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THE RADIO CLUB OF AMERICA, INC.
P.O. Box 2112, Grand Central Station, New York, N.Y. 10163

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The Radio Club of America, Inc.

BOX 2112, GRAND CENTRAL STATION, NEW YORK, N.Y. 10017

Price $2.50

Organized for the interchange of knowledge of the radio art, the promotion of good fellowship among the members thereof, and the advancement of public interest in radio.

TREASURER'S REPORT FOR 1980

INCOME	Receipts	Budget
New members fees 122	$ 366	$ 200
Member dues for this year	5,422	4,900
Member dues for next year	1,035	
Member dues for two years hence	963	
Member dues for beyond above	125	
Life Memberships	188	250
Pins, certificates, plaques	1,509	1,000
Proceedings Ads	3,490	4,600
Interest and Dividends	3,627	2,800
Misc.	58	
Banquet (deficit)		
TOTAL INCOME:	$16,783	$14,000

EXPENSES	Expenditures	Budget
Rent	$ 500	$ 600
Stationery & Printing	611	300
Office Supplies	248	250
Telephone, etc.	171	150
General Postage	745	700
Meetings expense	1,040	500
Proceedings Publications	4,855	6,000
Awards, plaques, pins	1,548	1,000
Legal, Insurance, Accounting	100	500
Newsletter and Balloting	437	500
Executive Sec. fees	2,750	2,500
Misc.	64	
Grants-in-Aid disbursements	1,000	1,000
TOTAL EXPENSES:	$14,070	$14,000

Status of cash and trust funds as of Jan 1, 1981

Irving Trust Checking	$ 263	Finch Fund	$11,385
Irving Trust Savings	621		
Life membership fund	618	1980 Gain from operations $2,713	
1st. National Checking	597	$4,000 of Life funds are in CD's	
1st. National Savings	276		
Stocks AT&T	5,625	The GRANTS-in-AID Fund	
Irving Trust CD 8.36%	11,500	1979 $ 1,660	
1st National CD 11.96%	17,000	1980 19,695	
1st National CD 15.65%	10,000	Interest 1,430	
Total	$46,500	**Total**	$22,785

THE PROXIMITY FUZE

Introduction to Part II

by Jerry Minter

We regret that Part I of The Fuze Story ended in the middle of Admiral Burke's comments because of space limitations in the October issue of the proceedings.

It is most fitting to resume the story with Admiral Burke, since the U.S. Navy was indeed the sole sponsor and user during most of WW II. Only near the end of the war did the Proximity Fuze see service other than over water.

As the result of U.S. Navy insistance on very tight security, the adaptation of the fuze to ground support during the final stages of the war in France caused a complete upset of the German forces.

The consistently precise timing of these howitzer shells just a few feet above their ground targets resulted in massive surrender and hastened the end of the war. (See Baldwin's comments immediately following those of Admiral Burke in this installment.)

(Continued from the October 1980 issue)

Those snoopers came into range, and we opened up. We brought down one of them right away. (Much to our surprise, as the 45-second mechanical time fuzes we had on our regular ammunition only brought down a plane at night by accident.) Those mechanical time fuzes were good for harrassing enemy aircraft at night, but that was about all. We were delighted, but Deke was disappointed because he wanted to use those fuzes against a full-scale enemy attack. Well, so did we, but you can't do that unless the enemy obliges, and they didn't. Worse than that, we ran into no barges and no surface ships.

After a few more days, Deke said he couldn't hang out on those destroyers for the rest of the war. We fired some test runs against some rocks to simulate surface ships. The fuzes worked beautifully, but it rains in the Solomons. It rains quite often and very heavily. So we fired some VT fuzes into those heavy rain clouds. The fuzes worked on them too. I know that Deke tried those fuzes on other types of ships too, but I don't know when or the circumstances.

About nine months later, I went as Chief of Staff to Admiral Mitcher, the Commander of the Fast Carrier Task Force just when it was first forming. At that time, all the five-inch 38's and five-inch 25 ammunition was fitted with VT fuzes, and, as you well know, those fuzes knocked down enemy planes by the dozens. Had it not been for those fuzes, our ship losses and casualties in the fast carriers in the last half of that war would have been enormously larger than they were. That fuze was a magnificent help.

Now I'd like to make one extraneous statement. I wonder if in our present circumstances, anything could be conceived, designed, tested, produced and used in anything like the short time it took for those VT fuzes. Thank you, gentlemen.

RALPH BALDWIN

At the beginning of World War II, a young Ph.D instructor in Astronomy at Northwestern University. At APL he was in charge of the development of fuzes for the Army and for their introduction to the combat forces . . . Author of the book "The Deadly Fuze" and currently President of the Oliver Machine Co. in Grand Rapids, MI.

I came to the Applied Physics Laboratory just after they moved into 8621 Georgia Avenue. I was one of the very junior members of the team. I was assigned to work under one of the finest men I ever knew, E.D. McAllister. Ed was tops. Tuve had a set of precepts which everyone learned. One of them was: "We don't want the best unit—we want the first." I think McAllister memorized those precepts because he gave his team a free hand to come up with new ideas, new ways of doing things, even to tackle projects that weren't specifically ours.

Dr. Hafstad mentioned that I had done some writing about the fuze. I have now completed the book on the history of the organization, the R&D, the testing and the battle use of the fuze. I think since you've seen it, Larry, it's much better balanced than it was before. I've had good information from some of the people in this room. Lew Clement gave me a lot of material on the work at Crosley. The Admiral has given me help, as have Wilbur Goss,

John Pearce, and so on. Many people whom I've asked for help came through beautifully. The book will be published this coming Fall by Presidio Press in San Rafael, California, and is entitled *The Deadly Fuze: Secret Weapon of World War II.* I have no idea what it will cost, but I know you'll all want several dozen of them to give to your descendants. [The cost—as noted in the Introduction—is $14.95, from Presidio Press, Box 3515, San Rafael, CA, 94902.]

Larry asked me if I would give something of its battle use. There were so many places for it that I'm going to concentrate by giving excerpts from one chapter, "Battle of the Bulge."

"The purpose of a weapon is to destroy the enemy's ability and will to fight. The radio proximity fuze was exactly such a weapon. It did not win the war alone, but when used with the SCR584 radar and the M9 gun director, both NDRC developments, the VT fuze can lay good claim to having been the real Number One secret weapon of World War II. The U.S. Army used two main varieties of Mark 45 fuzes: anti-aircraft and, particularly, anti-personnel types. Army type AA fuzes were used in British 3.7 and American 90-mm guns with terrific results against the V-1 buzz bombs in their attacks on London and later Antwerp."

But these stories, although fascinating and of tremendous import, will just be mentioned here while the main emphasis today will be on the Battle of the Bulge:

"The first test of proximity fuzes over ground was held on April 29, 1943, using a 90-mm gun. The first test of proximity fuzes in any howitzer was held on June 16, 1943. The first test with high explosives in the shells was held on July 9, 1943. The first fuzes actually designed as Mark 45 howitzer fuzes were produced the next October."

Anti-personnel fuzes

I'd like to digress at this point a little bit because it follows through with some of the freedom that Mac gave us. About April 1, 1943, I went to the Army War College to meet with Colonel Furuholman. I was going to tell him of an idea I had that these fuzes, which were primarily anti-aircraft at that stage, should be used against personnel. The only trouble was he beat me to the punch. He said that the main reason for that meeting was to see if the fuzes could be used in howitzers. I went back to the laboratory, got Phil Rudnick and asked him if he would design us fuzes for the 90-mm gun. We were still using the Mark 33 fuze which was for the British AA gun at that time, still an early model fuze. This particular one never went into production, but we didn't have anything that would operate at the low spin of the howitzers. We had to test in the 90-mm gun. We ran the tests at Aberdeen. Then we came back and told McAllister. He didn't sound too surprised. In fact, he said, "We knew eventually we'd have to get into that because anti-personnel fuzes were discussed early in the game, but concentration had to be upon the anti-aircraft fuze first."

The first time we used high explosives was the following July 9th. We drilled out the explosive in ten eight-inch howitzer shells. Colonel Furuholman brought a Colonel Malcolm R. Cox to the Aberdeen proving ground. Cox couldn't possibly conceive of anything good coming from a group of kids, the oldest of whom was 31 years old. He was bored stiff, but inadvertently we fixed that. We had the good ship *Ricochet,* a beautiful 52-foot long mahogany twin screw vessel that was owned by the Aberdeen proving ground. We went out into the bay, anchored supposedly where we were supposed to be, and told them to open fire with a 40-second flight time.

The first shell landed 200 feet from the *Ricochet.* Fortunately, it was just beyond us; so we were in the null zone and did not get any fragments. But, gentlemen, I don't ever want to be that close to an eight-inch howitzer shell again. They are 200-pound shells. Colonel Cox came alive. By the time we got back to Washington after watching nine out of ten fuzes operate properly, he was all set to win the war with a new order right then.

