

# Proceedings of The Radio Club of America, Inc.

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## DIRECTORY ISSUE

### EVOLUTION OF SPECTRUM MANAGEMENT

A. Prose Walker

Page 4

### ARMSTRONG MEDAL TO R. McMANN, Jr.

Page 12

### COMPLETE MEMBERSHIP DIRECTORY

Updated to Jan. 1, 1973

Pages 18 — 26

THE RADIO CLUB OF AMERICA, INC.

P.O. Box 2112, Grand Central Station, New York, N.Y. 10017

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



# The Radio Club of America, Inc.

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

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.

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## PROCEEDINGS OF THE RADIO CLUB OF AMERICA

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# Message From The President

As I start on my fifth year as President of the Club I am satisfied that our team; the Officers, Directors, Executive Secretary and Committee Chairmen, have been most successful in getting the affairs and activities of the Club into a positive groove that has generated international interest in the Radio Club of America. The new strength in membership, the high quality and talent of new applicants seeking to join, and the aggressive program sponsored by the Club are a credit to the 550 or so active members as well as the Officers and Directors.

A tremendous amount of effort and time has been contributed to making this program go on the part of many Directors and Officers as well as the Executive Secretary; this prompts me to offer a note of personal thanks to my clients who have supported my efforts in behalf of the Club and made it possible for me to spend the rather excessive amount of time that has been contributed by me to make the program go. The added support in form of paid advertisements for the Proceedings by these same clients as well as prize contributions by all of them to the Annual Banquet is hereby acknowledged, with **my personal thanks** to these top groups. I might add that eight of my clients are advertisers in this issue, and ten clients of Fred Link contributed substantially to the Prize pool for the 63rd Banquet meeting — so I think **my team** is “involved” . . . Thanks to all these fine people for the support given me.

In the line of thanks — I am most interested in indicating my personal as well as the Club's appreciation to the several top people who have contributed their time and effort as speakers for the events of the year, including the latest Banquet. Some top personalities have addressed Club meetings in 1972 and we owe a lot to all of them. Also, on behalf of the Club, I am anxious that our associate groups such as AFCEA, IEEE/V-T(G), QCWA, VWOA, DeForest Pioneers, and others that I may have overlooked that had joint meetings with us during 1972 know that we are appreciative of this mutual cooperation. We are looking forward to similar joint affairs in 1973.

For 1973 we have a lot of new thoughts and information.

**First**, we have a partial new slate of Directors with Bill Kanz, Jack Anderson and Stu Meyer as new faces. The top men who just completed terms will definitely be available and active on important committees, so we hope this minor rotation will be for the best interest of all involved. Our thanks and appreciation to Bill Lear, Leonard Kahn and Bill Ofenhausser for their contribution to our growth and success.

**Second**, we have instituted some changes in Proceedings format that I feel will be highly beneficial to all membership. Specifically, we have included a part page “Professional Directory” listing for our qualified members who are interested. It looks as though this is an instant success, as you should note from Page 11 of this issue. We have limited the acceptance of listings, but it is important to all members to know that **any member** active and qualified is eligible. The initial listing charge is \$15.00, with subsequent listings in later Proceedings to be at \$10 per listing, should a member wish to continue the idea later.

**Third**, and very important, is our complete membership directory listing being carried in this issue. This is a major task and I am certain there will be a few misspelled names, a number of incorrect addresses, and some omissions — so it is the plan to carry an insert “correction and changes” made up in similar size type as used in this directory issue so that the revisions can be clipped and pasted in your file copy over incorrect listings that will be reported. It is important that any member noting an error report it to the Executive Secretary so that we can make corrections.

**Fourth**, last year we called upon our Life Members for limited financial contributions to support the cost of mailings and extra features that we provide for them. We had a **limited** reaction, and immediate support from many of the distinguished group. We will need this backing again this year and although it has not been spelled out it is obvious that with the plan of two Proceedings annually, plus the numerous newsletters scheduled for 1973, that servicing costs of the membership will represent a substantial amount of the gross income from dues. In this instance approximately 100 of our membership are in the Life category, from whom we get no annual dues income. At the same time all these Life Members must get all material distributed by the Club. We have calculated that it costs approximately \$7.50 per member to service with mailings and Proceedings. That means the 450 dues-paying members have to pick up this load so the \$10 gross dues is totally absorbed with little or no margin . . . Consequently, I am suggesting to the Board of Directors a recommendation that we solicit financial support from the Life Members, possibly in the amount of \$5.00 annually for a sustaining contribution. Since this must be voluntary it is my plan to establish a new class of Life Members, to be known as **GOLD LIFE MEMBERS**. Those making the list will be contributors of \$5.00 annually as sustaining support. I am certain everyone would like to know how you, the Life Members, feel about this request. I feel it is a fair idea, and certainly will enhance the program of the Club.

**Fifth**, although it is not news to thank the vast majority of our members for their prompt payment of annual dues, it is important that you know this is appreciated and necessary. In the past year we had the sad task of dropping a few members from the rolls for failure to pay dues obligations. Fortunately this was not a large number, but even 5% loss is something we would rather not have. We think the Radio Club has a lot to offer to our highly selective membership and we definitely want everyone to maintain the association. So, please cooperate when you get your statement — and that will help.

I am suggesting to the Executive Secretary that we include a “bargain” opportunity to members and fellows of the Club to obtain Club Pins, and you will note a special pricing is offered if you include payment for a pin with your dues check.

**Sixth**, we want all the suggestions and advice we can get so if any members have any thoughts, please pass them along either directly to me, or to the Executive Secretary. Your administrative team is attempting to make the Radio Club of America not only the oldest Technical Radio Society in the world — but the liveliest and most beneficial to its members of any such organization.

**Seventh**, it is the plan of the Directors to possibly offer a new Award as of 1973. We have not finalized the designation or the requirements as yet — but I am thinking of an award to complement the very important **Armstrong Medal** award, which — as explained in detail in this issue — recognizes **technical** contribution to the industry. The proposed **President's Citation** award would be to the member singled out for his contribution to industry in the area of promotion, or some similar thought. If any member has any specific suggestion, let us hear from you.

One last thought — I am anxious to personally thank the many key personalities in the Club who have given so much of their own time, their own funds, to make 1972 another year of marked achievement and success.

Congratulations to the team.





# Evolution of Spectrum Management

by A. Prose Walker

(Chief, Amateur and Citizens Div., FCC)

came into being: radio beacons, weather reports and time signals, with frequency bands allocated to each. Such was the state of affairs in wireless at the beginning of World War 1 in 1914. When nations next met in Washington in 1927, three important scientific advances had been made in the field of radio;

Broadcasting of radio programs had commenced;  
Radio sets had been installed in aircraft;  
The frequency spectrum had been extended into the short waves above 3000 kHz, primarily through the efforts of radio amateurs who had been denied the use of other frequencies.

Spectrum Management has existed ever since we learned to transmit information by electromagnetic waves. In understandable terms, it means reconciling in the best possible way the desired uses of the radio spectrum. Initially it was rather simple, as viewed from our vantage point of hindsight. But most things are that way. The usable radio spectrum has changed over the years from the first transmission across the Atlantic in 1901 on 328 kHz (915 meters), to the present complex of usable radio frequencies now extending up to 275,000 MHz, not including laser optical systems in use, and some other "electric" waves about which we know comparatively little. Consequently, the difficulty of the task of administering the spectrum has increased immensely since men began using wireless waves.

Probably the very first attempt at spectrum management occurred because the extremely wide bandwidth of early spark transmitters would blanket everything on any frequency within a hundred miles or more of the transmitter. The technique utilized to get a clear channel (when diplomacy failed) was merely to lay a book on the telegraph key so that no one else could hear any other signals. But a succession of disasters at sea, culminating with the loss of the Titanic in April 1912, brought forcefully to mind that such a technique was not really useful as a spectrum management tool.

In 1903 Prince Heinrich of Prussia, enroute home from a visit to America, tried to send a courtesy message to President Theodore Roosevelt. He was refused service because the apparatus on board ship was of a different make than that of the shore station. That incident led to the first real attempt to manage the spectrum — at the Berlin Conference of 1906, which was attended by representatives of 29 countries. The principal issues were, understandably,

obligatory communications regardless of the manufacturer of the equipment;  
allocation of frequencies for public correspondence and maritime services,  
and agreement on the use of "S O S" as the distress signal.

Their discussions must have been totally foreign to the modern concept of spectrum management, which is judged by the criteria of bandwidth and signal-to-noise ratio required to transmit information at a given capacity in bits per second.

By 1912 progress in wireless communication had progressed to 479 coast stations and 2752 ship stations, of which 1964 were open to public correspondence. These developments led to the next radio conference in London in 1912, where three new services

Many of you in this room remember the thrills of those days when you finally got a UV201, a 210 or a 203, to oscillate on roughly 200 or 80 meters, or if you were lucky, on 40 meters; building your own chemical rectifier and filter, and gazing in awe at the Roller Smith hot wire ammeter (Model No. HWA-1041), which was absolutely necessary to measure your "radiation."

## Some New Departures

Herbert Hoover was chairman of the 1927 conference, and a most revolutionary procedure was adopted: to use the English language as well as French, the traditional language of diplomacy. However, all delegates were cautioned to "use the privilege with discretion!" This was the beginning of the establishment of the official languages of the ITU which now are English, French, and Spanish, with Russian and Chinese also included as working languages. In cases of dispute, the French text is still considered the official version. The work of the 1927 conference was so exhausting (it had nearly 2000 proposals before it) that it took what has proven to be a most important step in establishing a Consultative Committee. That committee has withstood the test of time and is now known as the C.C.I.R. (from the French version of the title).

The usable frequency spectrum as then understood extended from 10 kHz to 60,000 kHz and the real difficulties of spectrum management had begun. After a table of frequency allocation was drawn up:

How should the rights of conflicting parties be settled? . . .

. . . if a station changed frequency or a new station started up and caused interference, which station had priority?

After lengthy discussions it was concluded that there was no possible way in practice to make adherence to the table of allocations obligatory. That principle is still true today, as evidenced by the numerous reservations taken by many countries in the present International Radio Regulations, and the many transmissions which do not coincide with the Table of Allocations.

The period from 1932 up to the beginning of World War II encompassed two international conferences, at Madrid and Cairo, where additional scientific developments were taken into account:

1. Broadcasting had expanded into the short waves, as had also commercial interests and government

stations which had "seen the light" uncovered by radio amateurs in their experiments;

2. by 1934 there was a kind of radar in existence, and
3. in 1936 the BBC in London was broadcasting a "high definition" television service using 180 lines, which had been received on this side of the Atlantic.

During these early days after broadcasting became established, the portion of the spectrum which gave most difficulty to allocation people was from 150—1500 kHz. Little did they know what was to be the future of medium frequencies, later known as the standard broadcast band. As stations became more numerous, ways were sought to enable them to operate without causing undue mutual interference. One of the applicable techniques developed was the directional antenna, using vertical radiating elements with spacing, phasing and current ratios adjusted to produce the desired radiation fields in the wanted directions. The beginning of an era of consulting engineering was introduced by the installation about 1940 of such an antenna at WFLA in Tampa, Florida by the late FCC Commissioner T. A. M. Craven and Ray Wilmotte. Since that time, the allocation, or assignment, of stations in the standard broadcast band has been on an engineering basis, with complicated directional arrays now in use by roughly 2500 AM broadcasting stations in this country.

