California Radio: Bruno and Connie Zucconi Remember

An historical note by Bart Lee, K6VK, Archivist, and Fellow, CHRS, AWA,
from many pleasant conversations with Bruno Zucconi

Bruno Zucconi, CHRS, turned 98 years old in late August 2020. Bruno and his wife Connie, now 95, appear here:

Some of their recollections follow (after a word about Remler):

Elmer Cunningham founded the Remler Radio Manufacturing Company about 1918 in San Francisco. Remler is Elmer backwards and an additional "r". Cunningham bootlegged early vacuum tube triodes from an Oakland factory, much to the annoyance of Lee de Forest. Cunningham then joined RCA. RadioMuseum.org lists Remler products from 1921. Remler had its second factory at 2101 Bryant Street at 19th Street. [1]

[1] See: www.geojohn.org/Radios/MyRadios/Remler/Remler.html
http://classicradiogallery.com/remler_history.html

Bruno's Scala Radio Company[2] was across the street from the Remler factory. After a fire, Remler relocated to the four-story building on Bryant Street. Remler had evolved into Remler Company, Ltd. Bruno and Remler Chief Engineer Harry Greene, II frequently enjoyed lunch together at nearby restaurants on 18th and 20th streets, near the Reliable Sheet Metal Company.

Bruno knew Harry Greene very well. Bruno says: "He was a hellofa nice guy!" Greene was a quiet man, straight-laced and nice to all. Bruno's business, Scala Radio, was very near to Remler in San Francisco. Bruno notes that in those days "Everyone was always scrambling for business."

David Packard and Bill Hewlett wanted their fellow Stanford grad Greene to join them in their new start-up, according to Bruno. Greene was, however, less entrepreneurial and opted for a "real" job with Remler. Greene had two partners at Remler, likely Thomas B. Gray and Ernest G. Danielson, because they were in the company name for a while before it reverted back to "Remler" in 1931.

Whence the Remler "Scotty" ® radio trademark according to Bruno: In the 1930s, a nearby plastics company in San Francisco sought markets for its new Bakelite plastic. They could make a plastic case of some small dimension. They wondered if Remler, *i.e.*, Greene, could put a radio in such a small plastic case. He could. So he designed what became the Scotty to fit, and the rest is

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[2] Bruno says he adopted the name "Scala" for his company, when starting out in Hi-Fi, in the late 1940s, because *La Scala* opera house in Milan was well known, "Scala" can also mean scale, and he didn't see any benefit from calling his new business the Zucconi Company – because, as he says, "who knows from Zucconi?"

radio history, or at least local radio lore. Greene had very much wanted to make a midget radio. He did the schematics for the sets.

He had brought drawings to Magnavox in Oakland, but they turned him down. He then worked with the San Francisco company that formed Bakelite plastic. That company agreed to make the cabinets to expand their market into radios.

These became the San Francisco Remler Scottie home radios: small, simple, two knobs, one band, AC/DC, and *charming*. [3]

Internet Sourced Photo

President Roosevelt had a Scotty terrier, and some say the name derived from that presidential pet.

[3] See: https://worldradiohistory.com/Archive-Broadcast-Weekly/1933/Broadcast-Weekly-1933-05-28.pdf at page 16: "The Remler Scottie Makes Its Debut".

The earliest Scottie listed by RadioMuseum.org is 1936, with another at 1940. After World War Two, many models came out.[4]

Remler very early on had had some experience with Bakelite, because it used it in some of the parts it sold. Remler manufactured the later Scotties. In *Remler Reminiscences* by Rick Ferranti,[5] he notes:

> "If you ever see the letter 'g' on a Remler radio schematic, it's because the set was designed by Harry Greene II, Remler's chief electronics engineer from the 30's to the early 70's."

Ferranti adds that Greene's sons Clay and Dick worked for Remler during World War Two. John Kaar, then a young ham radio operator, also worked for Remler and later founded Kaar Engineering Company in Palo Alto. After the demise of its consumer products, Remler survived until the 1980s on military contracts, *e.g.*, the air navigation receiver R-122 of the 1950s.

Bart Lee collection and photo.