Within a very few weeks, an order for one million fuzes came through. If I remember correctly, it was $75 per fuze at that time. The authoriation for release of VT fuzes for general uses over land, anti-aircraft, and anti-personnel, was approved, subject to release by SHAEF, only a year later, October 25, 1944. D-Day had come and gone. The Allies were on the Continent to stay. Industrial plants in the United States had been humming for many months. Literally millions of these fuzes had been carefully stockpiled in guarded depots in the British Isles and in Europe. The supply and indoctrination programs were scheduled for completion in December 1944 so that an all-out and intensive use could be made of VT fuzes once the Allied high command set the date for battle use.

The Battle of the Bulge started on December 16, 1944, only nine days before the originally scheduled release date of Christmas. The Allied armies began their use of anti-aircraft fuzes immediately. Two days later, December 18, the release for field artillery use was given. The work of the indoctrination teams had been so effective and thorough that during the initial few months of general employment in Europe, there was no report of serious misuse of the VT fuze ammunition. Simultaneously with the Ardennes offensive, the *Luftwaffe,* which had been in comparative retirement, suddenly reappeared. With equal suddenness, a large part of it disappeared. The German pilots had never encountered such devastating flak as that produced by the 90-mm anti-aircraft batteries equipped with VT fuze ammunition. During the Ardennes offensive, the 1st Army AA claimed 471 planes in the last half of December. This was from a mixed firing of time and VT fuzes against unseen targets at night. Overall results have not been analyzed, but some VT engagements averaging eleven rounds per kill were reported. From mid December until the time of the Rhine crossing, United States anti-aircraft artillery men in Europe were busier than they had been at any time since D-Day. The VT fuze ammunition is credited with having shot down over 1,000 German planes during that period.

In a report dated January 17, 1945, from the Chief Ordinance Officer of the European theater of operations to the Army Chief of Ordinance in Washington, there are revealing incidents of the effectiveness of the fuze:

"Prior to mid December, the 9th Army AA had negligible activity, but in the last half claimed 350. Day-by-day records show that the rounds per kill decreased as the percentage of VT fuzes increased. Due to many low flying targets, more time fuzes than VT fuzes were used during this period. Nearly all firing was at night at unseen targets.

"The use of the anti-personnel fuzes in field artillery weapons during and after the Battle of the Bulge must be considered as the preeminent tactical advent of a new weapon in the history of warfare. All the advantages claimed for the fuzes were immediately confirmed as thousands of rounds of heavy shells were poured on road junctions, bridges, and highways over which the heavy columns were advancing. For the first time in the history of warfare, the artillery was able to obtain devastating airbursts over targets as much as 15 miles distant, both by day and night. Thus, guns emplaced in a strategic position could control the roads over a large section of the front."

Other extracts from the official report to the Chief or Ordinance show how the VT fuze helped to turn the tide of this critical battle. The VT artillery fuzes which the Chief of Ground Forces, General Lear, characterized as the most important innovation in artillery ammunition since the introduction of high-explosive shells, came into action against the enemy with absolutely perfect timing. In both the AA and ground role, VT fuzes have constituted a factor not foreseen in Von Rundstedt's calculations. The terrific execution inflicted and the consternation resulting from night-and-day bombardment have contributed materially to halting the advance and hastening the reduction of the salient. The effectiveness of VT fuzes exceeds our expectations, and no more timely date for commitment could have possibly been chosen. The absence of serious difficulties or complaints of any kind has been truly amazing. The characteristic reply to inquiries is that we have had no trouble. The field artillery commanders have repeatedly stated that the malfunctions were fewer than anticipated, that the item had not been oversold.

Field Marshal von Rundstedt planned an insanely desparate thrust to split the Allied armies. He followed Germany's traditional invasion route through the Ardennes Forest, known to be thinly held by the American 8th Corps, a combination of combat-weary and still unbloodied divisions. He struck with terrible power just before Christmas on December 16. When his troops, Germany's last assault reserves, smashed through the American lines, they were assailed by a new and devastating kind of artillery barrage in which every shell burst overhead. Fantastically, even individual guns appeared to be able to place an air burst over a moving target. The proximity fuze, in action for the first time against ground targets in Europe, was a fearful Christmas surprise which played a major role in destroying the impetus of the German onslaught and then drowning it beneath a rain of hurtling steel. Months, later, General Patton told Ed Salant, from the Laboratory, "The funny fuze [which is what he called the proximity fuze] won the Battle of the Bulge for us."

The "funny fuze" at work

Only a few of the reports from the Allied front will be cited, followed by some comments from the point of view of the recipients:

- It is reported that the 8th Infantry Division caught a German patrol in the Hurtgen Forest. Ninety-six dead Germans were found, and their bodies were reported to have looked as though they had been put through a meat grinder.
- A forward observer of the 82nd Airborne Division saw a bridge carrying heavy traffic of vehicles, horse drawn artillery and troops on foot. Two salvos of eight inches completely paralyzed all movement with 300 estimated casualties in addition to equipment destroyed.
- About January 10, 1945, an OP of the 104th Infantry Division Artillery observed a Grenadier unit carrying on a review some miles behind the German lines. The OP called for a 60-gun concentration against the parading units. The OP was very excited in trying to describe what he actually observed. He reported that the German ambulances rolled in and out of the area for several hours carrying the casualties.
- A German group of about six tanks was seen bivouacking for the night on the edge of some woods. They were some miles from the Allied artillery position and could be reached only by a few batteries of six Long Tom guns. After waiting for the crews to get out of the tanks, time on target salvos were fired. The next morning when the area was taken, they found the tanks immobilized by fragments through their lightly armored tops, many dead and a few dazed including the Commanding Officer. This man was bitter about the devastation and said that he should have camped in the open because, as he interpreted it, the super-quick fuzes detonated on the tree branches above the contingent. It is very significant that the tip of the German salient began to wither rapidly within a day or two after the fields of artillery of the 1st and 3rd Armies overlapped so that all supply roads were covered.
- About March 10, 1945, a large German pocket of resistance was holding the ground between American troops of the 9th Army and the Rhine River. It was discovered they were trying an escape across the Rhine in coal and other types of barges. Many volleys of eight-inch howitzer rounds were laid up and down the banks of the Rhine by the 252nd Field Artillery group. Many Germans were killed and several barges were sunk. Until the final surrender, the fuze did yeoman service in what gunners call interdictory fire, the purpose of which is to deny the use of a road, intersection, bridge, or a town square by dropping a shell onto it from time to deadly time. One of the immense values of the new fuze was its ability to accomplish this mission while leaving the target area intact for later Allied use.
- A single division artillery officer reported, summarizing the detailed reports of December 1944, two weeks, "It is hard to believe accumulated figures from our observers indicate 2,000 German dead which could be observed and counted. Of course, this does not include those under the bushes."

The Germans were impressed

- In a special report of comments by prisoners of war dated January 17 and 18th, 1945, during the Battle of the Bulge, both the devastating effect on morale and its casualties are noted: "The first time the new shell was used, it accounted for 50 percent of the entire battery personnel." Prisoners of war agreed that it was practically impossible to take cover against these shrapnels. They expressed amazement that soldiers in fox holes up to 50 meters away from the point of burst were wounded. An

added attraction of which the POW signalmen complained was the constant destruction of telephone and signal communications.

• Captured POW's have reported that several German infantrymen have been executed for insubordination as a direct result of our employment of VT fuzes. The German personnel had refused to go out on patrol duty in the face of VT fire. A German captain captured January 7 by 82nd Division said he had served four years and had been on every major front but had never experienced such devastating artillery fire anywhere as that which preceded his capture.

• POW's of 84th Division reported the execution of two men in their company for refusal to go out on patrol duty because even diving in ditches and fox holes did not save troops from the American harrassing fire which came at unexpected times and places, night and day.

• Nearly all POW's are much perturbed by the inhumane new artillery shells which they think must be illegal because they are so terrible. They wonder why the Wehrmacht had not retaliated with something equally frightful. The trauma induced by the bursting of shells above the heads of enemy soldiers greatly reduced their ability to fight.

• Of the hundreds of anecdotes about the Battle of the Bulge, few could better illustrate the demoralizing effect of the proximity fuze than one recounted by Lewis Azrael, nationally known columnist of the *Baltimore News American* and a former war correspondent of the Hearst newspapers:

"I was with the headquarters of an infantry battalion when some of the proximity fuzes were fired against the Germans. The prisoners were coming back in droves, looking absolutely shattered and stunned. They simply couldn't believe what had been happening to them. Among them I spotted a group of German officers, all of whom were wearing Russian campaign ribbons. I started talking to them. To a man, they thought the terrible beating they had taken was due to some new, unbelievably efficient method we had discovered to train our artillery men. I asked them what they had just been through compared with their experiences on the Russian front. One of them shrugged, 'Against the Russian artillery, a man stood a chance of surviving, but against this? My God, the only thing a man can do is grab his bottom in both hands and run like hell!"