### After World War II

Almost as soon as we realized that frequency congestion would become a future problem, we found the world engaged in another World War. In all countries involved in the scene of the struggle, terrible destruction of telecommunication facilities took place. Suffice to say that in France alone:

- 54,000 miles of overhead wires were down;
- 60 relay stations were destroyed;
- 30 cities had their underground cables cut;
- 110 telegraph offices lay in ruins;
- 50 submarine cables had been severed,
- and of the original 42 French national broadcasting transmitters, only four were usable at the end of the war.

Wars are waste, however much they accelerate technological progress. During World War II more technical developments were made than in the entire previous history of telecommunication. . . which laid the base for everything that has occurred in spectrum management since that time.

Following the war, the Big Five powers met in Moscow to discuss preparation for the next international telecommunication conference, which had been recognized as absolutely essential to avoid utter chaos in peaceful applications of war-time developments. Only the United States was relatively unscathed by the war; and characteristically, we desired to use this advantage for the benefit of others. This led to the World Administrative Radio Conference, the Plenipotentiary Conference, and the first of a series of High Frequency Broadcast Conferences in 1947 at Atlantic City. Six-hundred delegates from 76 countries attended to the post-war problems of the spectrum, not entirely aware of the tremendous added burdens to come into the scene with post-war developments and applications in the regions of the VHF, UHF and SHF. Television was still an experiment on VHF, but wartime radar techniques brought it into clear focus shortly after the end of hostilities. Fortunately for the United States, our government had recognized the impending spectrum utilization, and as early as 1944-45, before the war had ended, called General Allocation hearings on uses of the spectrum. This set the stage for the United States position at the Atlantic City WARC.

### TV Problems and Standards

A significant problem of the post-war years, which still has not been solved, relates to international standards for television. At Atlantic City in 1947, delegates were unworried about the allocation of the spectrum from about 30 MHz to 10.5 GHz. They concluded that it could be allocated to radar, television, FM broadcasting and few other "relatively minor services." What

can happen even with considerable international liaison in our present world of telecommunication is typified by present television standards in use throughout the world. In the United Kingdom they use 405 lines on VHF, but on UHF they use the CCIR standard of 625 lines. In the United States we established our system using 525 lines, and the French used 819 lines. This perhaps wasn't so bad, although annoying, until along came color television. No other subject ever elicited such acrimonious debate among I.T.U. delegates as the subject of color television standards at meetings in Vienna in 1965 and Oslo 1966. We had the NTSC simultaneous color system; the French had their SECAM system; Germany introduced the PAL system and Austria came up with what was called QUAM.

Some witty delegate coined some humorous descriptions for these systems which you might enjoy.

- NTSC . . . Never Twice the Same Color
- SECAM . . . System Elegante Contre L'Allemagne
- PAL . . . Pay for Additional Luxury
- QUAM . . . QUick Austrian Modification

So we not only have four different line standards but also different systems for encoding and transmitting color pictures. Fortunately the four mentioned (actually there were more) have been pared down to three. Everytime you see a satellite picture coming from the European area, remember it had to start out with a different line scanning standard as well as a different color encoding system, and go through a standards converter to be seen on your color television set. I often marvel at the preservation of quality considering everything that has to be done. We have learned that spectrum management becomes dependent on technical standards. As you look at the various TV systems in use throughout the world we find great variations in such important parameters as channel width, spacing between sound and video carriers, width and attenuation of the vestigial sideband, type and polarity of modulation, ad infinitum.

### The IRAC

Probably I should have stated initially that any attempt to cover this subject comprehensively would require much longer than you would like to listen. At this point we have just progressed beyond World War II and the technological revolution has just begun. You realize, I know, that any agency of the government that uses frequencies (and most of them do) has a group of spectrum managers overseeing their requirements. No agency can act alone in this field because of the interaction among the various uses of the spectrum. So there is a group of government spectrum managers called the Interdepartment Radio Advisory Committee (IRAC), which has existed since 1922 under various names. The broad main charter of this group is to take care of the frequency requirements of each agency of the government. The FCC is a liaison member, because its responsibility is to the civilian uses of radio, and therefore close coordination is required.

The IRAC has a membership of 16 departments or agencies, and three permanent subcommittees: Frequency Assignment, Spectrum Planning and Technical. The IRAC and its subcommittees are chaired by officials of the Office of Telecommunications Policy, whose Director is Dr. Clay T. Whitehead. The magnitude of the government's use of the spectrum almost staggers ones imagination. The dollar investment is over \$50 billion; millions of transmitters are operating daily; government frequency assignments amount to about 120,000 and the number of governmental missions depending on radio is incalculable. No wonder such a group is required to exercise the President's responsibility in this area of spectrum management.

### The Giant Step

Although there are thousands of worthy post-war developments, I would choose the satellite as the one which will remain the outstanding example of technology covering a wide variety of fields. Satellite communication became a reality on July 10, 1962, a short ten years ago. TELSTAR I was designed and built by Bell Laboratories and launched by NASA in just 18 months. Its impact

is still being felt throughout the world. Congress created the Communications Satellite Corporation three months after TELSTAR, and the international consortium known as INTELSAT now numbers 82 nations as members.

The evolution of international communications has proceeded rapidly through increased utilization of both cables and satellites. The INTELSAT system, now in fourth generation satellites, has increased its technological capacity from 240 voice circuits for INTELSAT I to 9,000 such circuits in INTELSAT IV in the spot-beam mode, or 12 TV channels, or various combinations depending on modes, emissions and radiation configurations. In 1965 we had only two-point coverage over the Atlantic basin in the northern hemisphere, whereas today several satellites provide practically total coverage in the Atlantic, Pacific and Indian Ocean basins with more than 80 antennas at 64 earth stations in 49 countries. Technological investigations now under way indicate that whenever traffic volume justifies it, a new generation of satellites can be provided during the late 1970's capable of providing 20,000 to 30,000 voice circuits with a maximum degree of redundancy to achieve the highest standards of reliability and useful lifetime. Although evolution of cable capacity is not so dramatic as that of satellites, it has increased from 36 voice channels in the first cable authorized, to current and planned capacities of three thousand such channels or even higher, per cable. We now have cable connections from the United States to Europe via TAT-1 through 5, to Bermuda, Puerto Rico, Virgin Islands, Jamaica, Panama, Cuba, Hawaii, Japan, Hong Kong, Phillipines and southeast Asia on to Australia.

Every service concerned with long distance and international communication has felt the impact of these achievements. Work in the CCIR, recent ITU conferences, and proceedings before the FCC, emphasize that communications handled by the Fixed, Aeronautical and Maritime Services are either in process of transition now or are being planned for satellites in the near future. What happens to the HF spectrum, which is currently allocated to these services? Well, obviously it will not mean a complete reduction of their HF spectrum allocation, because there will be a number of countries throughout the world without cable terminals and satellite earth stations. Such a major evolutionary development in communications makes it obvious that we must reexamine the utilization of the high frequency spectrum. The last over-all allocation from 3-30 MHz was in 1959 before we had a satellite system and prior to current cable expansion. Undoubtedly, new services and several old ones will clamor for more spectrum space.

### Hams, and Others

The High Frequency Broadcast Service now assigns stations every 5 kHz, utilizing geographic sharing, time sharing, highly directional antennas, and restriction of maximum modulating frequencies to 6400 Hertz. They will want more bands; something like ten, probably 500 kHz wide. By 1980 it has been predicted that the Amateur population of the world will be between six and eight hundred thousand. Frequencies allocated to Amateurs have been gradually whittled away over the years, rather than increased, as with most other services; and if the prediction of their numbers should come even close to being true, they will desperately need additional spectrum space in the 3-30 MHz area. Large areas must not be pre-empted by stations moving into unoccupied regions of the spectrum in a haphazard manner. (Some of this is currently taking place). That will only make the future administration of the spectrum more difficult. In my opinion, a study of the re-allocation of the HF spectrum will be inevitable. Services which have major blocks of HF spectrum allocated to them and which are going to cables and satellites with their traffic, will receive close scrutiny by the world's spectrum managers.

What does this mean to spectrum management? Well, in 1971 it meant a World Administrative Radio Conference specifically dealing with Space Telecommunication. Allocators now must think in new terms, which ten years ago would have been foreign

to their vocabulary except in specialized areas of communication. They now must deal with:

Propagation effects on earth-space transmissions instead of just the usual phenomena of F2 layer transmission, ducting, sporadic-E, etc.;  
the atmosphere "window" through which signals pass without undue absorption;  
Signal levels in terms of dBW/ m<sup>2</sup> of power flux density instead of signal strength in  $\mu\text{V}/\text{m}$ ;  
angle of elevation;  
refraction phenomena;  
scintillation and scatter;  
Doppler and Faraday effects;  
station keeping of the satellite;  
interference from the sun, and  
echoes, noise, temperature of the receiving system, and a host of others too numerous to list.

### A Problem-Solving Approach

All problems of spectrum utilization are certainly not solved because we have a satellite system. The tremendous requirements for mobile communications by the countless users in the various Land-Mobile Services have led to extreme pressures on desirable regions of the VHF and UHF spectrum. Although frequency sharing has existed for years, our parochial system of frequency allocation has been by the block method. Within each allocated block, station assignments in particular services are made. But Land-Mobile needs more spectrum, which has been the subject of numerous papers, hearings, discussions, arguments and controversies over the past several years. Land-Mobile stations are now sharing certain of the UHF television channels under specified conditions. Still the growth continues and the squeeze on the spectrum has resulted in an attempt to bring modern technology into the Land-Mobile frequency management process.

No doubt many of you know about the spectrum management project which the Commission is now implementing in Chicago. This program will require building and maintenance of a complete administrative and technical data base containing the records of all the licenses within a particular area. That data will be used as the FCC's automated record of the licenses, and will provide the engineering environment to enable making more optimum frequency assignments. The data bank will contain not only data from Application Form 425, but also inputs from monitoring observations. There are differences of opinion as to whether sufficient benefits can be derived from such an endeavor to make the result positive in terms of cost-effectiveness. It requires considerable money to conduct such an operation. No one can predict yet with much reliability just how much more spectrum utilization can be obtained by these methods, nor at what cost per application or channel assignment. Only time will tell. For administrative purposes, plans and budgets are being prepared for extending the project into other areas of the country. Regardless of which side of the fence one may be inclined respecting this project, it is an attempt to utilize modern techniques involving magnetically stored data and a computer to improve the use which can be obtained from one area of the radio spectrum. It is a step in the right direction, toward making a more effective value judgement of spectrum management. Its evaluation is awaited with interest.

There are always competing claims on the spectrum. There are five usually applied criteria in determining priority of use:

1. Inability to use wire lines or other substitutes for radio
2. Contribution to maintaining safety of life and property
3. The number of people who would benefit
4. The demands of the public for the output of the service
5. The technical suitability of the spectrum requested for the requirements of the service.

## Unknown Radiations?

When all is said and done, and we have every transmitter on the right frequency operating in the best interests of its users, we have a lot of electromagnetic energy wafting around throughout the area here on earth where people live. You can't see it, but do you wonder if there are any effects on humans from all this electromagnetic energy to which we are all subjected? Is there any relationship between the known forms of radiation and those "waves" about which we know but little? There are some measurable side-effects of electromagnetic radiations:

At 700 Hz we can produce electrical anesthesia  
Certain components of living cells in people are resonant in the aural and television broadcasting bands

We know that ants will align their antennae parallel to an electromagnetic field at 9 MHz

Radiation at 21 MHz increases the germination of gladiolus bulbs by 200%

Emissions at 27 MHz affects growing cells of garlic plants

You can kill bugs in bread with emissions at 29 MHz  
Short exposure to energy in the 300-3000 MHz region expedites regrowth of severed nerve cells.