[4] See: www.radiomuseum.org/m/remler-co_usa_en_1.html
[5] See: *CHRS Journal*, June 1993: http://antiqueradios.com/chrs/journal/reminiscences.html

Ed Nolan

Bruno also recalls his pleasant friendship with Ed Nolan, who was the Chief Engineer (V.P. for Engineering) with another northern California electronics company, Farinon, now part of Harris. (Among other things, Farinon made modems.) Nolan was known to be open-minded and personable. According to Zucconi's daughter Lin, Bruno admired Ed Nolan very much. Connie and Ed Nolan's wife were also good friends. Bruno and Connie Zucconi and the Nolans were quite close in Ed Nolan's later years. Bruno notes that both Harry Greene and Ed Nolan came from Weed, California, although several years apart.

Jack Moseley:

Bruno also knew and worked closely with broadcasting pioneer Jack Moseley. According to Lin, the Mosely family and the Zucconi family were very close. Lin recalls:

"We used to meet them in Yosemite for a long 4 day weekend every New Years. We'd all stay at Camp Curry or one of the little cabins at Yosemite lodge. Then we'd all go sledding together. Very fond memories. I'd say that this was in the late 50's and early 60's. [M]y Mom slipped and broke her wrist trying to pull a sled with my little sister over an icy dirty spot under a tree. We all went to the little hospital inside the park where they x-rayed and bandaged her wrist."

Moseley enjoyed amateur radio for decades as W6ERD. His obit says, in part:

"Jack [Moseley] worked 1951-1953 at Raytheon Manufacturing Company in Point Mugu, California, from 1953 to 1955 at Lear Inc., Santa Monica, California, before returning to Santa Barbara in 1955 … He was a pioneer in radio and television broadcasting. In 1959 he

founded a company in his garage, Moseley Associates, Inc., which was dedicated to the research and development of remote control equipment for the radio and TV industry. He was the first to develop a wireless audio link between radio stations and mountaintop transmitters, one of the first being used by Santa Barbara station KTMS-FM. As the business expanded, it rapidly outgrew Jack's garage, first relocating to a commercial/ manufacturing office … in Santa Barbara.…

"Moseley Associates, Inc., expanded into remote control systems, FM exciters, stereo generators, subsidiary communication generators, digital control systems and satellite earth station control systems. By the time of his retirement in 1977, Moseley Associates had grown to over 130 employees…. Moseley Associates is still in existence today and headquartered in Goleta, California."[6]

Moseley wanted to buy a directional gain antenna from Bruno's Scala Radio for a broadcasting relay. According to Bruno, Moseley had about 30 employees at the time. He intended to capture signals from atop a high ridge or mountain, and then beam them down to televisions in the valley or lowlands.

Bruno had already built a parabolic reflector dish. Moseley then said he didn't need that much gain. He said just make a "Miniflector" — so Bruno made it a smaller half parabolic shape, cutting off the top and bottom.

Moseley told Bruno he could use the term "Miniflector" as his own.

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[6] See: http://lakecitysilverworld.com/SWN16/2018/08/31/jack-moseley-91-year-old-california-entrepreneurs-love-for-lake-city-improved-quality-of-life-in-myriad-of-ways/

So Bruno then trademarked "Miniflector" for Scala Electronic Corporation:

Serial Number
73275590
Registration Number
1200895
Word Mark
MINIFLECTOR
***
Filing Date
1980-08-25

Bruno says that he sold the Miniflector ® only to Moseley. Moseley used them for studio and transmitter links.

Moseley brought television to Yosemite Valley. A receiver at great height captured the signals. Then an early "translator" (a technology pioneered by Dr. Byron St. Clair) rebroadcast them down into the Valley. Bruno's antennas handled the signals on both ends of the circuit. He once got flowers with a card saying, "Thank you for bringing TV to Yosemite!" Bruno also helped put in translator systems in Hawaii — once using filters in tin cans. They were hand-made but worked well, to the surprise of some. He also facilitated television into Reno, Nevada. Lin says:

"He tells stories about installing antennas at the top of Mt. Rose and how severe the weather was in winter. I know it because the Reno and Sacramento NPR stations still lose their substations that broadcast to Truckee/Tahoe every few winters and the outage lasts for months, often until the summer."