• Back to the used car garage [APL] in Silver Spring, Maryland, came the words of commendation from the great commanders on the fronts. General Eisenhower's cabled comment of January 17, 1945, said, "According to our observers, the timely release of VT artillery fuzes has vastly multiplied the lethal effect of interdictory and harassment fire. The unprecedented effectiveness of unseen fire at all hours of day and night has left the enemy severely upset, as confirmed by POW reports."

• Admirals King and Blandy joined in the chorus of praise at the end of the war. Colonel Morton would add for the land use of the fuze: "Never was a secret weapon more appropriately introduced, and never was the help of something more desperately needed." The colonel dramatically closed with: "When the war finally ended in both Germany and Japan, the VT fuze was still a secret weapon unknown to the military chiefs of either of our enemies."

HERB TROTTER

In 1942 Professor of Physics at Washington & Lee University. At APL he was put in charge of the production and quality control of the glass vacuum tubes designed to withstand the 20,000-g forces of being fired from a gun.

I joined the fuze project at the Department of Terrestrial Magnetism of the Carnegie Institution in Washington, in April 1941, when I left a teaching position at Washington University. The first fuze I worked on was the photoelectric bomb fuze. This was a fuze designed to stop massive bombing formations, which were then being used by the Germans over England. The proposal was that a bomber would get above a formation of incoming bombers in daylight, drop 500-pound bombs through the formation, and these bombs would go off from either an increase or decrease in the light as the bomb went through the formation. In other words, it was triggered either from a glint off a plane or from a plane's shadow. Several men gathered from universities on this project were: Charlie and Tommy Larson, Willy Faller from Cal Tech; Joe Henderson, Don Lockridge from the University of Washington at Seattle; and so on. By late summer of 1941, we had tested these fuzes against radio controlled drones off Cape May, New Jersey, and proved that they would operate satisfactorily. After the tests were completed, however, the Navy informed us that they were not going into production on it because they were afraid that they might be used against our bombers as we attempted to wrestle Europe from the Germans.

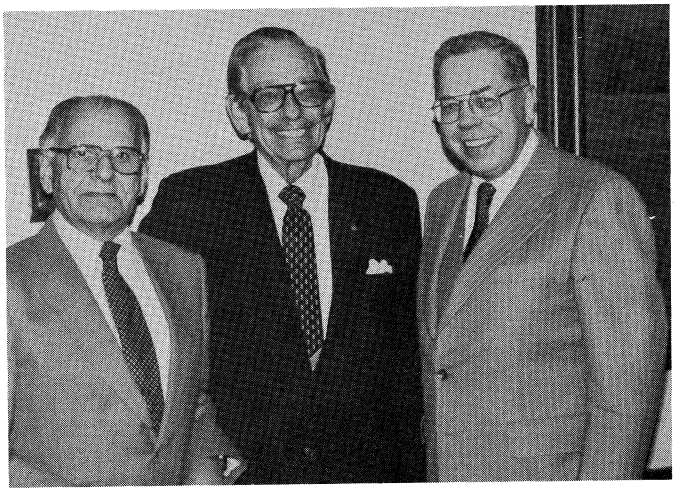
At this point, they said they would like to have a similar fuze that would work in a rocket. We immediately set out to see what we could do in this direction. Because of limited space at te Department of Terrestrial Magnetism, this whole project was moved to the Bureau of Standards. Several of the men went on Bureau of Standards payroll. However, Larry Hafstad and I remained on the payroll of DTM and were only lent to the Bureau of Standards. Our problem with the rocket fuzes was not building fuzes but building rockets. We didn't have any rockets available for test and had to get these made. Then we had to do our own loading. The rockets we were using had multiple stick propellant on a wire cage. We had to examine the propellant sticks to see that they were solid and not full of holes. We also assembled our rockets. We tested these at Aberdeen against target balloons. Although the fuzes worked properly, the difficulty was that the United States didn't have rockets available. So that project was dropped.

At this point, I returned to DTM to work on the shell fuzes. By then, there was already a lot of activity in progress on the fuze and its components. Ray Menlin was trying to design the mechanical structure of a vacuum tube to withstand the enormous forces experienced in a shell. He had left a teaching position in mechanical engineering at N.Y.U. where his specialty was bridge design. He was using the same basic concepts in designing the mechanical interior of the small vacuum tubes.

(Dr. Trotter's narrative will be continued in the next Proceedings.)

WASHINGTON SECTION ACTIVE

Holds three meetings—plans fourth



Left to right—Fred Link, President of the Club; Ralph Maddox, speaker at the December 4 meeting; Sam McConoughey of the FCC.

Ralph Maddox, broadcast pionner, was the feature speaker at the Washington Section luncheon meeting at Blackie's House of Beef December 4 last. He told in detail of his problems in establishing and maintaining one of the country's first broadcast stations, KFWH at Eureka, CA, in 1924. He also described some of the advantages of the period, in a field that had not yet built up its rules, regulations and printed forms. He was assigned the frequency of 1080 kc (no kHz's in those days) by making one telephone call to the Department of Commerce, without even having to file a written application.

He included numerous examples of his problems in making the venture viable commercially by overcoming the unwillingness of potential advertisers to try something as new and untried as radio. He also went into the problems of constructing a station in the early '20's.

Mr. Maddox is now living near Romney, W. Va, where he spends an active life restoring antique automobiles, gunsmithing, and maintaining a collection of more than 100 working antique radios. He also operates a hydraulic repair service.

Cellular system demonstrated

At its meeting January 21, 1981, the Section heard Graham Randolph of American Radio-Telephone Service and Paul Sturm of Motorola Communications and Electronics describe and demonstrate a working model of the new cellular mobile radiotelephone now in operation in the Washington-Baltimore area under an FCC developmental authorization.

Mr. Sturm, through maps and other visual aids, reviewed the present five-cell system and the concept of the eventual reuse of the cells through directional antennas, while Mr. Randolph covered the general concept. The big feature of the meeting was the working Motorola handheld set. By lot, several of the attendees were given an opportunity to use the system.

Commissioner Lee speaks

Robert E. Lee, Acting Chairman of the FCC, and a Fellow of the Radio Club of America, made good on a committment given last October and appeared as the feature speaker of the Club's Washington Section luncheon February 5, 1981, at the Touchdown Club. The meeting was held jointly with the Washington section of the IEEE Mobile Vehicular Technology Society.

With the election only three weeks past, Commissioner Lee's comments were on current events and topics. As usual, he was in good form and kept his audience in laughter with his jokes and wit. He covered his anticipated appointment as Chairman of the FCC for the remainder of his term; the forthcoming FCC decision on relocating in Virginia or staying in present quarters; the transition team impact on FCC personnel and policy, also his present plan, after his forthcoming retirement, to establish at Notre Dame University a communication department that will include the broad spectrum of telecommunication, instead of one limited to broadcast-cable-journalism and communication.

The Washington Section is indebted to Sam McConoughey, a Fellow of the Club, who arranged Commissioner Lee's engagement.

The planned meeting is the Semi-Annual Banquet April 7. Details are on page 16.

Acting FCC Chairman Robert E. Lee, speaker at the February 5 meeting, behind the podium. Beside him, Dean George Hill of the Washington Section.

SARNOFF CITATION

Monte Cohen, AA4MC, *right, receives the Sarnoff Citation "for significant contributions to the advancement of Electronic Communication" from former Club President Jerry Minter.*

BATCHER AWARD

Ed Raser, W2ZI, *right, of the W2ZI Historical Museum, West Trenton, NJ, receives the Ralph Batcher Memorial Award for the Preservation of Radio History from radio pioneer Frank Gunther, past President of the Club.*

PRESIDENT'S AWARD

Jack Poppele, *right, is presented with the special President's Award for "Unselfish dedication to the support of the Radio Club of America" by Club President Frek Link.*

DuMONT CITATION

Dr. Samuel Christaldi, *right, receives the DuMont Citation for "Important contributions to the Science of Television" from Dr. T.T. Goldsmith, recipient of last year's Citation.*

CLUB MAKES TWENTY-SIX NEW FELLOWS

Fellows elevated at the 1980 Annual Meeting: *Standing, left to right: Niles Barlow, President, Sideband Technology Inc.; Ken Miller, President, Penril Inc.; Monte Cohen, Chairman of the Board, General Instrument Co.; Larry Kline, Executive, Antenna Specialists Inc.; Tom Estes, technical executive, Phillips Petroleum Co.; Al Gross, pioneer and CB initiator; Walter Edge, industry pioneer; Ernie Landreville, APCO Executive Director; Robert Crabbe, RCC pioneer and industry leader. Seated: Jack Whiting, President, REPCO Inc.; Christina Larsen, Sec-Treas Larsen Electronics; Gene Goebel, industry pioneer; Eleanor Sherman, industry leader; William Chriss, VTS/IEEE official—Bell Labs; John B. Knight, amateur and industry leader; John Dettra, industry leader; Leo Myerson, famous industry pioneer.*

Not in photo: William Elder, Director of Telecommunications, American Trucking Association; Cliff Fraser, General Manager, Microwave Associates, Sunnyvale, CA; Arthur Goldsmith, retired (formerly U.S. Dept. of Transportation); James Mann, RCC leader and industry spokesman; Howard Mehrling, retired pioneer; Louise Ramsey Moreau, industry historian; Sanford Smith, Chairman LMCC and President, APCO; Harold Taggart, National Bureau of Standards, Boulder, CO; Pat Wiesner, President, Cardiff Publications, Richard Kirby, Director, International Radio Consultative Committee.