Radiations at 388 MHz are lethal to monkeys.

If one had the acumen to evaluate the present with the hindsight of the upcoming generation, I'm certain we would conclude that the science of communication is still in its infancy, despite the wondrous things that have come about. Perhaps certain of these unseen radiations will be discovered to be the catalyst that will enable people to communicate reliably

by **thought transmission**. We know that some people have such limited powers now, although we don't understand yet the details of how it is done. There is much research in progress on the subject throughout the world.

After thousands of years of development in mechanical technology, we are now engaged in extending our thought transference by electromagnetic means throughout our globe. We are even probing outer space, for some sign of life and intelligence there with which to communicate. If we do this, the final phase of the extension of mankind may well be, as Marshall McLuhan puts it,

"... simulation of consciousness, when the creative process of knowing will be collectively and corporately extended to the whole of human society, much as we have already extended our senses and nerves by the various media . . ."

When that time arrives, God help the spectrum managers!

A. Prose Walker, Chief of the Amateur and Citizens Band Division of the FCC, has devoted much of his life to the field of frequency management and allocation. He has been chairman of the International Radio Consultative Committee's Study Group No. 10 (aural broadcasting) since 1953. He has also served as chairman on the Field Test Panel of the National Stereophonic Radio Committee, which recommended the system of FM stereo now in use; as chairman of the NAB Disc Recording/Reproducing Committee, and on the Television Allocation Study Organization (TASO) as well as other government-industry committees whose decisions have been important milestones in the progress of telecommunications.

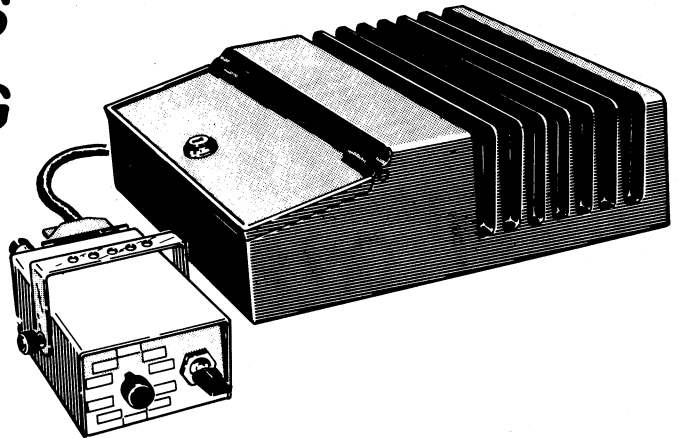
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**Frank King receives his Honorary Membership certificate, presented by the Club's vice president Samuel Harmatuk.**

Probably the best known of the three distinguished members to whom Honorary Memberships were presented at the 1973 Banquet Meeting is W. Walter Watts. Former Senior Group Executive Vice President of RCA. He is famous as a business leader and executive. He was a strong proponent of television as far back as 1935, when opinions about the advisability of investing large quantities of RCA resources in the new field were mixed.

His business triumphs tend to overshadow his earlier record as an engineer, when he built the transmitter for the early Chicago broadcast station WBBM practically single-handed. His amateur record goes back even earlier — he recently reminded President Link of a QSO between his amateur station in Illinois and Fred Link's 3BVA in York, Pennsylvania, in December, 1922. Mr. Watts came from his home in Florida especially to receive the citation.

The other Honorary Member present to receive his certificate was Frank King, one of the Founders of the Club and its first corresponding secretary. He had one of the earliest — if not the earliest — amateur phone station operating in 1911. He has been a shipboard radio operator, organized the first U.S. Navy Aircraft Radio Laboratory, was a long-time partner in the firm of Amy, Aceeves and King, and president of the King Radio Corporation.

The other founding member, W.E.D. Stokes, first president of the Club, was not able to attend. He sent the following letter:

#### The First President's Letter

This is a happy day for me. First, President Nixon is back on the job for four more years. Next, you have seen fit to honor me — for which I am most grateful, Finally, I see the forward momentum of the Radio Club continuing and the organization in strong hands.

We have come far from the beginnings of the Club — originally a small group of boys in their early teen's, making model planes to fly in the Armory. It was when Professor Fessenden suggested that we look into wireless and invent a system to control our models in flight that the Radio Club was brought into being.

All the members were imaginative, ambitious and active young people. Everyone wanted to invent something and get a patent. (I ended up with four.) We had a large collection of minerals, since my family was interested in mines. I tried all of them as possible detectors, and got my first patent on a bracket to hold galena.

My first transmitter was Station X on the Ansonia Hotel, powered with a 3-kW transformer. Every time I pressed the

# DISTINGUISHED MEMBERS HONORED

key the phone would ring and an angry voice say "Cut out that noise!" That frustrated normal attempts to exchange calls with friends. I began to study directional beams and made an antenna on the roof of my father's place in New Jersey. It consisted of four wires that led from a pole fastened to the chimney. Each wire sloped gradually downward, and had a lead down the chimney to a selective switch. I also received a patent for that idea.

About this time (1910) there was an uproar against the activities of amateur radio operators and the Depew bill, to drive them off the air, was introduced in Congress. A group consisting of Frank King, George Eltz, Ernest Amy, myself, and possibly one other, went to Washington to testify against it before the Commerce Committee. We killed the bill stone dead.

Next winter the club had a demonstration of equipment and ideas at the Armory. There was a large turnout and the quality and appearance of the handmade equipment was truly remarkable. Someone told me that wireless waves were like light. This prompted me to make a small sending and receiving station using ordinary electric heaters. The antennas were the coils set in the large reflectors. The system was decidedly directional, and may have been the first use of parabolic reflectors in radio communication.

Because the New Jersey coast was afflicted with numerous electrical storms I tried various ways to control the static. I found that I could take the screen door off the back porch and



**W. Walter Watts [left] and vice president Sam Harmatuk.**



place it on four glasses to use instead of the conventional rod in the ground. I received a patent for that idea. Everyone was making various designs of loose couplers. I had my own ideas about that and received a patent on my design.

#### The Wireless Telephone

About this time I was invited to go to Brant Rock to see Professor Fessenden at work. He showed me his "wireless telephone," which consisted mostly of an arc light and a telephone mouthpiece connected with suitable condensers. He let me borrow some "flaming arc" telephones and take them back to the Ansonia Hotel station. The equipment actually worked and may have been the first of its kind; the disadvantage was that it used too much power and dimmed the lights in the hotel every time it was turned on. Also, the carbons burned out very quickly.

In later years I owned three airplanes and experimented with directional beams. I found I could home in on distant stations by using a long antenna trailing from the back of my plane. I also noticed that the signals weakened when the plane was crossing certain mining areas, and did quite a bit of experimenting over Franklin Furnace, New Jersey, and Battle Mountain, Nevada.

#### Wartime Work

During World War II the Navy captured a German torpedo with a rod on the front of the warhead. It was copied and became the Mark 6 Exploder. I was involved in the torpedo program and was selected to write an inspection pamphlet telling how to make the thing work. The warhead contained a receiver, which was tuned in balance. When the torpedo passed under a ship the magnetism of the hull would distort the balance and explode the torpedo. That was the only way we were able to sink any Japanese ships — if a torpedo struck a



**W. E. D. Stokes, a founder and the first president of the Radio Club of America [then Junior Wireless Club].**

ship it was going so fast that the warhead would be telescoped before it had a chance to fire. The Mark 6 Exploder was set to go 15 feet under the enemy ships.

Again, let me thank you all for your generous gesture in making me an Honorary member, I wish you all and the Club the best of luck.

COMPLIMENTS OF

# Hazeltine Corporation Industrial Products Division

- *Hazeltine 2000 Video Display Terminal*
- *Hazeltine AVM System*



Left to right — Jan White, partner with Joanne Sotres in "Sotres-White Creative Promotions," a joint business, our president, Fred Link; Joanne Link Sotres; Susan Armitage, wife of Club member Alan Armitage. The Poppole half of the prize team — June, Lorraine and Pauline Poppole — were unfortunately missed by our roving photographer.

## PRIZE TEAM PUTS OVER TOP RAFFLE

The drawing for prizes has long been a main feature of Radio Club banquets. This year's prize drawing was by far the most successful in the remembered history of the organization. Member and guests bought tickets aggregating nearly \$700 for prizes that totalled nearly \$2000 in value.

The success of the drawing was attributed by all to the efforts of the Radio Club sales team, consisting of the young ladies above, Jan White, Joanne Link Sotres (with President Link between them) and Susan Armitage, together with the Poppole team, consisting of June, Lorraine and Pauline Poppole.

Second only to the efforts by the raffle team in producing results was the quality of the goods themselves. For every dollar invested in tickets, \$3.00 was drawn in prizes (not all—of course—by the same persons!) Jack Poppole's repeated announcements, pointing out the values that were being offered, also played their part, and Jack himself attributes the willingness to invest partly to the increasingly encouraging business atmosphere, which created an air of economic well-being missing from the last few preceding banquets.

Harry Boyle, Bob Harvey and Loren McQueen ably assisted the sales team by organizing the prize table, supervising the distribution and keeping the accounts.

Prizes were donated by the following supporters:

Aerotron Inc.	Microwave Associates Inc.
American Can Co.	Motorola
Boeing Electronics	North American Philips (Norelco)
Decibel Products	Plessey Electronics Corp.
General Electric	Pye Communications Ltd.
John A. Gambling	Parker Publishing Co.
Hazeltine Corp.	Radio Shack
Hallicrafters	RCA
E. F. Johnson Co.	Repco
R. W. Johnson	Unimetrics, Inc.
Tele-Measurements Inc.	Urban Sciences

The Grand Prize—an RCA color television set—was donated by Fred M. Link and four of his clients: American Can Co., Hazeltine Corporation, Microwave Associates and REPCO, Inc.

### ED RASER HONORED

Ed G. Raser, Curator of the W2ZI historical Wireless Museum, was presented with the Houck Award at the annual Historical Radio Conference held at the Smithsonian Institution, Washington, DC, on September 23, 1972.

The presentation was made by Mr. A. Prose Walker of the FCC, at a banquet attended by some 300 persons. It was in the form of a beautiful walnut plaque with an engraved brass plate inscribed:

**1972 Antique Wireless Association Houck Award presented to Edward G. Raser, W2ZI, for meritorious contributions to the preservation of early wireless history.**

The W2ZI Wireless Museum contains a large collection of equipment of the period between 1899 and 1925. In addition, its library of countless rare books, photographs, and magazines makes it one of the finest historical archives in the country. The Museum is open to the public by appointment only. Write W2ZI at 19 Blackwood Drive, Trenton, NJ 08628, or phone 209-882-6645 for an appointment if you wish to visit the Museum.

### OUR 1972 "GOLDEN LIFE" MEMBERS

The Radio Club wishes to thank those Life Members who so generously sent contributions in response to the appeal issued last summer by Secretary Frank Shepard. The following is our "Golden Life" list:

Leon L. Adelman  
H. S. Bernard  
Harold H. Beverage  
Albert K. Bohman  
Meade Brunet  
Frank E. Carnavacio  
Robert V. Crawford  
Karl D. Engle  
C. L. Farrand  
Edgar H. Felix

Robert C. S. Finlay  
Samuel N. Harmatuk  
A. V. Loughren  
Walter Lyons  
A. S. McKenzie  
Wm. H. Offenhauser  
D. E. Replogle  
Avery G. Richardson  
Frank H. Shepard  
W. H. Taylor, Jr.