Bruno says that the ARRL HANDBOOK frequently inspired his technological progress. And so did Pythagoras: he remodeled at the last minute a Scala antenna housing he had made for the FBI, when he realized that a right-triangle configuration would be stronger and more weather-proof.[7] The improvement found immediate favor with the Bureau. He had a good relationship with other three-letter US agencies (one of which insisted that he block outside visual access to his office in San Leandro). Lin reports:

"He also worked with the FBI to install antennas at the LBJ Ranch when Johnson was President. He worked with Robert Slager who was head of communications for the FBI. He has a picture that Slager took of him sitting on the floor leaning against a wall bent over asleep at the Ranch. Dad and Slager also became friends."

The Vatican bought Scala antennas from Bruno. Herb Caen of the *San Francisco Chronicle* noted this in his column, as Scala pioneered globalism.

Scala's successors still use the Miniflector ® trademark for the half-parabolic antenna. Bruno says that as far as he knows, there are 3,000 remaining in service, around the world. Bruno later sold his company, Scala, ultimately to Kathrein Broadcast GMBH of Germany. Kathrein has now sold the Scala antenna division to the Swedish telecom Ericsson —*Telefonaktiebolaget LM Ericsson*. So his old company has also seen the world – just as have his antennas, including C.I.A. service and the Vatican.

[7] CHRS has an example of this housing and the Scala antenna Yagi it was made for.

Bruno was closest to Jack Moseley and Ed Nolan. The Bruno Zucconi and Jack Moseley families once enjoyed a family vacation together at Christmastime at Yosemite. One of Bruno and Connie's daughters once stayed for a while with the Moseley family in Santa Barbara.

Making Antennas: Rosie-The-Riveter at Scala Radio

Scala Radio in San Francisco started in Hi-Fi, then home TV antennas, then high-performance, rugged VHF antennas for government agencies (many of the three letter kind) and the cable TV industry.

A Lady Machinist at Scala Radio, 1960s

In the 1960s Scala produced these antennas in the South of Market, which was then an industrial area. Scala's factory looked over to the Remler factory across the street.

Making these antennas required machinists. Bruno and Connie Zucconi, the founders and owners of Scala, provided these photos to the CHRS archives. The first is that *rara avis*, a lady machinist. Her name, alas, is lost in the mists of time.

