was created the logo with four stars flanking the three waves, coming together for the first time in the now-familiar circle (Fig. 20).

In 1933 Philips made its 100 millionth radio valve, and at this point was the largest producer of valves in the world.

In 1938 the Philips shield made its first appearance. Although modified over the years, the basic design has remained constant since then (Fig. 21).

By 1939 the company employed 45,000 people worldwide.

In 1946 the Rogers-Majestic Corporation in Canada was taken over by the Philips organization. Here Philips continued making valves under the Rogers-Majestic label (Fig. 22).

III. THE ESTABLISHMENT OF PHILIPS & CO. IN ARGENTINA

The first contacts of Philips & Co. with Argentina were made at end of 1919, when some independent merchants began to import incandescent lamps from the Netherlands.

The first representatives of Philips & Co. in Buenos Aires were three men, Mr. Bosco, Mr. Vila and Mr. Marzoni, with offices at 1447 Rivadavia St. in the city of Buenos Aires. Later, in 1923, the three established the "Philips SAECO" (Philips South America Export Company) as a subsidiary of N. V. Philips Gloeilampenfabrieken.

Philips SAECO began at 970 Moreno St. in Buenos Aires, with 350 employees dedicated to the commercialization of electrical and electronic products imported from Holland, which were soon offered in the local market. In May 1929, Philips gave the first exhibition of television in Argentina, with the Nipkow scanning disc, in Buenos Aires, to which was specially invited Ms. Josefine Baker, the famous American/Parisian dancer, as a promotion.

In early 1930, Philips SAECO started importation of radio receivers. In 1934 an incandescent-lamp plant opened at 527 Herrera St., Buenos Aires (Fig. 23). Here were made lamps for the general Argentine market and for the companies Osram, Ericsson, and General Electric. One of the biggest factories in Argentina had been born.

On June 19, 1935, Philips SAECO became "Philips Argentina Sociedad Anónima de Lámparas Eléctricas y Radio." Its director and vice president was Mr. Cornelio G. H. Van Luyt (Fig. 24). This year the (now) Philips Argentina began construction of radio receivers, made principally by women (Figs. 25 and 26). At end of the year, Philips Argentina began to import all types of high-power valves for the broadcast industry of this country. The 30 kW broadcast station LS8, Radio Sténtor, was built entirely by Philips Argentina.

At end of 1938 was born "F. A. P. E. S. A." (Argentine Factory of Electric Products, stock company), a firm created by Philips Argentina to produce electric components. This company began work in the Philips factory at 527 Herrera St.

In 1940 F. A. P. E. S. A. began making radio valves. In 1941 Philips Argentina had some 1,100 employees. At end of the War the factory was moved to a new building located at 3892 Vedia St., Buenos Aires, known as the big Philips factory of today.

On July 14, 1944, on a large property on Vedia St., were placed the foundation stone and a time capsule with certificates and several coins of the day, inside the glass bulb of a big electric lamp. The move of the factory to the new Vedia St. address began in April 1945 and was finished in September.

At this point Philips created a second trademark, "Franklin," with lower-pric-

Fig. 15. Dario carton design


Fig. 16. Bernard Tellegen


Fig. 17. B-443S pentode


Fig. 18. 1926 waves-and-stars logo

Fig.19. Early carton design


Fig. 20. 1930 waves-and-stars logo

Fig. 21. Shield logos, 1938 and 2004

Fig. 22. Rogers-Majestic carton

Fig. 25. Assembling receivers

Fig. 23. Lamp plant in Buenos Aires

Fig. 26. Making loudspeakers

Fig. 24. Cornelio G. H. van Luyt

Fig. 27. Philips factory in the '60s

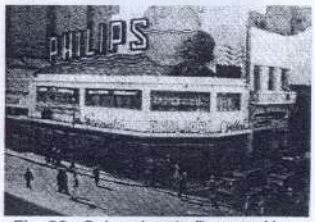


Fig. 28. Sales shop in Buenos Aires

Fig. 29. Label of Philips-Argentina vinyl record

Fig. 30. Symbol-rich SAIRA advertisement

Fig. 31. Philips Argentina carton

Fig. 32. Another Philips Argentina carton

Fig. 33. Miniwatt carton

Fig. 34. FAPESA Miniwatt carton. Note image of Rimlock 8-pin miniature tube.