# Professional Directory Of Radio Club Members

DALE L. BUNDAY, PE  
*Communications Consultant*  
8704 Willowick Drive  
Austin, TX 78759  
512-345-1118

W. G. H. FINCH, PE  
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CPO Box 44  
Newtown, CN 06470

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*Communications Systems Consultant*  
1911 North Fort Myer Drive  
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*Management Consultant*  
2537 Claver Road  
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216-382-4070

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934 Pleasant St.  
Oak Park, IL 60302  
312-386-9188; 217-525-6818

CARLES HOLT  
*Systems Engineering & Support*  
22061 Del Valle St.  
Woodland Hills, CA 91364  
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P.O. Box 803  
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177 Worcester Street  
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A305-746-0952

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*Communications Consultant*  
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Campbell, CA 95008  
408-377-2900

JACK R. POPPELE  
*TV Consulting, Design, Manufacture*  
145 Main Avenue  
Clifton, NJ 07014  
201-473-8822; 212-581-9020

GEORGE A. PRAUL  
*Public Safety Consultant*  
1054 Bristol Road  
Warminster, PA 18974  
215-675-6961

JOHN J. RENNER, President  
*Advanced Technology*  
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Arlington, VA 22201  
705-525-2664

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New York, NY 10017  
212-697-0235

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*Consulting Engineer*  
Electronic, Electromechanical Systems  
P.O. Box 332, Summit, NJ 07901  
201-273-5256

G. E. SMITH  
*Consultant, Communications*  
Camden, SC 29020  
803-432-7653

DAVID TALLEY  
*Telecommunications Consultant*  
40 East Ninth Street  
New York, NY 10003  
212-982-2420

NORMAN E. WUNDERLICH  
*Consulting Engineer*  
2220 Avenue of the Stars  
Los Angeles, CA 90067  
213-277-2399

COMPLIMENTS OF

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dodge  
Communications Company**

MARLBORO, NEW JERSEY 07746



**Frank Gunther presents the Award to Renville McMann, Jr.**

Renville McMann, Jr., President of CBS Laboratories, received the 20th Armstrong Medal awarded by the Radio Club of America, at the Annual Banquet Meeting last November 17. The award was established in 1935 in honor of Major Edwin H. Armstrong, famous for the superheterodyne receiver and the father of FM radio broadcasting. The first of the Armstrong medals was presented to Major Armstrong himself. After that, it was awarded to a number of notables in the field of electronics: Professor Hazeltine, Dr. Beverage, Greenleaf Whittier Pickard, Harry W. Houck, Carman R. Runyon, Jr., Charles Stuart Ballantine and John V.L. Hogan, all between the year 1937 and 1947. After a gap of a few years in which no medal was awarded, Captain Henry J. Round of England received the medal in 1952. He was one of four who received the award in the 1950's. Six awards were presented in the '60's and Frank Gunther received the medal in 1970.

The Armstrong medal was presented to McMann for his outstanding contributions in the application of communications techniques to television systems. A son of one of our pioneer members, he is a past president of the Club. He graduated from Yale University, where he earned a B.S.E.E. degree, in 1950. He was on the staff of Hartley Research Laboratory at Columbia University and was associated with late Major Edwin H. Armstrong as an engineer on FM systems, including multiplex stereo and the Signal Corps' Moon Radar development program. He worked for the National Broadcasting Company as a project engineer on color TV studio and broadcasting equipment, as well as TV receiver design. He has been an instructor in communications at New York University and a consultant to the U. S. Forest Service on Project Skyfire.

At CBS Laboratories, which he joined in 1955, McMann has been instrumental in developing the Minicam Mark VI Portable Color TV Camera System and as a result of this work is co-holder of the first "Emmy Citation" for development from the National Academy of Television Arts and Sciences. He has also developed various reconnaissance systems based on the use of the laser for film scanning.

McMann is co-inventor with Dr. Peter C. Goldmark of the EVR and BEVR concept which promises to revolutionize the distribution of pre-recorded video information for educational and entertainment applications. He developed a miniature, low-light level version of the CBS field-sequential color camera system along with a field store scan conversion system to convert the resulting signal to a standard NTSC format. As a result of this work, he was consultant to NASA on the Apollo Color TV System.

12

## **Renville McMann, Jr.**

### **receives the**

## **Armstrong Medal**

McMann has developed image enhancement systems using vertical aperture utilization with non-linear signal processing which are now employed in virtually every color TV station. An Emmy in 1971 was presented for the color corrector he developed with CBS Laboratories consultant Adrian Ettlinger to maintain the uniformity of pictures shot under differing conditions.

Prior to his appointment as president, McMann was executive vice president of CBS Laboratories, a division of Columbia Broadcasting System, Inc.

The presentation was made by Frank Gunther, a past president of the Club and winner of the latest preceding Award, who said:

"On behalf of the Radio Club of America, it is my honor along with the other members of the Awards Committee, Ernest V. Amy, Harry W. Houck, William H. Offenhauser and William P. Lear, to present The Armstrong Medal of Honor, in this year of 1972.

"As you know, this medal is not awarded every year, but only after your committee has searched very carefully throughout our Club's membership to find a recipient worthy of joining the esteemed list of former Medalists. Thus, The Armstrong Medal Of Honor has become one of the most cherished awards for our entire industry, throughout the world.

"This year we have found a winner who rightly deserves this award, for his technical accomplishments have truly followed the tradition of our club's most famous member, Edwin H. Armstrong, for whom this medal was named.

"He is the son of Renville H. McMann, an early member of our Club. As a student he worked summers and later full time as a laboratory assistant under Professor Armstrong at Columbia University and Alpine, New Jersey.

"He is a past President of The Radio Club of America; holder of numerous patents covering inventions that will benefit mankind for generations to come. His abilities have been recognized and rewarded by his co-workers and in January this year, he became the President of The CBS Laboratories—a division of Columbia Broadcasting System, Inc.

"Throughout his entire career, he has been an outstanding example of a modest, unselfish, dedicated human being.

"Therefore, tonight, at the 63rd Annual Dinner of The Radio Club of America, I am honored to represent his peers, in presenting to Renville H. McMann, Jr., The Edwin H. Armstrong Medal of Honor, with its' accompanying Citation:"

"The Armstrong Medal for 1972 is awarded to Renville H. McMann Jr. by the Radio Club of America, in recognition of his outstanding contributions to the application of communication techniques to television systems.

"During the past eighteen years, while holding various executive positions from Director of Engineering to the President of CBS Laboratories, he has demonstrated many of the inventive characteristics of Edwin H. Armstrong, on whose staff he served from 1943 to 1951.

"He is the holder of some two dozen patents, including:

"The Color Scan Converter which enabled mankind to watch the astronauts walk on the moon

"The radio controlled portable color camera which sent pictures of Apollo landings to the largest audience in the history of the world.

"The signal processing techniques which enhance the sharpness and color of the pictures we see every day

"The low-light-level color camera which enables medical science to better understand the human body

"The use of the laser to scan and record extremely high resolution photographs

"The development of the Photo Scan Image Transmission System which was used to obtain the first high-resolution photographs of the moon and which mapped the moon prior to the landing of the astronauts

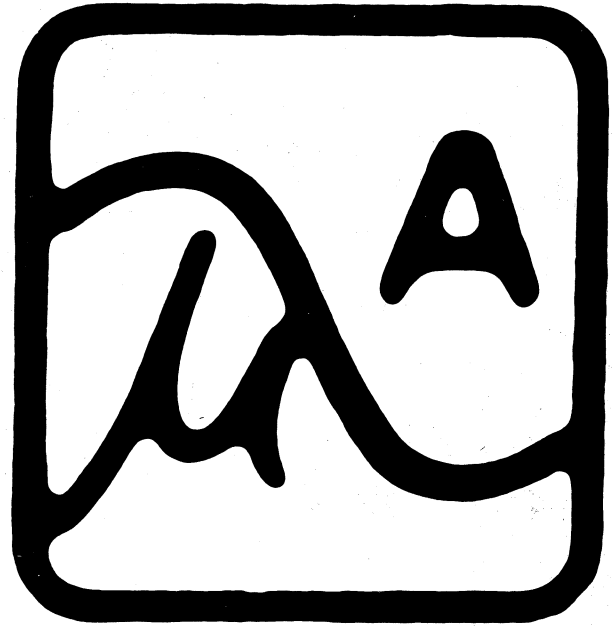
"The application of colored lasers to TV film recording, which promises to revolutionize the production of moving pictures."

**ARMSTRONG MEDAL RECIPIENTS**

Professor Alan Hazeltine	1937
Dr. Harold H. Beverage	1938
Greenleaf Whittier Pickard	1940
Harry W. Houck	1941
Carman Randolph Runyon, Jr.	1945
Charles Stuart Ballantine	1946
John V. L. Hogan	1947
Captain Henry J. Round	1952
Raymond A. Heising	1953
Melville Eastham	1956
John Bose	1959
Paul Ware	1962
Harold A. Wheeler	1964
Ernest V. Amy	1965
John Kelly Johnson	1967
Jerry B. Minter	1968
Francis H. Shepard	1969
Frank A. Gunther	1970

Other names than those in the list printed here have been mentioned in connection with the Armstrong Medal. This is because a number of replicas of the medal were presented to members of the Club at the October 21, 1950 dedication of the IBCG Memorial, a monument commemorating the first shortwave transmission across the Atlantic, December 11, 1921. The monument is on the site of the shack in Greenwich, Connecticut, from which the original transmissions were made.

These Armstrong medallions were presented to the original participants in the event, E. V. Amy, Major Armstrong, George Burghard, Minton Cronkhite, John Grinnan and Walter Inman, staff of the original WIBCG, and to Paul Godley, who received the transmissions in Scotland.



- New IF Heterodyne, Remodulating, and Portable Radio Systems for video, voice, and data transmission. New equipment sub-systems allow transmission of PCM or FDM carrier above the video spectrum. Split channel operation doubles the video signal capacity.
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## The Famous 63rd Bro

"The 1972 Annual Banquet," says Banquet Chairman Jack Poppele, "will go down in history as 'the Famous 63rd.' The results were beyond all expectations, and the slide rule came in handy in comparing the results of the 1972 banquet with those of 1971."

Two-hundred-odd members and guests made this the biggest affair for many years. Represented among the guests were several fellow associations, such as the ARRL, whose president Harry Dannals headed a table of largely Headquarters hams. The Armed Forces Communications and Electronics Association (AFCEA), the Quarter Century Wireless Association and the Vehicular Technology Group of the IEEE were also represented, thanks largely to the work of David Talley, W2PF, and others, who spread publicity at the various organization meetings and conventions.

Amateurs were particularly evident, numbers of members and guests wearing badges with their call letters. At one point, Frank Gunther asked all active hams to stand up, then all who had been hams in the past to do the same. Between active and inactive, approximately half of those present were or had been amateurs.

14

The ladies were particularly in evidence, their numbers having increased every year since 1969, when the Club, after years of all-male banquets, resolved to again invite the ladies. Their increased interest in the Club as they learn more about it and their husbands' activities is given credit for part of the increased activity of the past few years. When the ladies begin "to know and appreciate the affairs of their engineer-executive mates, things begin to hum," says Jack Poppele.