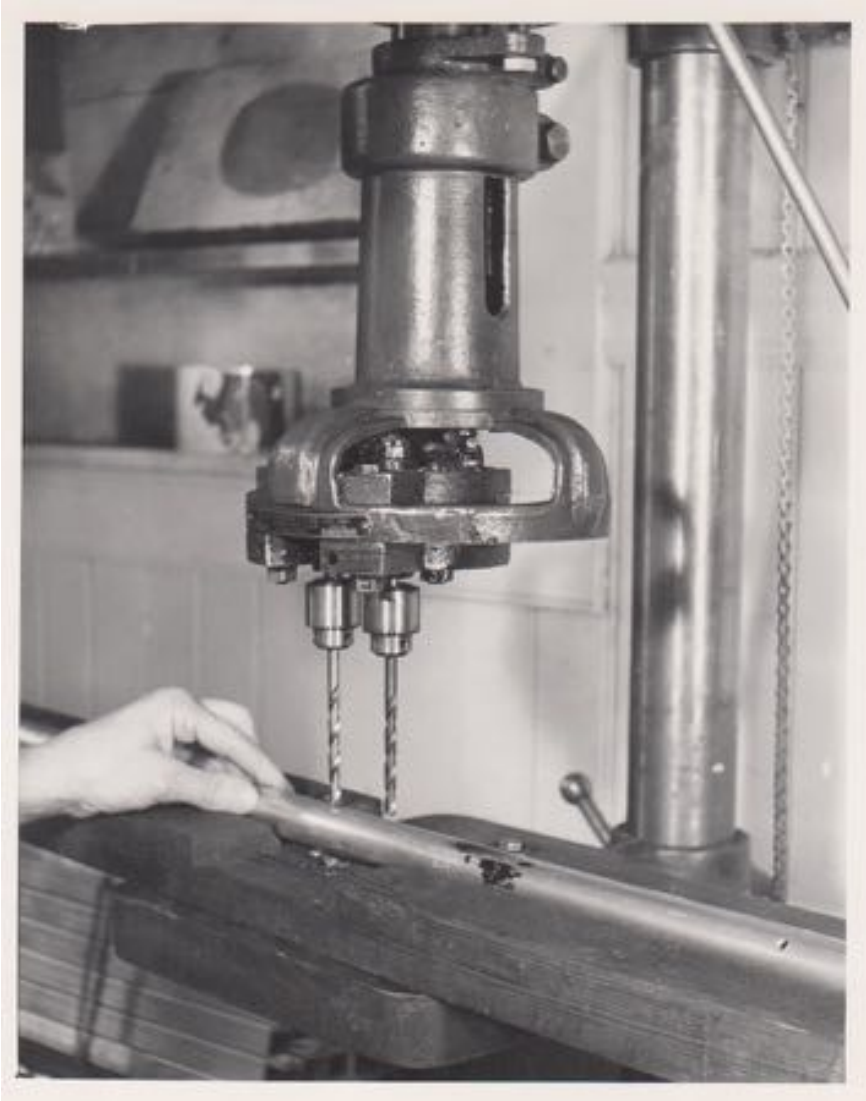
Mr. Gene Crandall, according to Connie

Connie Zucconi identified this lathe operator as Mr. Gene Crandall; she also had known his wife “Peg.”

The tools at Scala, according to a review of the photos by Walt Hayden, CHRS, were first-class.

A Drill-Press Adapted as a Vertical Mil

Bruno Zucconi says they bought the drill press at Sears, then a source of good tools. He made it into a vertical mill by the addition of the precision adjustable beds.



A Double-Bit Drill Press

This photo shows a special double-bit drill press to drill high precision matching holes for antenna mounts. Bruno says that he took these photos at the time with a good Leica camera, used to document Scala's work.

From today's perspective, some fifty years on, the cigarette in the shop is striking, as is the absence of protective eyewear. The lady machinist, on the other hand, and her employment by Scala, shows it to have been a very progressive company. It is rare to see inside the local radio industry in such detail. The CHRS archive is grateful to Bruno and Connie Zucconi for preserving these photos of San Francisco at work 50 years ago, thus preserving this aspect of industrial radio.

Coda

Bruno Zucconi enjoyed a long involvement with radio, even before the Second World War. His business ventures after the war put him in the middle of California's new electronics industry as it evolved. He met and worked with many of the important California entrepreneurs of the 20th Century, as they built an industry. Harry Greene, Jack Moseley and Ed Nolan are three he remembers especially fondly. Early on, in his Hi-Fi work, he saw the benefit of off-setting some aspects of the IF circuitry for bandwidth and stability. Later he used the same principle in his antennas. The Hi-Fi enterprise didn't take off, but the antennas have had world-wide impact.

CHRS Finds Scala Radio and Bruno Zucconi

The CHRS interest started with a Flea Market Find – an oscilloscope probe labeled Scala Radio Company, San Francisco. [8]

[8] See Bart Lee, "Bruno Zucconi and his Scala Radio Company," *CHRS Journal*, Vo. 35, No. 1 (2016) for a detailed account.

Bruno Zucconi, now age 98, owned Scala Radio Company of San Francisco between 1954, when he founded it, and 1979 when he sold it to an Oregon company. This company eventually became a subsidiary of German company, Kathrein. Mr. Zucconi and his wife Connie came to Radio Day By The Bay, at Radio Central in Alameda on July 25, 2015.

Cynthia Edwards Reinholtz brought Mr. and Mrs. Zucconi down to see the library. There we met to mutual astonishment: mine because I had hoped to find him somehow, or more about him, since writing a CHRS Facebook post about his Scala Radio Company in May, and Bruno and Connie Zucconi to meet someone who had been researching and writing about their Scala Radio Company of many decades ago.

That Flea-Market find, the 'scope probe branded "Scala Radio Company San Francisco" sparked my interest. Having done some research, a CHRS Facebook post evolved:

"San Francisco's Scala Radio Company is long-gone from the City and from its factory at 2814 Nineteenth Street as well. It was founded in 1954. In the 1950s it specialized in instrumentation. Pictured is its 'scope probe — the "Dual Purpose" BZ-5. It could read

direct, or through a resistance, for set alignment purposes. A switch selected which type of operation.