Fig. 35. FAPESA carton

Fig. 36. Another FAPESA carton

ed products. In September 1945 F. A. P. E. S. A. also moved to the new Philips Argentina building.

In the new plant (Fig. 27), Philips made receiving valves, transmitting valves; and transmitters for broadcasting, the Argentine Navy, and export.

The television era in Argentina began on October 17, 1951. Philips had imported from Holland the first 4,000 television sets, which sold very quickly in Buenos Aires. In the mid-'50s Philips Argentina began production of television sets with very good results.

By the Fall of 1959, Philips Argentina had eight head offices strategically placed across the country, with 15,000 sale locations for electric lamps, 2,500 sales offices for radio receivers, 2,000 locations for home appliances, 1,800 stores for music records and 500 authorized service shops. Figure 28 shows one of the first typical authorized Philips sales shops, placed at the corner of Corrientes Ave. and Maipú St. in downtown Buenos Aires. In the year 1961, F. A. P. E. S. A. moved to a field of 36,000 square meters in La Tablada county, not far from the Philips factory. Here in La Tablada were built several buildings of the factory complex controlled by Philips. In 1961 F. A. P. E. S. A. began producing the rest of the electronic components needed by Philips to make radio and television sets: capacitors, resistors, potentiometers, coils, transformers, etc. In the '70s, Philips Argentina put vinyl phonograph records on the local market under the name "Phonogram," later "Poly Gram," the enormously successful brand. Figure 29 depicts the local Philips record label.

IV. THE FABRICATION OF RADIO VALVES BY PHILIPS ARGENTINA

The first valve factory in Argentina was the "S. A. I. R. A" (Sociedad Anónima Industrial Radiotelefónica Argentina), as shown in the advertisement of Fig. 30. This company was founded on November 28, 1933, by the businessman Mr. Teodoro Prieto. The S. A. I. R. A. factory produced its first valve on July 20, 1934. This company ran well, making a line of valve types until 1939, when it was taken over by Philips.

In mid-1939 Philips Argentina established an association with Mr. Prieto, the president of S. A. I. R. A. and of the "Radio Prieto Society." The latter was making radio receivers and held two broadcasting licenses, "Radio Prieto" and "Radio Argentina." After this association, Philips Argentina took possession of both broadcast stations, which became controlled by Philips.

With respect to the S. A. I. R. A. factory, it became controlled by Philips about the year 1940. In this year Philips Argentina began the production of radio valves with the Philips brand. In Figures 31 and 32, where one can see a stamp "Industria Argentina" and a sticker "Revised Industria Argentina." These were the first boxes used by them. Other brands were (Fig. 33), F. A. P. E. S. A. Miniwatt (Fig. 34) and F. A. P. E. S. A. (Figs. 35 and 36), all made in Argentina by Philips, winning control of the local valve market.

At end of 1961, F. A. P. E. S. A. began making electronic components. The valve types made by this company began in 1940 with the series "Philips Miniwatt," European and American types, the "Red series," the "Gold series," the "Argenta" (a line specially made for the Argentine market), "Miniature" type, "Noval" (nine-pin miniature) type, and "A-Technique" (Rimlock) type. There were also picture tubes with 90° and 110° deflection and 21" screens. High-power valves for industry and for the radio and TV broadcast markets were also made here. The parts of each valve: glass envelopes, cathodes, grids, plates, etc., were made by F. A. P. E. S. A. (Figs. 37 and 38).

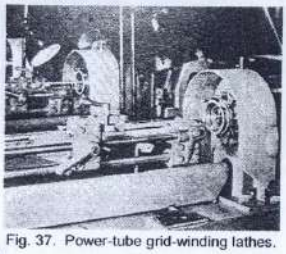


Fig. 37. Power-tube grid-winding lathes.

Fig. 38. Assembling an 833 in the F. A. P. E. S. A. plant.

THE ARGENTA VALVE SERIES

Argenta valves were a line made especially for the Argentine market, launched by Philips Argentina in 1940 (Fig. 39). They were divided into two series:

The "U" series was intended for radio receivers working on alternating or direct current. These valves had a very low heater current, only 100 mA, a third of the current of the common American types. The series included a magic eye of the same characteristics. Figure 40 shows an advertisement for the Argenta valves 13BC1U (a duodiode-triode) and 25AC1D (a diode-triode).