Another important factor was the evidence of improvement in the overall business climate, which aided in bringing in members from all corners of the USA and Canada. The prize awards also continue to be one of the most interesting features of the affair, and this year's prize-ticket team contributed no little to its interest, as is noted in the story on page 10.

President Fred Link analyzed the success of the banquet-meeting as due to no less than eight contributing factors: The spirit at the cocktail and good-will party from 5 to 7 pm; the catering and handling of the banquet itself; the excellent quantity and quality of the products offered for the prize raffle; the presentation citations to Honorary Members; the impressive Armstrong Medal award to Renville McMann, with



## e All Previous Records

the sidelight of his father being present; the presentation of Certificates to new Fellows, fourteen of whom came from points more than 200 miles away to receive them; the excellence of the main speech by A. Prose Walker, and finally the prize drawings, with a color TV set as the main prize.

From the financial side, the affair was also deemed the greatest success for years. Sale of dinner tickets amounted to \$2,184.00 and for the prize-affle tickets \$670.00, making a total gross income of \$2,854. Total expenses were in the order of \$2,053, leaving a balance of \$804 for the benefit of the Club.

### Results of the Election

The names of the 1973 Board of Directors appear on the inside front cover. The members of the Board are elected for two-year terms, half being elected each year. The new members on the Board, serving through 1974, are John Anderson of Kaman Aerospace Corporation and Stuart Meyer of RCA. Leo Sands and William Kanz were appointed in 1972 to serve out the terms of Directors who had retired, and were confirmed by the election. George Bailey, Frank Barnes and Walter Lyons were incumbent Directors and were reelected.

Of the 530-odd ballots sent out, 255 were returned. Ballots were counted on the afternoon of the Annual Banquet-Meeting and the results announced at the meeting. Tom Carlson, of Norelco, who was runner-up in the election, was designated by President Link as alternate Director, to fill any gaps in the Board that may occur during the year.

**Congratulations to our Fellow and Director Edgar F. Johnson and to all the members of his fine company on the occasion of the 50th anniversary of the founding of E. F. Johnson Co. Our best wishes to Edgar and all members of the company!**



These newly elected Fellows of the Radio Club of America are, left to right: A. Prose Walker, Chief, Amateur and Citizens Division, FCC; William H. Vogel, TV and FM engineer, veteran communications man; Jerome Zauderer, Product Director, Hazeltine Corporation; Marshall Treado, Manager, Law Enforcement Standards Labs., National Bureau of Standards; Ramsey McDonald, communications executive, retired; William Gamble, Director of Communications, Alleghany County, PA; R. J. "Jim" Evans, Director, Michigan Office of Law Enforcement; Thomas A. Regan, Communications Supervisor, New York State Police, retired; Louis Brown, Executive Vice President, Communications Industries, Inc.; Nicholas Alimpich, project engineer, Michigan Bell Telephone Co.; Lee M. Augustus, Supervisor of Communications, Michigan Bell Telephone Co. Seated, Frank Shepard.

Twenty-seven members of the Club were elevated to the status of Fellow at the Annual Meeting, November 17. Besides the 19 in the photographs, eight were unable to attend the presentation, and their certificates were sent them by mail. They are:

- James Dalgleish, Galashiels, Scotland, consultant to PYE of Cambridge, Ltd., and Director of BEPI (Electronics) Ltd.;
- R. D. Darrell, old-time technical writer and now prominent author on audio subjects;
- Frank Genochio, President, Catel Corp., Sunnyvale, CA;

- Rear Admiral Samuel L. Gravely, Jr., Director, Naval Communications, United States Navy, Washington, DC;
  - Bruce Kelley, Curator of the Antique Wireless Museum, Holcomb, NY;
  - Cyril C. Miller, aerospace instrumentation engineer, consultant, inventor of the microwave oven;
  - David Niblack, Director of Communications, State of Colorado;
  - Herbert Watson, consultant, Indian Wells, CA.
- Some of the new Fellows who came to receive their cer-

## A WORD FROM BILL LEAR

Bill Lear, our distinguished inventor, Fellow and former Director (now also subject of a book: "They Said It Couldn't Be Done," by Victor Boesen, published by Doubleday) reports to President Link that he is in the middle of an SEC registration program involving his steam engine development, and promises to have something more to tell the Club later. His unique Christmas card, from Moya and Bill, observes:

"Remember year before last when we sent the announcement of our little *Engine that Could?* Well, last Christmas came—and it was still trying to get up over that mountain! It was taking more time than we bargained for—the obstacles were greater—the problem much more complex! We (Bill and Moya) addressed ourselves completely to solving the problems on all fronts: meeting the 1976 emission standards—achieving fuel economy—and carefully engineering for low-cost production. It has been an exciting, challenging, frustrating, discouraging achievement! We'll get it made—maybe 1973."

"Fred Link notes: "History tells us that anything Bill Lear sets out to accomplish generally *gets done*. I should know; I was a very close personal associate of Bill's in the period 1932 to 1942, and I never failed to be amazed at the talent and capability of this outstanding man."

## WE'RE MAKING OUT OK!

Our Treasurer, Dave Talley, reports that the Club finished the year 1972 in good financial shape. His report follows:

### BALANCE SHEET, DECEMBER 31, 1972

#### ASSETS

CASH:		
Checking Account in Midland Bank:	\$3,905.28	
In Life Membership Fund in Emigrant Savings Bank	<u>1,190.14</u>	5,095.42

#### INVESTMENTS:

100 shares AT&T Co. common stock @ \$54-1/8	5,413.00	
3 AT&T Co. 8-3/4% Debentures @ \$100	300.00	
6 AT&T Co. Warrants @ \$9-1/8	<u>54.78</u>	5,767.78

#### CLUB PROPERTIES:

Moving-picture projection screen	78.39	
Fellow Club Pins	293.56	
Member Club Pins	208.00	
Miscellaneous furniture and fixtures	<u>1.00</u>	580.95

**TOTAL ASSETS:** ..... \$11,444.15

#### LIABILITIES:

Life Membership Fund	1,190.14	
Executive Secretary for December, 1972	125.00	
Executive Secretary's expenses for Dec.	<u>60.00</u>	1,375.14

**NET WORTH:** ..... \$10,069.01





More newly elected Fellows of the Radio Club (standing, left to right): William Bryson, Chief Engineer, Phelps Dodge, Communications Division; Joseph Gagne, Director of Communications, Long Island Railroad System; William M. Lee, Director of Communications, State of Virginia; Robert Mason, Director of Communications, Santa Clara County, CA; Ray E. Meyers, pioneer communications expert; Fred Shunaman, Editor, **Proceedings** of the Radio Club; Niels Tuxen, manager, Communications and Electronics, North American Philips Co., New York, NY; Jack Wayman, Vice President, Consumer Electronic Products, Electronic Industries Association, was unfortunately standing a little to the right of the photo.

Seated in front, are Armstrong medal recipient Renville McMann, Jr., Past President Frank Gunther, and the Club's Vice President, Sam Harmatuk.

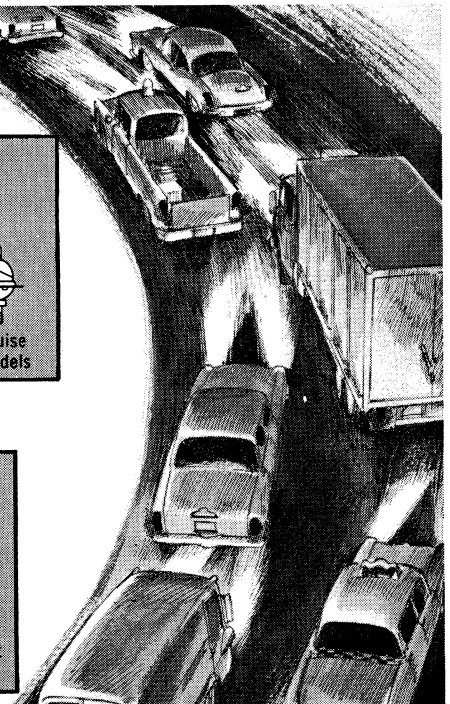
tificates travelled long distances: Ray Meyers from San Gabriel and Robert Mason from Monte Sereno, CA, and Louis Brown, from Dallas, Texas. Three, Jim Evans, Nicholas Alimpich and Lee Augustus, came from Michigan. Three came from the Washington, DC, area and two from Florida. One Honorary Member, W. Walter Watts, also came up from Florida to receive his award.

The activities for which the Fellows were cited covered a wide range: Louis Brown and William Bryson, for example,

were recognized for their contributions in the field of antenna engineering, James Dagleish for notable achievements in coordinating the efforts of the United States and British governments during World War II, and Ramsey McDonald for pioneering the direct-dial mobile telephone. Ray Meyers was cited as radio operator of the Wilkins expedition under the North Pole, Joseph Gagne for railroad communications and Jerome Zauderer for his work in the field of automatic vehicle monitoring.

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- low profile 7 models
- conversion mount 11 models
- ball mount 5 models
- cowl mount 16 models
- disguise 6 models
- portable 17 models
- gutter mount 4 models
- trunk mount 10 models
- magnetic mount 10 models
- motorcycle mount 6 models
- bumper mount 4 models



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# RADIO CLUB OF AMERICA

Membership, January 1, 1973.