SCALA TEST INSTRUMENTS

MODEL SMI-53 SUPER MARKER INJECTOR

67.50

79.50

TEST PROBES

9.75

The 1956 Allied catalog (above) lists the probes, BZ-1 through BZ-5 with different characteristics, along with two TV test instruments (injectors).

Sixty years ago, television and then color television came to the fore as home entertainment and the primary source of news of the world. With tens of thousands of sets turned on for six or more hours a day, only able, competent servicing could keep them going. The

complexity of the analog circuitry challenged radio servicemen. The sets' vacuum tubes ran hot, and the picture tubes called for thousands of volts on the outside (anode) of the tubes — one wrong move and that charge could fling you across the room. Alignment, especially of the color television sets, called for patience, skill and instrumentation.

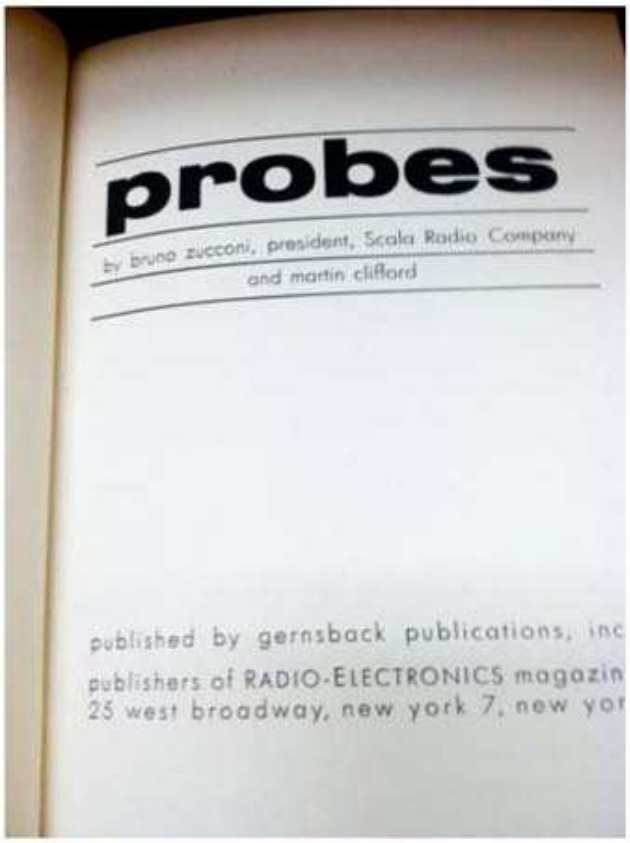
A mint condition Scala probe donated by Bruno Zucconi.

In April 1954 "The Engineering Staff - Scala Radio Co." (*i.e.*, Bruno Zucconi) wrote the first of what was to be a series of articles in *Radio - Electronics* about "Killing Those Alignment Bugs" in television sets. (See also the November 1954 issue). The April cover shows scope probes in this use:

Radio-Electronics, April 1954, cover.

The September issue of *Radio - Electronics* picked up a Scala Radio press release about the then-new BZ-5 probe (p. 136). “As a direct probe, the BZ-5 is designed for general trouble shooting. Shielding guards against pickup of stray fields near the chassis... [I]n visual alignment work ... the arrangement is basically that of a low pass filter ...”

The “Engineering Staff” notes became Bruno’s book.



Probes authored by Bruno Zucconi and Martin Clifford and published by Gernsback Publishing.

In 2015, principal Ellis Feinstein of the Oregon successor Scala company noted that in the early 1950s it started out in the new High Fidelity field and that “Scala” referred to the musical scale (in Italian, as will appear).

Scala principal Mike Bach (WB6FFC) writes:

"A group of Broadcasters who made their home in Medford Oregon purchased the company in 1979. Those men were Mr. Ellis Feinstein who became President of the Company and his old boss, Ray Johnson, former owner of TV station KTVL and Radio station KMED. Mr. Feinstein is a Fellow of the SBE and has been retired for a number of years now. He is also a Ham Radio operator, K7MFR.

"The original founder of Scala was Mr. Bruno Zucconi. *** The TV station Ellis worked for had a number of TV translator stations here in Oregon and northern California, Bruno told Ellis he was thinking or retiring so the guys did not want to lose a source of the best low power TV antennas on the market and they purchased the company.