PIONEER AWARD

Frank King, *a founder of the Radio Club of America, outstanding contributor to its success, and designer (in 1912) of its present emblem, receives the Pioneer Award from Captain W.G.H. Finch.*

Club Has Staunch Supporters

The Radio Club of America begs to express its great appreciation for the support given to its Annual Reception by the contributors below:

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Pye Telecomm. Ltd.
RCA Mobile Comm. Div.
Repco Inc.
Scientific-Atlanta Inc.

Armstrong Medallist Leonard Kahn Urges Reform of Patent System

Responding when awarded the Medal he calls for ending present abuses.

Leonard Kahn receives the Medal from Club secretary Frank Shepard for work in AM stereo, independent sideband, time diversity, voice processing and other techniques.

by Leonard R. Kahn

May I take a few minutes to discuss with you a most important problem that touches all researchers, has adversely affected the economy of our nation and has also lessened the ability of technology to help serve mankind?

The problem I refer to is the anti-patent attitude of the Federal courts. Our industry's greatest innovator, Major Armstrong, the first recipient of the Armstrong medal in 1935, as well as the last and 25th Armstrong medalist, Murray Crosby, my former boss, who received this medal posthumously in 1978, were both most severely mistreated by the Courts.

Indeed, Major Armstrong wasted years and years of his creative life in the courts, where he lost every major patent struggle. He was so disturbed with the system then, that in 1948 he personally funded a $50,000 study by Columbia University School of Law to research the problem, specifically the means courts and administrative agencies used to determine scientific and engineering facts. However, the courts have, if anything, become more anti-patent during the last 30 years.

I believe that the reasons why patents fare so poorly in the Courts are two-fold:

First there is an actual bias by some jurists against inventors, often identifying them by the pejorative term "monopolists". Actually, one judge in the 2nd U.S. circuit* remarked on the tendency to equate patentees with felons.

The solution to the first problem is to educate the judiciary, as well as the other branches of our government, that industrial research and development cannot survive in our free enterprise system without an effective means for paying researchers for their honest work.

The second reason is the lack of knowledge and respect that many jurists display towards technology. One of the most startling facts that faces anyone who becomes exposed to patent litigation, is that a person with no special knowledge, training, or, indeed, in many cases, interest in technology, will be the final "judge" of scientific and engineering matters that we spend our entire professional careers studying. This must be changed.

The facts of patent cases and other scientifically based legal actions must be determined by our scientific and engineering peers—not by lawyers or other laymen.

What can one do about this problem?

First of all, you can apply some of your own inventiveness to search for means of improving the situation. Second, as an interim solution, you can, whenever called as an expert witness, tell the truth and resist all efforts to manipulate and prostitute your testimony.

As an example of the problem, one witness, qualified as an expert in physics, testified under oath that "There is no functional relationship between energy and power." We must do something to protect litigants against the all-too-common use of such experts to trick and confuse lay judges.

Indeed, I plan to propose a peer review procedure to the Radio Club to examine the transcripts of electronic patent trials and publish findings of any improper expert witness testimony. Such findings should be published as quickly as possible; hopefully, while the case is still before the Courts. Even if such activities are not fruitful in specific cases they will allow future litigants to protect themselves from further attempts to use these same corrupt or incompetent witnesses.

Let us hope that we can help find a way of insuring that the treatment that Major Armstrong suffered is not repeated over and over again, in the future. And, let us hope that our Nation is allowed to resume its industrial leadership, rejuvenated by a healthy and effective research and development program protected from both domestic and foreign copyists.

Thank you once again for this honor.

---

*Judge John F. Dooling in Carter-Wallace, Inc. v. Davis Edwards Parmacal Corp., 1971, 169 USPQ 645 at 667.

A little knowledge about antenna systems can be expensive.

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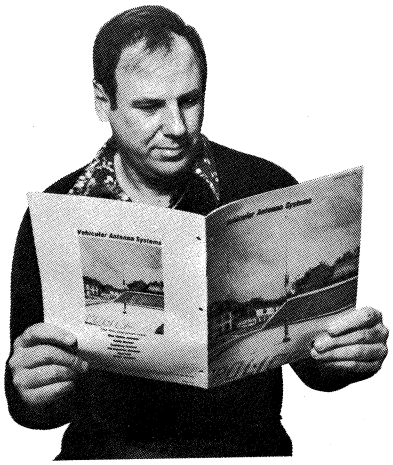

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Rigid coaxial transmission line and FM broadcast antennas are covered in this 36 page catalog. Included is data on rigid line end fittings, components, hardware, installation accessories and custom assemblies. A section of the catalog is devoted to radomes, low pass filters and directional couplers.

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The Radio Club of America, organized in 1909, celebrated its 71st Anniversary on November 21, 1980. During the 71 years, the Club has never overlooked its annual birthday.

We entertained almost 300 members and guests at the Sheraton Hotel in New York. Nineteen states were represented at the dinner, and at least one, Bill Nicol, Fellow of the Club, and the speaker at the 1975 Banquet, came from abroad.

Key speaker at the Annual Banquet was Andrew F. Inglis, President of RCA American Communications, Inc. (Americom). RCA Americom operates two high-capacity satellites in synchronous orbit to provide television, private line telephone and data communications service to business, government and the media.

In a detailed discussion illustrated with slides, Mr. Inglis described the part that RCA Americom is now playing in the satellite communications field, and told what other satellite concerns are doing, stopping to point out that the demand for satellite services far outstrips the supply.

He went on to cover present and future uses of satellites in communications, TV (especially for specialized networks who direct programs only to certain segments of the viewing audience), cable TV, pay TV and direct broadcast service. A synopsis of his talk follows:

"Satellites are recognized today as a proven and cost-effective method of sending voice, data, facsimile, video and audio signals over vast distances. The rapid growth and acceptance of the satellite as a communications tool has provided us with both challenge and opportunity.

"Challenge has resulted from the unprecedented increase in demand for satellite communications services, particularly for broadcast and cable television. The fact is, there is only so much room in the sky to operate geosynchronous satellites capable of serving all of the United States.

Technological advancements in satellite design and capacity, along with careful evaluations of frequency allocations and efficient spectrum utilization, will help us meet these challenges.

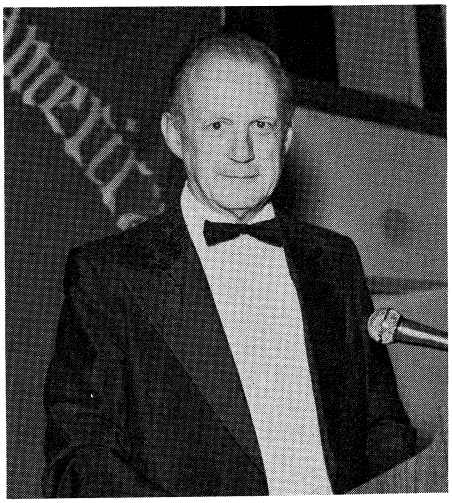
"Opportunities for effective usage of the satellite as a communications tool are limited only by the imagination of the entrepreneur. In addition to being a medium of business communications and entertainment, future uses will expand to include broader educational applications as well as providing cultural and information material to highly specialized audiences and interest groups."

Within weeks following his speech and predictions, several applications for expansion were filed with the FCC for extensive satelite transmission.

The Radio Club has been proud to bring to its members, especially at our annual dinner, a look into the Electronic future.

Tele-Measurements is grateful to provide the support of its staff members who assist so diligently to make our Banquet reach new honors each year. We tell our own people constantly if the Industry has been good and productive to you, you owe Electronics something in return. Good Service.