- Abrams, Stephen J.**, (M 1961), 3 Charlotte Drive, Spring Valley, NY 10977
- Adelman, Leon L.**, (M 1951, F 1957, L 1971), 25 Chittenden Ave., New York, NY 10033
- Akin, R. M., Jr.**, (M 1924, F 1944, L 1972), 28 Evergreen Way, No. Tarrytown, NY 10591
- Albers, Ralph H.** (M 1971), 51-03 59th Place, Woodside, NY 11377, General Electric Co., Mobile Radio Dpt.
- Albertson, Fred W.**, (M 1972), 310 Harbor Dr., Bay Biscayne, FL 33149
- Alexander, Jay R.**, (M 1957), 14 Somerset Lane, Riverside, CT 06871
- Alexander, Bob** (M 1973), Secode Electronics, Div. of Communications Industries, 908 Dragon St., Dallas, TX 75207
- Alimpich, Nicholas** (M 1972, F 1972), 23500 Northwest Highway, Southfield, MI 48075, Michigan Bell Telephone Co.
- Allen, Hughes S. Jr.**, (M 1967), 3601 Royal Woods Drive, Sherman Oaks, CA 91403
- Allison, John K.**, (M 1968), 160 South Country Road, East Patchogue, NY 11772
- Amerman, Edward A.**, (M 1938, F 1953, L 1972), 59 Harrison Ave., Roseland, NJ 07068
- Amy, Ernest V.**, (M 1909, F 1926, L 1926, H 1964), 1890 Bay Boulevard, Atlantic Beach, NY 11509
- Anderson, Jack G.**, (M 1970), ILC Industries, Inc. Wilmington, DE 19809
- Ardery, James E.**, (M 1973), General Electric Co., Mobile Radio Dept., Lynchburg, VA 24502.
- Armitage, Alan L.**, (M 1969), P.O. Box 303, Dutch Lane Road, Freehold, NJ 07728
- Arnold, John W.**, (M 1929, F 1938, L 1971), 623 East Broad Street, Westfield, NJ 07090
- Ashton, Shirley S. Jr.**, (M 1972), P.O. Box 31231, Washington, DC 20031
- Atchley, Dana W. Jr.**, (M 1970), Concord Road, Lincoln, MA 01773
- Atkins, C. E.**, (M 1962, F 1967), 38 Ardsley Road, Montclair, NJ 07042
- Atwood, Horace Jr.**, (M 1956, F 1961), R-1, Box 715, Montville, NJ 07045
- Augustus, Lee M.**, (M 1969, F 1972), 1213 Westmoorland Ave., Ypsilanti, MI 48197
- Aull, Wilson Jr.**, (M 1920, F 1926, L 1971), 40-14 149th Street, Flushing, NY 11354
- Avallone, Alfonso** (M 1956), 882 First Ave., Franklin Square, NY 11010
- Bach, Norman G.**, (M 1969, F 1971), 800 N. Lindbergh, St. Louis, MO 63166, Monsanto Co.
- Bailey, George W.**, (M 1948, F 1953, L 1970), 61 East 66th Street, New York, NY 10021
- Bailey, Wm. F.**, (M 1960), 37 Chestnut Street, Garden City, L.I., NY 11530
- Baker, Bentley G.**, (M 1969), 3559 Primrose Road, Philadelphia, PA 19114
- Baker, Hugh M.**, (M 1968), 5005 Nebraska Ave., N.W., Washington, DC 20008
- Barber, Alfred W.**, (M 1952, F 1957, L 1972), 32-44 Francis Lewis Blvd., Flushing, NY 11358
- Barnes, Frank P.** (M 1969, F 1970), 320 Park Ave., New York, NY 10022, ITT
- Barnhill, Robert B.**, (M 1970), 535 Wingate, Timonium, MD 21093
- Barone, Salvatore A.**, (M 1926, F 1930, L 1971), 130 Clock Boulevard, Amityville, NY 11701
- Bassett, Rex.**, (M 1972), 2108 N.E. 22nd Terr., Ft. Lauderdale, FL 33305
- Beard, Charles H.**, (M 1973), Aerotron, Southwestern Regional Sales, 206 Wigg, Weatherford, TX 76086
- Becker, Herbert**, (M 1971), 3500-339 / West Manchester Avenue, Inglewood, CA 90305
- Behr, Joseph**, (M 1948, F 1952), 15 Fox Den Road, Danbury, CT 06810
- Bernard, H. S.**, (M 1942, F 1957, L 1971), Indian Harbor Estates, Route 2, New Smyrna Beach, FL 32069
- Bernat, Norman S.**, (M 1970), 25 Cobblewood Road, Livingston, NJ 07039
- Best, Lewis E.**, (M 1971), 1775 Michon Drive, San Jose, CA 95124
- Beverage, Harold H.**, (M 1920, F 1926, L 1971), P.O. Box BX, Stony Brook, NY 11790
- Biggs, J. Alan**, (M 1949, L 1971), 49 Hendricks Isle, Fort Lauderdale, FL 33301
- Bitcon, William A.**, (M 1971), 38 Glendale Avenue, Beaconsfield, Quebec, Canada
- Black, Robert S.**, (M 1971), 5304 Holly Street, Bellaire, TX 77401
- Bohman, Albert**, (M 1926, F 1952, L 1970), R.D. 1, Box 319, Horse Shoe, NC 28742
- Bolin, Ray E.**, (M 1959), 26 Twin Springs Lane, St. Louis, MO 63124
- Borden, Edward W.**, (M 1969), 22 College Ave., Upper Montclair, NJ 07043
- Borst, John M.**, (M 1934, F 1940, L 1971), 335 West 88th St., New York, NY 10024
- Bose, John**, (M 1938, F 1940), 549 W. 123rd Street, New York, NY 10027
- Boyle, Harry**, (M 1970), 585 Main St., East Orange, NJ 07018, RCA Corporation
- Bradshaw, Carl J.**, (M 1972), South Main Street, Crystal Lake, IL 60014, Oak Electro/netics Corp.
- Brinkley, John R.**, (M 1971, F 1971), 25, The Marlowes, St. Johns Wood. London, ENGLAND
- Brizzolari, Anthony J.**, (M 1972), 109-10 Queens Blvd., Forest Hills, NY 11375
- Brodie, William A.**, (M 1973), Brodie Comm's Co., P.O. Box 687, Brandon, FL 33511
- Brown, John S.**, (M 1972), 9756 S. Leavitt St., Chicago, IL 60643
- Broslaw, Joseph**, (M 1972), 212 Beverly Road, Hempstead, NY 11550
- Brown, Louis E.**, (M 1970, F 1972), 3180 Quebec, Dallas, TX 75247, Decibel Products, Inc.
- Brown, Robert M.**, (M 1970), 5611 Middaugh Ave., Downers Grove, IL 60515
- Brozan, Ralph M.**, (M 1970), 405 Lexington Avenue, New York, NY 10017
- Brunet, Meade**, (M 1928, F 1952, L 1971), Millsdale Farm, Mendham, NJ 07945
- Bryson, William B.**, (M 1969, F 1972), 403 Middle Rd., Hazlet, NJ 07730
- Bunday, Dale L.**, (M 1973), Communications Consultant, 8704 Willowick Drive, Austin, TX 78759.
- Burchard, Earl O.**, (M 1971), 2017 Sumter Drive, Tallahassee, FL 32301
- Burns, Robert F.**, (M 1969, F 1971), 19 Silver Beech Road, Riverside, CT 06878
- Burton, Jan**, (M 1970), 3605 S. Tamarac Drive, Denver, CO 80237, Motorola Communications
- Buster, Claude F. Jr.**, (M 1969), 5055 Seminary Rd., Apt. 1009, Alexandria, VA 22311
- Butt, Harvey R.**, (M 1971), 118 River Drive, Annapolis, MD 21403
- Buttner, Harold H.**, (M 1928, F 1940, L 1971), 320 Park Avenue, New York, NY 10022, Int. Tel. & Tel. Corp.
- Byrne, Arthur R.**, (M 1970, F 1971), American Lane, Greenwich, CT 06830, American Can Co.
- Callahan, John L.**, (M 1922, F 1926, L 1971), 702-A Kingston Terrace, RD 4, Princeton, NJ 08540
- Campbell, James J.**, (M 1971), 50 Fieldstone Drive, Whippany, NJ 07981
- Canavaciol, Frank E.**, (M 1934, F 1941, L 1971), 7119 Juno St., Forest Hills, NY 11375
- Caperton, John H.**, (M 1969), 516 Country Lane, Louisville, KY 40207
- Cardwell, George E.**, (M 1969), 7 Albany Ave., Jackson, NJ 08527
- Carini, Louis F. B.**, (M 1930, F 1942, L 1971), 246 Wolcott Hill Road, Wethersfield, CT 06109
- Carlson, Thomas**, (M 1971), 790 - 14th Avenue, Paterson, NJ 07504
- Carter, Tom F.**, (M 1969, F 1969), P.O. Box 31001, Dallas, TX 75231
- Castrignano, Robert A.**, (M 1960), 157 Idlewood Dr., Stamford, CT 06905

**Caywood, William**, (M 1972), 5740 Beulah Lane, Murrysville, Pa. 15668

**Cervantes, Howard T.**, (M 1939, F 1940, L 1971), 34 Johnson Road, Binghampton, NY 13905

**Chalfin, Norman L.**, (M 1948), 460 San Juan Pl., Pasadena, CA 91107

**Chapman, James T.**, (M 1971), 79 Fourth Street, New Rochelle, NY 10801

**Childers, Aubrey A.**, (M 1969, F 1971), 5208 North 31st Road, Arlington, Va. 22207

**Chislow, Joseph H.**, (M 1970), 61 Phillips Ave., Deal, NJ 07723

**Christaldi, P. S.**, (M 1940, F 1950), 132 Squire Hill Road, Upper Montclair, NJ 07043

**Christie, Donald M.**, (M 1972), 11405 Ladera Vista Drive, Austin, TX 78759

**Chittick, Kenneth A.**, (M 1941, F 1953, L 1972), 8020 College Ave., Indianapolis, Ind. 46240

**Cimorelli, Joseph T.**, (M 1950, F 1957), 10 Cromwell Drive, Morristown, NJ 07960

**Clark, Eugene W.**, (M 1971), 1-14 Plaza Road, Fair Lawn, NJ 07410

**Clark, Michael**, (M 1970, F 1971), Braxted Park, Witham, Essex, ENGLAND

**Clement, Louis M.**, (M 1920, F 1926, L 1971), 72 Palm Court, Pompano Beach, FL 33062

**Cobb, Howard L.**, (M 1934, F 1944, L 1971), 250 Rockaway Ave., Boonton, NJ 07005

**Coggin, Denis E.**, (M 1971), 1901 North Moore St., Suite 602, Rosslyn, VA 22209, Special Industrial Radio Service Assn.,