The "D" series comprised interesting valves for battery-operated radio receivers, with filaments operated at 1.4 V and only 25 mA. The line included a magic eye of the same characteristics.

Fig. 39. "Buzz" for the Argenta line.

Features of the Argenta line:

1. Very low heater/filament current.
2. Multiple valve types in one bulb.
3. The magic eye of the "U" series had dual sensitivity for long-wave and short-wave receivers.
4. The "U" series was intended to work between 100 V and 250 V on the plate; the "D" series between 90 V and 135 V.
5. The "U" series used different heater voltages for series connection, maintaining the total current at 100 mA.
6. Octal American bases, which were widely used in this country.
7. External metallization in a bright silver color.

Figure 41 shows an advertisement of some types of valves made by Philips Argentina at the time of World War II. The advertisement says: "The scarcity of raw materials for making electron valves in this country during WW II was not an obstacle for Philips Argentina, which made a complete line of rectifiers and transmitting valves, the pride of the Argentine industry."

V. PHILIPS ARGENTINA EPILOG

In 1982 F. A. P. E. S. A. changed its name to "Austral Factory of Electric Products Stock Company" and moved to the city of Rio Grande (Fig. 42), in the Tierra del Fuego territory at the southern limits of Argentina, making here only home appliances. In 1990 this factory was sold to Whirlpool.

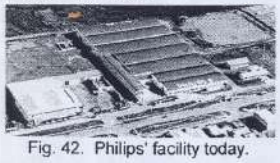


Fig. 42. Philips' facility today.

After all these years, Philips Argentina continues in operation selling TV sets, audio equipment, illumination products, and small home appliances. One can see in Figure 43 the last logo of this company in use today in the world.

PHILIPS
sense and simplicity

Fig. 43. Modern logo.

Fig. 40. Argenta "new series" valve advertisement, covering the 13BC1U (100-mA AC-DC) and 25AC1D (battery) spray-shielded tubes. "New eloquent examples of the high quality and valuable characteristics that Philips offers in its new Argento series of valves."

Fig. 41. Some power tubes made by Philips in Argentina. At far left, the TA18/100 70-kW triode. In the center: a group of U. S. -designed types plus, below the "S" in "Argentinas," the PP05/25. At far right, the TA12/20 18-kW triode. "World-wide Experence at the Service of Argentine Industry."

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ACKNOWLEDGEMENT

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THE "NATIONAL" 6-PIN BASE

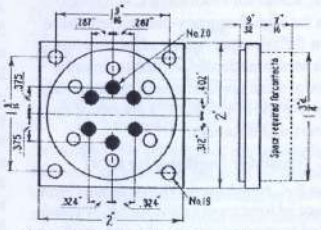
The National Company, American maker of short-wave receivers, introduced a unique six-pin base for its plug-in coils in the early '30s. It used two clusters, of differing width. of three pins each. The pins were of the same diameter. There has been discussion on the Web in recent times as to why the company didn't use the standard six-pin tube-base format. The view has been expressed that National cynically devised an incompatible design in order to prevent others from making coils to fit its radios.

With a little research, it falls out that National designed its base quite a while (in "radio" terms) before six-pin tubes existed. The coils originated with the "Thrill Box" (SW-5) receiver, described in the June 1930 issue of *Radio News*. By contrast, the first six-pin tube was the Wunderlich A detector, announced by Arcturus on March 17, 1932. It was quickly followed by RCA's 55, announced June 30 of the same year. Later six-pin types included the 89 of about July.

The Web discussion was complicated by mention that the National AGS receiver of 1932 used both the odd plug-in coil format and the six-pin 89 tube. It was pointed out that the Tung-Sol data sheet for the 89 is dated Nov 21, 1928, considerably predating the National base format and rein-forcing the theory of marketing monopoly on the company's part. Well, Nov. 21, 1928 is indeed the date on the first page covering the 89 in the old Tung-Sol multi-volume data binder. However, the obverse page is dated Nov. 21, *1938*, a much more plausible date and consistent with neighboring sheets in the binder.

The old-time joke was "never buy a car that was made on a Monday morning or a Friday afternoon." Well, Nov. 21, 1938 was a Monday. "Never trust a data sheet that was typed on a Monday"!

Thanks to Al Klase, National enthusiast, for bringing this matter up. Announcement letter on the Wunderlich, courtesy of Joe Knight. - Ed.



Socket to take the National base.