J.R. Poppele



Andrew F. Inglis

Ken Miller Responds

Ken Miller, K61R, President, Penril Corp., was selected to respond for the members elevated to the grade of Fellow at the 1980 Annual Meeting. His response follows:

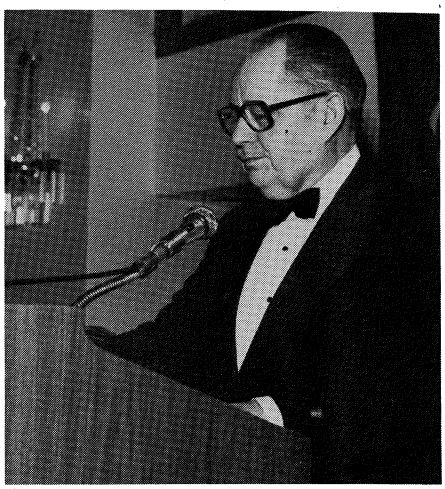
When our Club's President, Fred Link, honored me with the opportunity to fill the role of respondent for this evening's impressive roster of recipients of the 1980 Fellow awards, I was not quite sure what remarks would be appropriate. But it soon became evident that my associates and I have a common theme. Perhaps at a time like this it is best to be simple and say it as it is.

It is clear that my colleagues here tonight are welded together with a unified thought. Each of us is proud and honored to have been given the opportunity in our lives, in our little or large way, to contribute to the explosive need for more efficient, better and more effective communications —between ourselves and others—in a world crying out for better communication.

Speaking for each of us, it is with great pleasure and a touch of humility, but most importantly, with a sense that we in some way have achieved the responsibility resting on the shoulders of every one of us from the day we are born—to make our world better than it was when we joined it, and with our mutual efforts to make communication between each of us as humans and between our machines, achieve the objective of making our and your world a better place to live—we are proud, individually and collectively, to accept the honor bestowed upon us this evening.

Grants-in-Aid Make Big Jump

The Grants-in-Aid Committee, under the leadership of Joe Walker, right, has increased the Fund from $1,660 at the end of 1979, to the sum of $19,695 on December 31, 1980. This, Joe says, will be a hard act to follow in 1981, but he hopes to bring the amount to a total of $50,000 by the end of the year. Already almost $5,000 has been reported as of the end of February.



The Radio Club of America, Inc.

GRANTS — IN — AID COMMITTEE

Founded 1909, New York, U.S.A.

Reply to: Joseph F. Walker
Phillips Petroleum Company
601 Armstrong
Bartlesville, OK 74004

The Grants-In-Aid Committee reports a truely outstanding year for 1980, both in contributions and the number of grants awarded. The support of our members and organizations sharing our goal or providing financial assistance to students pursuing careers in electronics has been most gratifying.

The Radio Club of America Board of Directors, at the Annual Meeting on November 21, 1980, unanimously approved seven grants for distribution in 1981. This is the greatest number authorized in any year in the history of the Club. The following grants are being awarded:

Capt. W. G. H. Finch Fund - Two $500 grants to Florida Institute of Technology
Two $500 grants to Polytechnic Institute of New York
One $500 grant to Armstrong Memorial Foundation, Columbia University
One $500 grant to the Foundation for Amateur Radio
One $500 grant to the Radio Amateur Satellite Corporation (AMSAT)

The Grants-In-Aid Committee reported contributions of $17,920 (through November 1, 1980) at the Board meeting. During the Annual Banquet President Fred Link announced that Life Members Tony Amoscato and Tony Natoli contributed $3,000 to the Grants-In-Aid Fund. Fellow Bill "Chief" Keel also made another contribution of $100.

As in all Club programs and activities, our members have been and continue to be the greatest source of support to our Grants-In-Aid Program. It has been suggested that some of our members may have affiliations with companies or organizations, which, if acquainted with our Program, might wish to consider providing financial support to it. Members are encouraged to supply information concerning such prospects to any of the Grants-In-Aid Committee Members: George Apfel, Henri Busignies, Charlie Higginbotham, Jim Mann, Jerry Stover, Dave Talley, John Whiting or Joseph Walker. Any of these Committee Members will be most happy to contact prospective contributors in behalf of the Club.

Our Grants-In-Aid Committee goal for 1981 is to increase our Fund to $50,000. Let's all make that extra effort to make our goal a reality. All contributions support grants as the administrative costs of our Grants-In-Aid Program are borne by other Club funds.

Respectfully submitted,

Joseph F. Walker, Chairman

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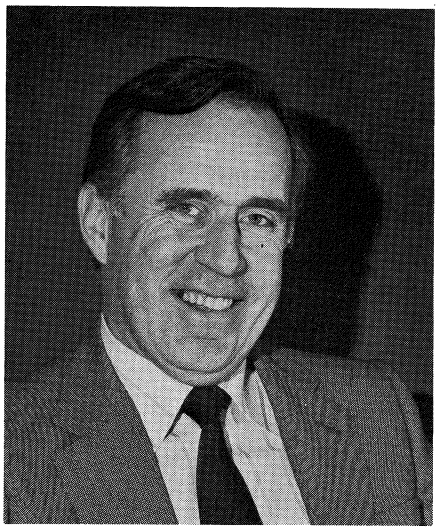
Washington Holds 1981 Banquet



Michael O'Loughlin

The Washington Section of the Club will hold—jointly with the IEEE Vehicular Technology Society—its Semi-Annual Banquet April 7, at the Capitol Hilton Hotel, 16th and K Streets. The IEEE/VTS is holding its annual conference April 6, 7 and 8.

Speaker at the banquet is Michael O'Loughlin, Chief Executive of Pye Telecomms. Ltd. His subject: "Is Your Radio Really Mobile?"

A mechanical, electrical and production engineer, Mr. O'Loughlin is a council member of the Electronic Engineering Association of Great Britain, a member of the Council of the Royal Warrant Holder's Association.

Mr. O'Loughlin is being made a Fellow of the Club at this meeting. He is cited for "Industry contributions and leadership, including directorship of Pye Telecom Ltd. of Cambridge, England."

Five other members are being elevated to Fellowship at the meeting:

Dennis Bodson, principal consultant for research and development to the Manager, National Communications System. Mr. Bodson holds Extra Class amateur license W4PWF, and is a member of a number of industry-related committees and boards. He is being cited for "Promotion of technological advancement through application of standards to achieve compatibility."

Alfred G. Franz, deputy chief, Licensing Division, Private Radio Bureau, FCC, is recognized for "outstanding performance in license administration in the public safety, industrial and land transportation two-way radio field."

Thomas Lamoureux, the Executive Director of Telocator Network of America, is cited for "Leadership in helping industry organizations in the fields of common carrier and paging."

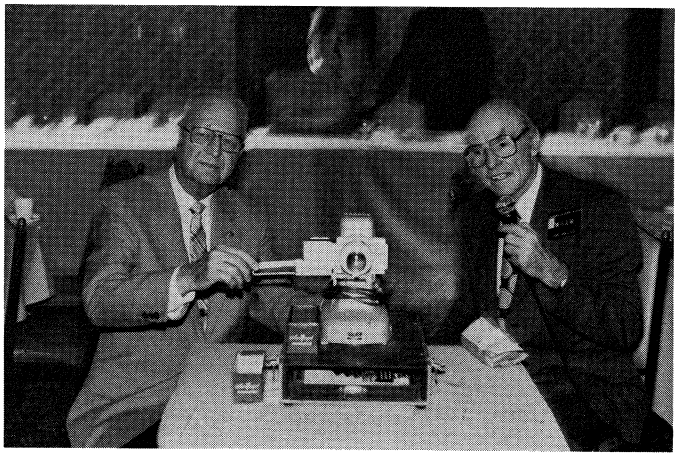
William Torbick, Manager of National Marketing, General Electric Mobile Radio Product Dept., Lynchburg, VA, is recognized for "Proven leadership in the field of land mobile radio.

Gordon Raitt, President of Westech Systems Ltd. of Alberta, Canada, receives a citation for "Specialized mobile radiotelephone system development."

Southern California Meets

Don Wallace, W6AM, and Irv Emig, W6GC, delivered a slide-illustrated talk on amateur activities in the Peoples Republic of China, at the second meeting of the Southern California Section of the Radio Club. It was held January 23, at the Luminarian Restaurant, Monterey Park. They spoke for nearly an hour and a half on Chinese hams and ham activities. The two had just returned from a tour of China by American journalists and radio amateurs, sponsored by the New China News Service.

The Section has been organized since October 8 of last year, and received its charter at the Annual Meeting November 21. Officers of the new Section are Henry M. Edwards, President; Jim Mann, Vice-President; Hugh Robertson, Secretary, and John Leopold, Treasurer.



Left—Irv Emig, W6GC; right—Don Wallace, W6AM

From left—H. Robertson, H. Edwards, J. Leopold

Dispatching a Large Taxi Service

A cellular system in the 1950's

In early 1951, the Link Radio Corporation was engaged by the Checker Cab Company of Detroit, Michigan, to design and install a two-way radio system capable of handling the expected traffic. This was not a simple requirement to meet, since the fleet was made up of 897 taxicabs with an exceptionally high ratio of dispatched calls to cruising pickups.