**Cohen, Leslie L.**, (M 1970), 137-25 223rd St., Laurelton, NY 11413

**Colby, Norman C.**, (M 1971, F 1971), R.D. 1, Box 97-B, Claysville, PA 15323

**Colen, Roy W.**, (M 1969), 990 So. Fair Oaks Ave., Pasadena, CA 91105, Fannon-Courier Corp.

**Connor, George C.**, (M 1936, F 1942, L 1971), P.O. Box 528, Weirsdale, FA 32695

**Cook, Lawrence**, (M 1939, F 1957, L 1971), 610 William St., Boonton, NJ 07005

**Cooley, Austin G.**, (M 1971), 690 West Second Street, Reno, NV 89503

**Corbin, David N.**, (M 1969), 6939 S. Delaware St., Littleton, CO 80120

**Corbin, Walter, Pres.**, (M 1971), 670-9th Street, Oakland, CA 94604, General Communications Engineering

**Cote, Andre F.**, (M 1972), 1530 No. 12th St., Arlington, VA 22209

**Covey, Arnold B.**, (M 1972), 5 Heights Rd., Ridgewood, NJ 07450

**Cowan, Stuart D.**, (M 1971), Box 596, North Street, Rye, NY 10580

**Craig, James A.** (M 1971), 7 South Shirley Avenue, Moorestown, NJ 08057

**Cramer, Bruce G.**, (M 1955), P.O. Box 333, Jenkintown, PA 19046

**Crann, Paul J.**, (M 1970), 259 Orchard Pl., Ridgewood, NJ 07450

**Crawford, John D.**, (M 1939, F 1957, L 1972), 16 Lodge Rd., Great Neck, NY 11021

**Crawford, Robert V.**, (M 1940, F 1953, L 1970), 11 Crest Circle, Murray Hill, NJ 07974

**Cressman, Charles E.**, (M 1970), Box 327, Leesville, SC 29070

**Crosby, Murray G.**, (M 1939, F 1940, L 1972), 93 Muttontown Rd., Syosset, NY 11791

**Cumeralto, Quinten G.**, (M 1970), 7091 Springboro Rd., Marine City, MI 48039

**Cumming, L. G.**, (M 1969, F 1969), 53 Grandview Terrace, Essex, CT 06426

**Cunniff, Leo C.**, (M 1958, F 1963), 35 Hillcrest Road, Cedar Grove, NJ 07009

**Dahlen, Phillip B.**, (M 1972), Harcourt Brace Jovanovich Publications, 1 East First St., Duluth, MN 55802

**D'Airo, Leonard J.**, (M 1971), 383 Pittsburgh Avenue, Massapequa Park, NY 11762

**Dalgleish, James W.** (M 1972, F 1972), 7, Strathalmond Park, Edinburgh, EH4 8AJ, Scotland

**Daly, John** (M 1969), Repco Inc., 1940 Lockwood Way, Orlando, FL 32804

**Darrell, Robert D.**, (M 1946, L 1971, F 1972), Balmoral, The Vly, Stone Ridge, NY 12484

**Davidson, Bruce F.**, (M 1971), 810-1/2 Manhattan Court, San Diego, CA 92109

**Davidson, Charles**, (M 1971), 157 Summit Road, Elizabeth, NJ 07208

**Davis, E. Stuart**, (M 1955), 1149 Weber St., Union, NJ 07083

**Davis, J. M.**, (M 1971), P.O. Box 1853, Deland, FL 32720

**Davison, Charles H.**, (M 1971), 107 Springcrest Drive, Hightstown, NJ 08520

**Davison, Charles H., Jr.**, (M 1972), 11 Moline Rd., East Brunswick, NJ 08816

**Dawes, Paul K.**, (M 1971), 16841 - 16 Ave. S.W., Seattle, WA 98166

**Day, Howard B.**, (M 1921, F 1926, L 1971), 12 Elena Place, Belleville, NJ 07109

**deNeuf, Donald K.**, (M 1972), 602-B Heritage Village, Southbury, CT 06488

**Devine, Frank J.**, (M 1969), 101 E. 12th St., Huntington Station, NY 11746

**DeZonia, William J.**, (M 1970), 4608 Fieldale Road, Lynchburg, VA 24503

**DiBlasi, John** (M 1920, F 1926, L 1971), 155 Bay View Rd., Plandome, L.I., NY 11030

**Dickey, E. T.**, (M 1927, F 1927, L 1971), 104 Jefferson Road, Princeton, NJ 08540

**Diehl, Wm. F.**, (M 1920, F 1926, L 1971), 2024 Columbia Pike, Arlington, VA 22204

**Dirmann, John F.**, (M 1973), Sales Manager, REPCO, Inc., P.O. Box 7065, 1940 Lockwood Way, Orlando, FL 32803

**Dorian, Charles**, (M 1971), 4444 Chesapeake St. N.W., Washington, D.C. 20016

**Dornfeld, Seymour**, (M 1970), 2760 Elaine St., Bellmore, NY 11710

**Doty, Archibald C., Jr.**, (M 1972), 8360 Rushton Road, South Lyon, MI 48177

**Drake, John E.**, (M 1969), 129 Denoke Lane, New Canaan, CT 06840

**Dreher, Carl**, (M 1922, F 1940, L 1970), R.D. 5, Brewster, NY 10509

**Drexler, Harford P.**, (M 1973), Bucks Co. Dept. of Comms., Administration Bldg., Doylestown, PA 18901

**Dunnell, Richard C.** (M 1970), 41-71 Denman St., Elmhurst, NY 11373

**Durr, George H.**, (M 1971), City Mutual Building, Hobart Place, Canberra, Australia 2601, Managing Director, General Dynamics Pty. Ltd.

**Duskis, F. E.**, (M 1964), Ansonia Hotel, Broadway & 73rd St., New York, NY 10023

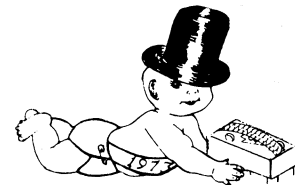
**Edge, Walter H.**, (M 1969), 104 Forest Ave., W. Caldwell, NJ 07006

**Edinger, J. Raymond**, (M 1949, F 1957), 852 Henry Street, Uniondale, L.I., NY 11553

**Eldridge, Albert B.**, (M 1958), 23 Fern Rd., Sparta, NJ 07871

**Ellis, I. M.**, (M 1971), 6615 Pemberton Drive, Dallas, TX 75230

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- Engle, Karl D.**, (M 1929, L 1971), 3621 W. Devon Ave., Chicago 45, IL 60645
- Erickson, Ero**, (M 1970), 4024 No. Pioneer St., Chicago, IL 60634
- Espenschied, Lloyd**, (M 1923, F 1926, H 1959), 99-82nd Road, Kew Gardens 15, NY 11415
- Evans, J. Lawrence, Jr.**, (M 1967), 79 Glenwood Rd., Englewood, NJ 07631
- Evans, R. J.**, (M 1969, F 1972), 525 Highland Ave., E. Lansing, MI 48823
- Fahrner, Joseph A.**, (M 1971), 6094 East Lake Avenue, Orchard Park, NY 14127
- Farrand, C. L.**, (M 1920, F 1926, L 1971), 117 Wall St., Valhalla, NY 10595, Farrand Optical Co. Inc.
- Farrar, Donald R.**, (M 1965), P.O. Box 618, Groton, CT 06340
- Fein, Marvin J.**, (M 1970), 151 Rock Creek Lane, Scarsdale, NY 10583
- Felch, Edwin P.**, (M 1939), Box 141, APO San Francisco
- Felix, Edgar H.**, (M 1928, F 1942, L 1971), 69 Allen Avenue, Manasquan, NJ 08736
- Felt, Marcus A.**, (M 1964), 669 Summit St., Englewood Cliffs, NJ 07632
- Fennimore, Roland M.**, (M 1968), 5148 Napoli Drive, Naples, FL 33940
- Ferrell, Oliver P.**, (M 1968), Box 239, Park Ridge, NJ 07656
- Finch, Wm. G. H.**, (M 1927, F 1959, L 1971), 1913 Stuart Avenue, Richmond, VA 23220
- Fine, C. Robert**, (M 1971), 570 North Street, Harrison, NY 10528
- Fingerlie, William**, (M 1970), 35 Midbrook Lane, Old Greenwich, CT 06870
- Fink, Donald G.**, (M 1934, F 1940), R.D. 2 Kitchel Road, Mt. Kisco, NY 10549
- Finlay, Robert**, (M 1939, F 1953, L 1970), P.O. Box 4712, Fort Lauderdale, FL 33304
- Finlay, William P.**, (M 1965), 49 Carouilli St., North Providence, RI 02904
- Fisher, Robert W.**, (M 1969), 1915 Riviera Parkway, Point Pleasant, NJ 08742
- Flinn, David G.**, (M 1970), Starlane Farms, Ridge Road, Ludlowville, NY 14862
- Flood, Bernard H.**, (M 1970, F 1971), P.O. Box 6638, Phoenix, AZ 85005, Arizona Dept. of Public Safety
- Forster, William H.**, (M 1970, F 1970), ITT Europe, 11 Boulevard de l'Empereur, Bruxelles, Belgium 1000
- Fowler, Henry L., Jr.**, (M 1956), Mac Spar Drive, Mt. Fern, NJ 07111
- Fraser, Clifford G.**, Microwave Associates—Land Mobile Comms., 999 E. Arques Ave., Sunnyvale, CA 94086
- Frederick, Andrew**, (M 1969), 12 North 21st St., Philadelphia, PA 19103
- Freeman, E. W.**, (M 1969), Box 57, Yankton, SD 57078
- Freeman, Robert J.**, (M 1972), 11537 Brandy Hall Lane, Gaithersburg, MD 20760
- Friedberg, Milton R.**, (M 1971), 2537 Claver Road, Cleveland, OH 44118
- Fruehauf, Milton C.**, (M 1969), 22 Homestead Terr., Scotch Plains, NJ 07076
- Gagne, Joseph W.**, (M 1969, F 1972), Town Lane, Amagansett, NY 11930
- Gamble, William M.**, (M 1971, F 1972), 2503 Allender Avenue, Pittsburgh, PA 15220
- Gartsman, Harry S.**, (M 1970), 9955 Durant Drive, Beverly Hills, CA 90212
- Genochio, Frank A.**, (M 1969, F 1972), 428 Luther Drive, Santa Clara, CA 95051
- Gensler, Barry**, (M 1970), 512 Broadway, New York, NY 10012, Barry Electronics Corp.
- Gernsback, Harvey M.**, (M 1970), 145 E. 15th St., New York, NY 10003
- Gilbert, Kenneth A.**, (M 1972), 1716 Saddle River Court, Vienna, VA 22180
- Glaser, Marcus**, (M 1951, F 1957), 226-07 137th Ave., Laurelton, NY 11413
- Godknecht, William H. A.**, (M 1971), 25093 Champlain Road, Laguna Hills, CA 92653
- Godley, Paul F.**, (M 1920, F 1926, Honorary 1964), The Tarn, Great Notch, NJ 07424
- Goebel, Eugene S.**, (M 1972), 934 Pleasant Street, Oak Park, IL 60302
- Goldsmith, Alfred N.**, (H 1922), 424 Madison Ave., New York, NY 10017
- Goldsmith, Arthur**, (M 1972), 4303 Wynnwood Drive, Annandale, VA 22003
- Goldsmith, Thomas T., Jr.**, (M 1939, F 1942, L 1971), RR 2, Box 312, Travelers Rest, SC 29690
- Goldwater, Barry M.** (M 1969, F 1970), P.O. Box 1601, Scottsdale, AZ 85252
- Graham, Charles B.**, (M 1960), 87 Ingram St., Hamden, CT 06517
- Graham, John J.**, (M 1969), 110 Chestnut Ridge Rd., Saddle River, NJ 07458
- Grammes, Elton G.** (M 1971), 1444 San Francisco Avenue, Long Beach, CA 90813
- Gravelly, Rear Admiral Samuel L.** (M 1972, F 1972), 7211 Idylwood Court, Falls Church, VA 22043
- Gray, Gary David**, (M 1971), 481 City Drive South, Orange, CA 92668, Communications Center, Orange County.
- Grebe, Alfred H.**, (M 1953, F 1959), 15 Caraway Road, Setauket, NY 11733
- Greenberg, Arthur L.**, (M 1972), 389 East 138th Street, Bronx, NY 10454
- Gregory, Glydus**, (M 1971), 1501 London Street, Sacramento, CA 95822
- Grenfell, William**, (M 1969, F 1970), 7216 Valleycrest Blvd., Annandale, VA 22003
- Griffith, Percy E.**, (M 1970), Route 1, McCrory Lane, Kingston Springs, TN 37082
- Grim, Edgar P.**, (M 1970, F 1971), 1667 Conklin St., Philadelphia, PA 19124
- Grim, Frank F.**, (M 1973), Pye Telecommunications Ltd., Newmarket Road, Cambridge, ENGLAND CB5 8PD.
- Grim, W. Manning**, (M 1926, F 1938, L 1971), 136 Davis Ave., White Plains, NY 10605
- Grogan, William F.**, (M 1967), 359 Fairfax Dr., Fort Myers, FL 33905
- Gruber, Paul**, (M 1956, F 1961), 831 Coventry St., Boca Raton, FL 33432
- Gunther, Frank A.**, (M 1940, F 1951, L 1970), 10 Highpoint Rd., Dongan Hills, S.I., NY 10304
- Gurian, Mal**, (M 1969), 141 Sunset Lane, Old Tappan, NJ 07675
- Guthrie, Tom F.**, (M 1972), 61-19 228 St., Bayside, NY 11364
- Guy, Raymond F.**, (M 1939, F 1940), 2320 N.E. 34th Court, Lighthouse Point, FL 33060
- Hall, F. Summer**, (M 1949, F 1957), Gilsum, New Hampshire 03448
- Hall, John R.**, (M 1972), 2731 Preston Drive, Mountain View, CA 94040
- Halligan, William J.**, (M 1960, F 1964), 179 E. Lake Shore Drive, Chicago, IL 60611
- Halstead, William S.**, (M 1972), 10 West 16th Street, New York, NY 10011
- Hamilton, Hugh G.**, (M 1950, L 1971), 1280 Royal Palm Way, Boca Raton, FL 33432
- Hamilton, Joseph D.**, (M 1969), 5 Mary Bell Rd., Norristown, PA 19407
- Hara, Benji**, (M 1956), 918 S.W. 27 Way, Boynton Beach, FL 33435