"The company started out as a High Fidelity Audio Amplifier and test equipment concern. Mr. Zucconi saw an advert placed in a local paper by the forest service, looking for a company to build heavy duty Yagi Antennas that could withstand very harsh winters on mountain tops. He designed what became the CA5-150 Yagi. This Antenna used SCH-40 Aluminum Pipe and not thin wall tube as was popular with the rest of the industry. The elements were attached with heavy Aluminum Castings. These same techniques continue today."

Bruno Zucconi holding a Scala Yagi Antenna, San Leandro, *c*. 2017. CHRS has this antenna in its Hall of Communications collection.

The National Association of Broadcasters used Scala's antenna for illustrative purposes in the NAB Handbook.

After HiFi, Scala specialized in instrumentation. Pictured is its 'scope probe -- the "Dual Purpose" BZ-5. It could read direct, or through a resistance, for set alignment purposes. A switch selected which type of operation.

The 1956 Allied catalog lists five probes, BZ-1 through BZ-5 with different characteristics, along with two TV test instruments (injectors) and other instruments.

The BZ 1000 Test Set

Radiomuseum.org lists at least three probes.[9]

[9] http://radiomuseum.org/m/scala_usa_en_1.Html . (It also notes headphones from 1972, but it's not clear they come from the same company.)

Scala developed its next products, the high strength Yagi type antennas, for federal service. Scala moved to Oregon in 1979. On January 25, 1979, Scala Electronic Corporation (corporation number C0909018) surrendered it legal status in California. The Scala company next operated as a division of Kathrein in Medford, Oregon. That company made communications gear. It began to merge with Kathrein in 1985, according to the Kathrein website.[10] Kathrein in this country dated itself from Scala's 1954 founding.

The website for Kathrein Inc., Scala Division, notes that it is:

"… a leading manufacturer of professional antenna and filter systems for communications and broadcasting, serving commercial and governmental markets worldwide. Our product groups include professional antennas, RF filters, and accessories for a wide range of applications, including:

= Wireless mobile communications
= TV and FM Broadcasting
= Wireless local loop and Internet
= Radio paging systems
= Point-to-point and point-to-multipoint data and control networks
= Land-mobile radio communications systems of all types[.]"

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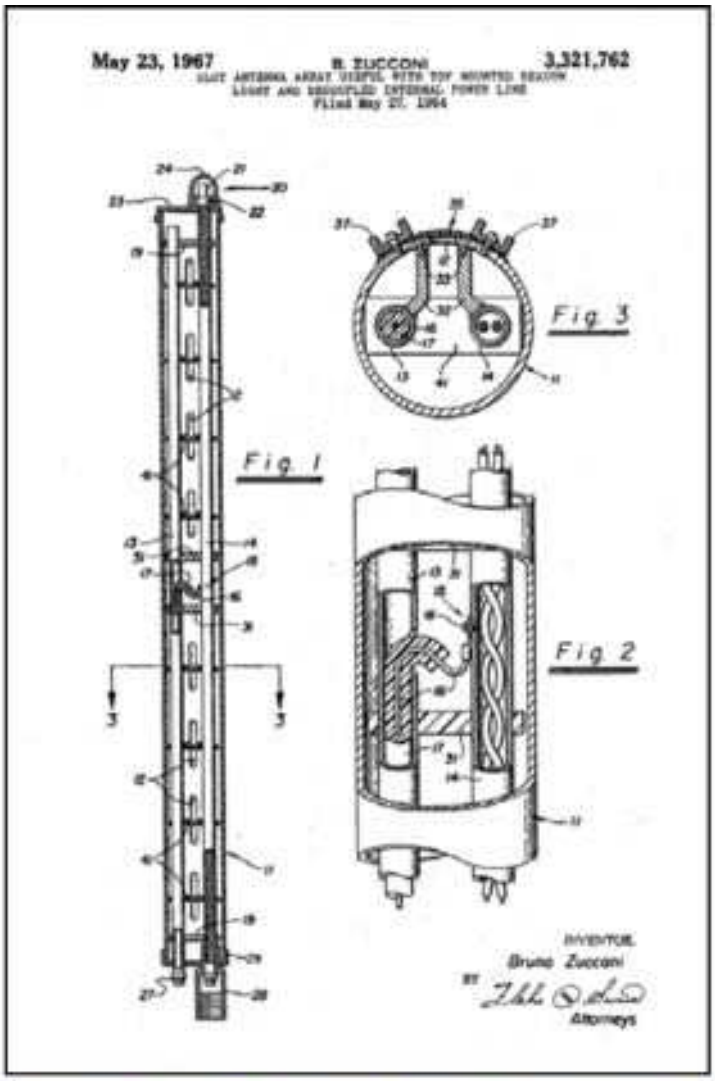
"In addition to [Scala's] own designs, the company builds antennas having their origins at Kathrein, but have been redeveloped for the North American marketplace. With Kathrein firmly positioned as the world's oldest [Germany, *circa* 1919] and largest source of antenna and filter products for wireless communications and broadcast technology, it made good sense to align Scala with that visibility and the company became Kathrein Inc., Scala Division on January 1, 2000."[11]