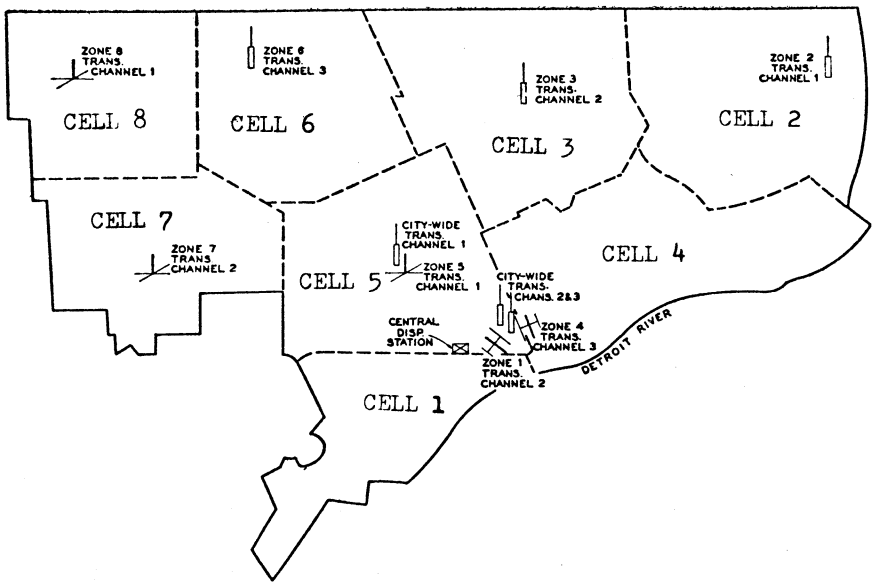


Fig. 1—How the city of Detroit was divided into zones, and how antennas were located to cover the city with three channels in such a way as to provide a maximum of coverage with a minimum of overlapping.

Introduction

By F. Stuart Meyer

(formerly Chief Engineer, Link Radio Corp.)
Fellow and Executive Vice President, Radio Club of America.

In recent years we have heard much about frequency reuse and spectrum efficiency, as a result of the Federal Communications Commission report and order relating to its famous docket 18262. Little is known (or remembered) about a fully operational cell system (with manual handoff) shortly after the FCC authorized the 450-460 (then Mcs) block of frequencies for land mobile use at the beginning of the '50's.

A condensed version of an article follows from the September-October, 1953 issue of *Communications Engineering* follows this introduction. The basic decision to employ frequency reuse was a direct result of the FCC's decision to grant no more than three frequency pairs to the Checker Cab Co. of Detroit, despite the fact that the system was to employ almost 900 mobile units:

THE DETROIT SYSTEM

By James A. Craig

(formerly assistant Chief Engineer, Link Radio Corp.)
Fellow, Radio Club of America.

System Facilities:

Assuming that each cab worked two shifts per day, and handled 15 dispatched calls per shift, the radio system would have to be capable of handling 30 calls per cab per day, or a total of more than 25,000 calls per day.

However, since each day has its short peak-load period and longer slack periods, such a figure is not normally to be expected on a 24-hour basis. On the other hand, even if a 24-hour load of one half 25,000 calls per day were taken as representative, this would still mean over 500 calls per hour, or almost 10 calls per minute. Since peak loads could be easily double the average hourly rate, it became apparent quickly that this would be no ordinary radio system. One base station could not begin to handle such an amount of traffic. More important, the work load would have to be split up among many dispatchers. But to realize any advantage, dispatchers would have to be provided with simultaneous access to the radio facilities without mutual interference.

Working closely with cab company officials, we divided the city into zones, or cells, as designated in the accompanying system diagram.

The ultimate number of zones and the area included in each zone was predicated on Checker Cab's traffic experience in Detroit. Every effort was made to distribute the traffic so that the present busy zones would not be overloaded and, at the same time, to provide zones in the outer fringes of the city that could absorb traffic growth to be expected from population shifts and the increased business accruing because of the advantages of taxi dispatching by radio.

After many changes in the quantity of zones and shifts in zone boundaries

the arrangement shown in Fig. 1 was made. It can be seen that eight zones are utilized and that three 425-mc. taxi channels are employed. Initially, two channels were planned, but it was impossible to arrange zones so that the same channel was not used in any adjacent zones. With three channels, zones operating on the same channel are always separated by a zone operating on a different channel.

Two requirements were given greatest importance in the development of the zone system: first, complete coverage of each zone by its transmitter; second, minimum signal overlap between common-channel zones which would have defeated the frequency reuse scheme. These requirements are virtually in direct opposition. A certain amount of overlap in one zone from another same-channel zone could be tolerated if unavoidable, provided that each transmitter signal would completely capture a receiver within its zone.

Meeting these requirements involved many experimental checks on antenna heights, locations, and configurations, and variations in transmitter powers. It soon became obvious that transmitter power played a minor role in determining coverage at 450 mc. If line-of-sight transmission existed on a given circuit path 2, 20, and 40 watts produced nearly the same results. Therefore, the zone transmitters were all made standard 20-watt equipments.

Pattern-shaping was attempted, using phased coaxial and ground-plane arrays, to provide coverage without overlap according to individual zone shapes. Here also the results were unimpressive, for the same reason that transmitter powers made little difference in coverage. In using phased arrays to produce figure-eight, cardioid, or other patterns, a boost in power in some directions is gained at the expense of a power loss in other directions. Such arrays are not intended to form a beam or to completely eliminate radiation in any sector. Even though power had been thus reduced in a certain direction no loss was noticed in mobile contact within the affected area, since power in itself is relatively unimportant.

The most important factor affecting coverage, in virtually all cases, was antenna height. Indeed, at antenna elevations of 60 to 75 feet, the coverage could be tailored in terms of 4 or 5 city blocks by changing antenna elevation 4 or 5 feet.

While this discovery solved a lot of problems, each zone had still to be evaluated on its own merits and peculiarities. Referring to Fig. 1, in zones (cells) 7, 8, 6, 3, and 2, non-directional antennas are used at elevations of 60 to 110 feet. Zones 7 and 8 use unity-power gain ground-plane antennas. However, in zones 1 and 4, available transmitter locations with proper antenna height are not centered in the zones. These zones employ stacked coaxial arrays, which produce low-angle radiationa at a power gain of 3.

During the final tailoring of the systems a downtilt antenna was used at one location (the Detroit Leland Hotel rooftop) to eliminate cell (zone) overshoot. No such antenna was available "off the shelf" at that time, but the problem was solved by mounting a ground plane antenna upside down, resulting in an umbrella-shaped radiation pattern.

Zones 1, 4, and 5 all intersect in the loop area of Detroit. There are many tall buildings which produce propagation shadows. For that reason the zone 5 transmitter is located as shown on the map, at an elevation of some 300 feet. Overlap into zone 2 and 8 occurs to a minor degree, but this is offset by the fact that complete coverage of zone 5 including its loop area is accomplished with almost no dead spots. In the cases of zones 1 and 4, no structure of comparable height existed in zone 1 although one was available and used temporarily in zone 4. In either event, antenna elevation would have increased overlap difficulties, particularly from zone 1 into zone 7. The final decision in the cases of zones 1 and 4 was to locate both transmitters at the top of 400-foot David Stott Building, located at the center of the loop district. These transmitters excite Yagi antennae trained down the centers of the respective zones. Each Yagi is equipped with a vertical V-shaped metal screen, to minimize leakage behind and to the sides.

City-Wide Transmitters:

In off-load periods such as the early-morning hours, when traffic can be handled by possibly two or three dispatchers, the simple zone system would necessitate switching on the part of the dispatchers in selecting the zone transmitter proper for each call. No cost-effective electronic switching equipment was available during this era. To eliminate this objection, three 100-watt city-wide transmitters, one on each of the three channels and each capable of city-wide coverage, were provided. At first, all three transmitters were placed on the same building in the loop district where zones 1 and 4 transmitters are located. Situating the city-wide transmitters at the same location with two zone transmitters was permissible since, by the nature of the dispatching technique, the zone transmitters would not be used when the city-wide transmitters were in use, and vice-versa. However, the roof of the Stott Building shadowed the channel 1 signal in the extreme northwest corner of the city. This problem was overcome by the simple expedient of shifting the channel 1 city-wide transmitter to the location used for the zone 5 transmitter.

The three city-wide transmitters are used to provide three methods of operation: single-frequency coverage of the city on channel 2; east-west coverage on channels 1 and 2; and sector coverage, east, middle, and west, on channels 1, 2, and 3. This permits complete off-load servicing of the entire fleet by one, two, or three dispatchers, as required. In practice the east-west method of operation is normally used, although a city-wide transmitter can be temporarily pressed into service to cover for a disabled zone transmitter.

All city-wide antennas are stacked coaxial beacons with power gain of 5. No overlap problem exists under city-wide operation.

Equipment and Operation:

The zone and city-wide transmitters are housed in 34 and 68-in. cabinets respectively. They are remotely controlled via leased two-wire lines from the central dispatching office, but can be operated locally by service personnel. A selector switch on the control panel of each transmitter is used to select remote or local operation, and also permits wire intercommunication between service personnel at the transmitter and the dispatching office.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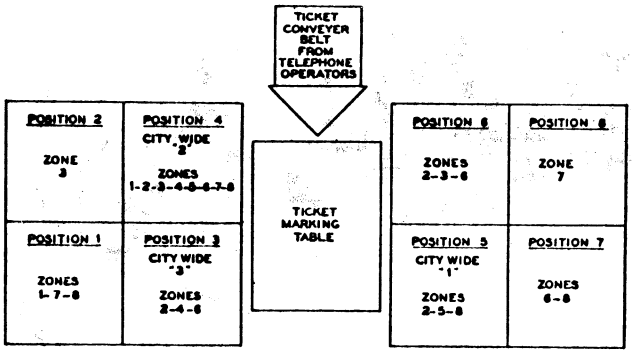


Fig. 2—A diagram of the dispatching table layout.

All the taxicabs are equiped with 10-watt transmitters. Each mobile transmitter-receiver is equipped with a selector switch located on the control head convenient to the driver. With this switch, a driver can instantaneously select any one of the three channels used the system, depending upon his zone location. Each driver is given a zone map normally mounted on the vehicles sun visor, similar to that shown in Fig. 1, so that he will become acquanted with the zone boundaries and will use the channel corresponding to his location. After a period of about a week the driver has memorized the boundary streets of the zones, and the map is no longer required. Boundaries were so arranged as to necessitate a minimum of channel switching in the cabs when traveling down most main streets or avenues.

As traffic loads decrease from a peak period when the zone system has been in use, and the intent is to shift to one of the three modes of city-wide operation, each zone dispatcher broadcasts a general call to that effect to all cabs under his control. A similar procedure is followed for any other mode shift.

Considerable study was devoted to the dispatching and remote-control facilities associated with this system. In addition to providing normal switching and audio facilities, it was necessary to furnish means whereby the proper zone and city-wide transmitters could be made available to dispatchers as required by hourly traffic changes. Fig. 2 shows the dispatching table layout in its final arrangement. It can be seen that position 4 is the master position, at which one dispatcher can control one city-wide and all eight zone transmitters. At positions 3 and 5 are tied in one of the other two city-wide transmitters and three zone transmitters. Three zone transmitters can be controlled at each of positions 1 and 6, and two transmitters at position 7. Since all eight dispatchers will be working when positions 2 and 8 are in use, only one zone transmitter can be controlled at these positions.

At all multiple positions the dispatcher has a turret before him on which appears an upper row of green lamps. These light upon receipt of a call from a cab, so that the dispatcher can tell in which zone the cab is located at the time. Rectified audio from the received call is utilized to operate a relay which, in turn, lights an associated lamp at all positions at which this zone transmitter can be controlled.

Conclusion:

By employing frequency reuse in the same geographical area, greater spectrum efficiency was achieved when compared to the (then) conventional mode of operation. In this particular system, the relatively short messages employed in taxicab dispatching worked relatively well with the size of the cells employed. The manual channel switching is a limiting factor when considering system expansion (increasing the number of cells for greater frequency reuse) but in this day and age is easily solved by the use of electronic processing techniques.

NEWS OF THE MEMBERSHIP

Mal Gurian (M 1969, F 1976), our Vice President, has resigned from Aerotron after many years as a key figure of that company. Mal has no immediate plans at the moment.

J.M. Bucknell (M 1975) has founded his own operation, Intelsig (Cambridge) Ltd., devoted to the design and supply of a varied line of signalling devices and systems. He had been with Pye Telecommunications, Cambridge, England, since 1957.

Robert S. Black (M 1971, F 1976) is now President of the petroleum-gas-pipeline industry organization ENTELEC (Energy, Telecommunications & Electrical Association).

Steven J. Beeferman (M 1977, L 1978) has been appointed Vice-President/General Manager of the new Mobilcom division of Sideband Technology Inc. (STI). He will be responsible for worldwide sales and service from offices operating in Rochester, NY and Toronto, ONT.

RCA/QCWA Meeting Notices Have Been Discontinued

Due to the high cost per member attending, the Club has decided to cease sending out notices for the New York City luncheon meetings held jointly by the Radio Club and the Quarter Century Wireless Association. There is a large overlap in membership between the organizations, and few club members outside the metropolitan area attend. The result is that on occasion more than $36 has been spent for notices that were valuable to only three persons.

Luncheon meetings are normally held on the second Wednesday of each month, with the exception of June, July and December.

If any member wishes to be kept advised of the meetings, please drop a line immediately to the Executive Secretary, Fred Shunaman, 933 East 7th St., Plainfield, NJ 07062, and ask to be put on the list to receive notices regularly.

New Members

Sixty-three new members have joined the Club since the list in the October, 1980 issue was pusblished:

Charles J. Affelder, N3AYU, 2114 Ruatan St., Adelphi, MD 20783

Willard D. Andrews, WB2LCF, 247 Green Ridge Rd., Franklin Lakes, NJ 07417

Sanford H. Barnes, WB6UXK, 3922 Calle del Sol, Thousand Oaks, CA 91360

William H. Bellchambers, Fibbences,' Andlers Ash Road, Liss, Hampshire, England, GU33 7LR

Neil F. Bennett, Phelps Dodge Communications, Route 79, Marlboro, NJ 07746

Ernest J. Bonanno, FCC Common Carrier Bureau, 1919 M St., N.W., Washington DC 20554

Robert W. Brandel, WA0UHS, E.F. Johnson Co., 299 10th Ave., S.W., Waseca, MN 56093

George Calafut, W6PZO, 24811 Redcliff Ct., Sunnymead, CA 92388

Kenneth W. Cooper, W2FLZ, Harris Corp. RF Comms. Div., 1680 University Ave., Rochester, NY 14610

Martin Cooper, Motorola, Inc., 1303 E. Algonquin Rd., Schaumberg, IL 60196

David R. Corsiglia, WR6AAA, Western Walkie Talkie Inc., 234 E. 17th St., Costa Mesa, CA 92627

Edwin S. Crane, W2EF, 58 Patterson Ave., Hempstead, NY 11550

Antonio Cruz-Uribe, W9MMD/XE1BT, 901 Howard St., Green Bay, WI 54303

Kent J. Cushman, 65 W. Norwalk Road, Darien, CT 06820

John A. Daak, 1220 Blazewood St., Riverside, CA 92507

Daniel J. Davies, RCA Corp., 1901 N. Moore St., Arlington, VA 22209

R.L. Deitsch, American Broadcasting Co., Radio WPLJ, 1330 Sixth Ave., New York, NY 10019

Howard G. DeLong, 9605 Hillridge Drive, Kensington, MD 20795

Roger G. Deyoe, K6DNG, 3416 Genevieve St., San Bernardino, CA 92405

Marvin Druskoff, K2VIV, 3622 Myrtle, Long Beach, CA 90807

Ronald A. Duncan, SAB-Harmon Industries, Inc., RR 1, Grain Valley, MO 64029

Patrick K. Dunne, 622 Elm St., Anaconda, MT 59711

John A. Gay, Jr., A-1 Communications, 1601 W 8th, Amarillo, TX 79101

Edward J. Henley, 13707 Sloan St., Rockville, MD 20853

Carl L. Henricks, Association of American Railroads, 1920 L St. N.W., Washington, DC 20036

Leo M. Himmel, Sr., Association of American Railroads, 1920 L St. N.W., Washington, DC 20036

Joseph A. Huie, K2PEY, Harris Corp., Comms. Div., 1680 University Ave., Rochester, NY 14610

Richard H. Ingham, KB6II, 1521 East Aspen, Santa Ana, CA 92701

Carl H. Insel, E.F. Johnson Co., 299 10th Ave. S.W., Waseca, MN 56093

Wm. W. Janssen, K7NOM. 990 Brown Road, Bridgewater, NJ 08807

John B. Johnston, W3BE, 17701 Bowie Mill Rd., Derwood, MD 20855

Carl G. King, Jr., King Communications, 364 S. Water St., Saginaw, MI 48607

Charles M. Lewis, W4BV, 835 119th Ave., Treasure Island, FL 33706

Howard H. Lipstone, WB6ZRC, Allen Landsburg Productions, Inc., 1554 Sepulveda Blvd., Los Angeles, CA 90025

Ralph G. Maddox, Vali-Hi Farm, Purgitsville, W VA 26852

Bertram G. Marshall, K2JAQ/TI2JAQ, 1714 Winfield, St., Rahway, NJ 07065

Barbara G. Martin, *Communications* Magazine, 3900 S. Wadsworth Blvd., Denver, CO 80235