[10] www.kathrein-scala.com
[11] www.kathrein-scala.com/aboutus.htm

As of 2014 manufacturing was done in Mexico in a 137,000 square foot factory, according to Mr. Bach. Not bad for a little company that started out in San Francisco *circa* 1954 with HiFi and the BZ-1 Oscilloscope probe. [12]

Bruno Zucconi patented some of his ideas.



Patent for slot dipole array. Scala Radio Company.

CHRS also has a Scala antenna like this in its collection; it's 9' high.

[12] Acknowledgments to www.AmericanRadioHistory.Com; Mike Bach and the late Ellis Feinstein.

But he says it's best just to keep a device "Patent Pending" because once it's patented, it's public — and once it's public, it will be stolen by competitors with lower costs and fewer scruples and who are not about to pay royalties. This happened to his TV Super Marker Injector, which The Octopus RCA copied and sold.

Bruno notes that this also happened to his initial television Yagi antennas. He designed these highly directional Yagi antennas to reduce "ghosting" from reflections in San Francisco. He pioneered off-set elements to increase the bandwidth needed for television reception. But competitors could copy them and make them a lot more cheaply. Bruno's costs of materials alone exceeded the competitors' price to the market.

Federal contracts for high-quality antennas looked like a great opportunity after this grief. Soon, as a result of quality, Scala Radio joined only four other companies as candidates for certain federal contracts. He designed and built his federal-contract antennas in his San Leandro facility.

A Scala contractor took a special liking to Bruno, as many did. This one made him a cast aluminum desk ornament (known back in the day as an “ashtray”). Bruno has donated it to the CHRS Radio Central museum, along with three of his antennas, test equipment and archives.

The Scala Radio Corp. unique, hand-cast ashtray,
the feet of which are Bruno’s initials, “BZ”

A Century or So Ago:

Bruno's daughter Lin reports:

"Dad came over from Italy with his family in 1930 when he was 8 years old. He grew up in Borgo Val de Taro in the province of Parma. His father came over to the U.S. before the first World War and sent money to his family back in Italy.

Bruno recalls that his father in San Francisco, among other things, strengthened and rehabilitated houses for a handsome profit. Bruno helped out. Bruno tells of his childhood fascination with radio sounds in the late 1920s in Italy where he lived near Genoa, then in the U.S. By the time he was eleven or twelve years old, battery sets could be found on empty lots as people replaced them with AC powered radios. On his own, Bruno started learning about radios, 01A tubes, coils and all the rest. But he says, he figured radio repairmen made little money compared to electricians, so he chose that path in the late 1930s. He also got a Coast Guard maritime license. He could not get an amateur radio license and legally operate because he was not yet a citizen.

All of this made him valuable to the military when Word War Two started: he started out as an "enemy alien" but his skills got him promoted to "friendly alien." In the Army in the Pacific Theatre he was a corporal. But the Army made him a deck officer in its Army fleet of supply ships. So afloat he was an officer but ashore he was a corporal. He tried to stay afloat.

When he mustered out and came home, he met again the little girl he had known in the neighborhood years prior: Connie Giacotto. They were married shortly thereafter. The CHRS website features a video interview of Bruno and Connie.

(de K6VK, 11 XI '20, v6.1) ##