Richard L. Miller, KJ6W, P.O. Box 1146, Palmdale, CA 93550

Samuel Moses, W1ASD, 282 Auburn Road, West Hartford, CT 06119

Todd W. Oldenburg, WB2VXY, Sinclair Radio Lab. Inc., 675 Esminger Rd., Tonawanda, NY 14150

Michael J. Orofino, W2KO, 2 Brookside Drive, Baldwin, NY 11510

Jack L. Pattison, Telecom Consultants, Inc., 8812 E. Las Tunas, San Gabriel, CA 91776

Edward J. Reichler, Meridian Comms., 4617 Park Mirasol, Calabasas Park, CA 91302

Richard J. Reichler, Meridian Comms., 4617 Park Mirasol, Calabasas Park, CA 91302

Wm. R. Reynolds, WA2YMH, 6 Valevue Road, Madison, NJ 07940

Henry L. Richter, W6VZA, Telecom Consultants, Inc., 8812 E. Las Tunas Dr., San Gabriel, CA 91776

George E. Riggins, WA6DZR, Riggins Electronic Sales, 3272 E. Willow St., Long Beach, CA 90806

Hugh B. Robertson, RTS Communications Div., 2311 W. Olive, Burbank, CA 91506

Dan L. Roszelle, 1525 N. 214th St., Elkhorn, NB 68022

Anthony J. Russo, Metro Mobile Comms. Inc., 110 East 59th St., New York, NY 10022

Edward H. Scott, 17519 Lassen St., Northbridge, CA 91325

Vito A. Semal, Harris Corp, RF Comms., 1680 University Ave., Rochester, NY 14610

Leland W. Smith, W5KL, Box 38-B, Route 3, Jasper, AR 72641

Warren C. Struven, Stanford Linear Accelerator Center, 2575 Sand Hill Rd., Menlo Park, CA 94205

Charles C. Thompson, 20101 Interior Lane, Huntington Beach, CA 92646

Stephen J. Tivy, WD6AND, Los Angeles Co. Comms. Dept., 1110 Eastern Ave., Los Angeles, CA 90063

Arthur R. Trout, Intrastate Radiotelephone Inc., 2301 W. Olive Ave., Burbank, CA 91506

Carolin B. Weber, WB6SJK, 9064 La Colonia Ave., Fountain Valley, CA 92708

James O. Weldon, Continental Electronics Mfg. Co., P.O. Box 270879, Dallas, TX 75227

Donald G. Werner, WA6KKR, 1055 Hermosa Ave., Sierra Madre, CA 91024

Richard M. White, Metro Mobile Comms., 110 East 59 St., New York, NY 10022

Deborah S. Yelich, *Communications* Magazine 3900 S. Wadsworth, Denver, CO 80110

Ronald B. Zimmelman, 3577 Mountain View Ave, Los Angeles, CA 90066

Meyer VTS President

Stuart Meyer (M 1965, F 1967, L 1978) was elected President of the Vehicular Technology Society of the Institute of Electrical and Electronic Engineers at its Board of Directors meeting in Orlando, FL, last December.

The IEEE Vehicular Technology Society is active in electronic and electrical automotive technology, mobile radio communications on land, sea and air, and the use of electronic technology to control ground transportation systems.

Meyer had previously held the posts of Vice President and Treasurer of the Society. He rose through the ranks in the VTS chapter in Washington, DC, starting as secretary-treasurer, then vice chairmen, and later, chairmen. While chairman, his chapter earned the "Chapter of the Year" award. In addition, he was chairman of the IEEE/VTS 1976 annual convention and will have the same role in the coming 1981 conference.

Stu is employed by the E.F. Johnson Co. as manager of its Government and Industry Relations office in Arlington, VA. He has held managerial and engineering positions with RCA Corp., Aerotron, Hammarlund and the Allen B. DuMont Laboratories. His career in land mobile radio started when he joined the Link Radio Corp. shortly after his discharge from the U.S. Navy in 1945. During his tenure with Fred Link he rose to the position of Chief Engineer.

His other industry activities include: Chairman of the Engineering Panel, Communications Division, Electronic Industries Association (EIA) and member of the Board of Directors, National Association of Business and Educational Radio (NABER). He is also active on a number of land mobile and related communications committees.

Stu was first licensed as an amateur radio operator in 1933, being issued the call W2GHK, which he has held continuously since. He now holds an Extra Class ticket. He is President of the Foundation for Amateur Radio, a consortorium of 50 clubs located in the Greater Washington and Baltimore areas. He has been chairman of a number of Ham conventions and conferences, including the 1975 ARRL National Convention. He is a charter Life Member of the ARRL, an overseas member of the Radio Society of Great Britain, and is QSL manager for a number of DX stations around the world. His "DXpedition of the Month" program has sent out over a million QSL cards since 1962. Stu is the recipient of the "DX Hall of Fame" award and many others. His amateur radio interests are predominantly DX-oriented—both phone and cw on the frequency bands from 160 through 10 meters.

Meyer received much of his technical and engineering education at the U.S. Naval Academy and the Naval Air Technical Training Command as well as with the de Forest Institute.

NOTICE

Annual Meeting and Banquet

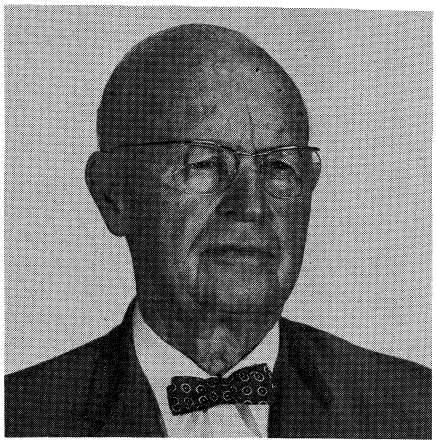
The 72nd Anniversary Awards Banquet will be held, as in the past several years, at the New York Sheraton Hotel, 7th Avenue at 56th St., New York City. **The date; November 13, 1981.**

The evening Banquet and Reception will be preceded by the usual technical sessions.

Mark the date on your calendar!

Obituaries

CLAIR FARRAND



Clair Farrand (M 1920, F 1926, L 1971) died January 7, 1981, at the age of 85. He had been a member of the Club since 1920 and received the Pioneer Award last November.

Beginning with an amateur station, WN, in 1908, he was successively a marine operator, wireless operator at Wanamakers, Philadelphia, then a Marconi inspector in New York. During World War I he designed radio equipment at the Marconi factory at Aldene, NJ.

In 1918 he independently invented the moving-coil loudspeaker. He received a patent on it, and it was some time before it was discovered that Siemens had described such a speaker in the 19th century.

Beginning about 1925, he made high-class broadcast receivers, and radio equipment for amateurs, while continuing to manufacture quality loudspeakers, and beginning in 1927 he made talking motion picture equipment. Later he formed the Farrand Optical Co. and made improved bombsights for the Navy and Air Force in World War II. He held more than 250 patents.

HUGH G. HAMILTON

Hugh Hamilton (M 1950, L 1971) died September 18, 1980, in Boca Raton, FL. His age was 75. Mr. Hamilton graduated from MIT in the 'teens, and during his life had two ham calls, 2GK and W2AIF.

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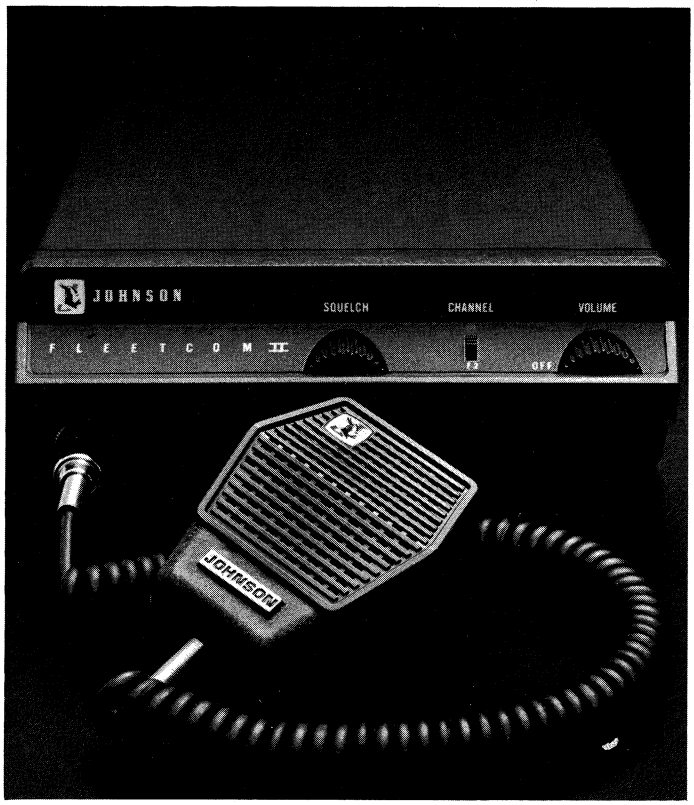

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