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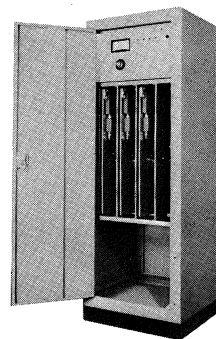
**MOBILFONE**



- Harmatuk, Samuel N.**, (M 1957, F 1961, L 1970), 1575 Odell Street, Bronx 62, NY 10462
- Harnett, Daniel**, (M 1925, F 1927, L 1970), 408 Brampton Dr., DeWitt 14, NY 13214
- Harris, Charles S.**, (M 1967), 29 Rockaway Place, Massapequa, NY 11758
- Harvey, Robert**, (M 1970), 238 West St., Suite 20, Annapolis, MD 21401, E. F. Johnson Co.
- Hawkins, Stanley L.** (M 1969), 408 N. Gulf Blvd., Indian Rocks Beach, FL 33535
- Heintz, Ralph M.**, retired, P.O. Box 546, Los Gatos, CA 95030
- Helms, Clegg A.**, (M 1971), 2400 The Plaza, Charlotte, NC 28205, Radio Div., City of Charlotte.
- Henney, J. Keith**, (M 1927, F 1932, L 1970), Snowville, NH 02877
- Herrin, Charles, W.**, (M 1972), 195 North 30th St., San Jose, CA 95116, SETCOM Corporation.
- Hervey, James P.**, (M 1969), 1967 Upland, San Pedro, CA 90732
- Hirsch, Charles J.**, (M 1947, F 1952, L 1971), 1065 Princeton-Kingston Rd., Princeton, NJ 08540
- Hoffman, Robert E.**, (M 1966), 20 West 44th Street, New York, NY 10036
- Hollingsworth, Lawrence M.**, (M 1972), 2720 DesPlaines Avenue, DesPlaines, IL 60018, Communications System Div., RCA Corporation
- Hollister, Frank J.**, (M 1968), 26 Townsend St., Glen Head, NY 11545
- Holt, Carles A.**, (M 1971, F 1971), 22061 Del Valle St., Woodland Hills, CA 91364
- Hopper, Kenneth D.**, (M 1970), P.O. Box 188, Holmdel, NJ 07733
- Horn, Charles W.**, (M 1920, F 1926, L 1971), Present address not ascertainable
- Horner, Richard E.**, (M 1971), 299 Tenth Avenue S.W., Waseca, MN 56093, President, E. F. Johnson Co.
- Houck, Harry W.**, (M 1920, F 1926, L 1970), Mountain Rd., Wallpack, NJ 07881
- Hudson, Philip H.**, (M 1971), "Silhill", Dinas Dinlle, Llandwrog, Caernarvon, North Wales
- Hull, Lewis**, (F 1951), R.D. 1, Powerville Road, Boonton, NJ 07005
- Hummer, Earl W.**, (M 1971), 1007 Borman Ct., Elk Grove Village, IL 60007
- Inglis, Andrew F.**, (M 1970, F 1970), RCA Bldg., 15-7, Camden, NJ 08102
- Jacobs, John E.**, (M 1972), 7303 Redbridge Court, Springfield, VA 22153
- Jaffe, D. Lawrence**, (M 1953, F 1959), 33 Nassau Drive, Great Neck, NY 11021
- James, Wallace M.**, (M 1931, F 1937, L 1971), 56 Francisca Ave., West Caldwell, NJ 07006
- Jansky, C. M., Jr.**, (M 1969, F 1970), 3020 Tilden St., Washington, D.C. 20008
- Jarvis, K. W.**, (M 1935, F 1938, L 1971), 3735 Southview Dr., Apt. 313, San Diego, CA 92117
- Johansen, Harry**, (M 1972), 38 Edgemere Rd., Livingston, NJ 07039
- Johnson, Douglas J.**, (M 1972), 13000 East 48th Avenue, Denver, CO 80239
- Johnson, Edgar F.**, (M 1969, F 1969), 1009 E. Elm Ave., Waseca, MN 56093
- Johnson, Gustave A.**, (M 1969), Parkview at Madison, 6A, Laurence Harbor, NJ 08879
- Johnson, J. Kelly**, (M 1941, F 1942, L 1970), 191 South Avenue, New Canaan, CT 06840
- Johnson, Robert M.**, (M 1971), 777 14th St., NW, Washington, D.C. 20005, General Electric Co., - Mobile Radio Dept.
- Johnson, Rodney W.**, P.O. Box 803, Ben Lomond, CA 95005
- Jones, Harold A.**, (M 1971), Meadow Lands, PA 15347, RCA Corp., Div. V.P., Commercial Systems
- Kahn, Leonard R.**, (M 1953, F 1961), 966 Brush Hollow Road, Westbury, NY 11590
- Kamen, Ira I.**, (M 1971), 303 Crossways Park Drive, Woodbury, NY 11797, Laser Link Corp.
- Kanz, William J.**, (M 1970, F 1970), 395 Beckwith Avenue, Southwold, NY 11791
- Kardauskas, Edmund**, (M 1951, F 1964), 185 Pricilla Drive, Lincroft, NJ 07738
- Katz, Paul**, (M 1973), Dept. of State, AID, Office of Public Safety, 21st and Virginia Ave., Washington, DC 20523
- Kaye, Robert K.**, (M 1972), 10 Overlook Drive, Framingham, MA 01701
- Kayser, Carl T.**, (M 1965), 11 Glenbrook Drive, Boonton, NJ 07005
- Kelley, Bruce L.** (M 1965, F 1972), Main Street, Holcomb, NY 14469
- Kelly, Kenneth J.**, (M 1972), 60-11 Broadway, Woodside, NY 11377
- Kelley, Leo A.**, (M 1938, F 1942, L 1971), 34-38 87th St., Jackson Heights, NY 11372
- Kennedy, E. L.**, (M 1942, F 1952), 223 Sachem Dr., Forest Heights, Washington DC 20021
- Kershner, Eric S.**, (M 1970), Route 3, Herb Road, Hagerstown, MD 21740
- Kihchel, Oliver D.**, (M 1970), Route 66N, R.D. 3, Greensburg, PA 15601, Kihchel Communications, Inc.
- Kimmel, Robert**, (M 1969), 880 Scenery Pl., Harrisburg, PA 17109
- King, David W.**, (M 1971), 194 Sylvandell Avenue, Edison, NJ 08817
- King, Frank**, (M 1909, F 1926, L 1926), 85 Willow Ave., Larchmont, NY 10538
- King, Patrick J.**, (M 1972), 125 Acre View Drive, Stamford, CT 06903
- Kirby, Richard C.**, (M 1971), 2814 - 15th Street, Boulder, CO 80302
- Kitchen, Emmett B. Jr.**, (M 1971), 501 Cannon Rd., Silver Spring, MD 20904
- Kline, Larry H.**, (M 1972), 12435 Euclid Avenue, Cleveland, OH 44106, Antenna Specialists Co.
- Klusacek, Emil R.**, (M 1969), 26 Locust Lane, Elnora, NY 12065
- Kobi, John T.**, (M 1956), 2 Henrietta Lane, Massapequa Park, NY 11752
- Koestler, Anthony**, (M 1973), 75 Central Park West, New York, NY 10023
- Kohler, Gerhard M.**, (M 1965), Present address not ascertainable.
- Konter, Richard W.**, (H 1970), 89 Croke Ave., Brooklyn, NY 11226
- Koski, Jorman I.**, (M 1970), 2228 Yucca St., Forth Worth, TX 76111
- Krause, R. C.**, (M 1972), 1570 Bournemouth St., Grosse Pointe, MI 48236
- Kreer, Henry B.**, (M 1970), 1904 Glen Oak Drive, Glenview, IL 60025
- Kunik, I. Jordan**, (M 1952, F 1964), 521 Fifth Ave., New York 17, NY 10017
- Lamb, James J.**, (F 1958), 20800 Homestead Road, Cupertino, CA 95014
- Lane, S. H.**, (M 1969), P.O. Box 30410, Santa Barbara, CA 93105
- Langer, Peter L.** (M 1954), 43-55 168th Street, Flushing, NY 11358

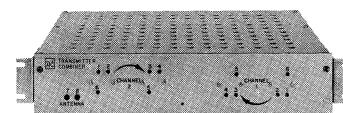
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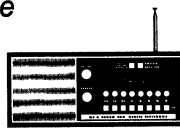
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- Larsen, Leland J., (M 1971), P.O. Box 1686, Vancouver, WA 98663, Larsen Electronics, Inc.
- Lear, William P., (M 1969, F 1969), River House, Verdi, NV 89439
- Lee, Robert L., (M 1972), 309 West Lincoln St., Pontiac, IL 61764
- Lee, William M., (M 1969, F 1972), 7610 Rockfalls Dr., Richmond, VA 23225
- Lempert, Irving E., (M 1941), 1037 S. Westmore Ave., Lombard, IL 60418
- Leo, Robert E., (M 1971), Route 3, Box 83, Bozeman, MT 59715
- Lessig, Linwood G., (M 1971), 123 San Sebastian Prado, Altamonte Springs, FL 32701
- Levergood, J. H., (M 1970), 16 Florister Drive, Trenton, NJ 08690
- Levin, Ferrer, (M 1969), 115 Hartwich Street, Maywood, NJ 07607
- Lewis, Harold M., (M 1923, F 1928, L 1971), 510 Blanchard Pkwy., Allenhurst Park, Allenhurst, NJ 07711
- Lewis, Robert F., (M 1969), 112 Oak St., Box 206, Lincroft, NJ 07738
- Liebman, Jim, (M 1972), 5757 E. 14 St., Tucson, AZ 85711
- Link, Fred M., (M 1968, F 1968), Robin Hill Farms, Pittstown, NJ 08867
- Littlejohn, E. C., (M 1969), 4300 Morriswood Drive, Nashville, TN 37204
- Logan, Robert G., (M 1972), 4 Moss Drive, Brewster, NY 10599
- Long, F. Vinton, (M 1970), 224 Ockley Drive, Shreveport, LA 71105
- Long, Robert M., (M 1971), 20351 Craigen Circle, Saratoga, CA 95070
- Loughren, Arthur V., (M 1924, F 1929, L 1971), 22 Broadlawn Ave., Great Neck, NY 11024
- Lovell, Theodore, (M 1970), West Shore Road, Lake Iosoco, Bloomingdale, NJ 07403
- Luethje, David S., (M 1970), 5339 Vanalden Ave., Tarzana, CA 91356
- Lundahl, Tore, (M 1959), 1 East Hill, Sherburne, NY 13460
- Lynch, Arthur H., (M 1921, F 1926, L 1970), 5265 Nautilus Drive, Cape Cora, FL 33904
- Lyons, Walter, (M 1952, F 1961, L 1970), 33-26 160th St., Flushing, NY 11358
- Majewski, (M 1971), 1054 Virginia Avenue, New York, NY 10473
- Mallory, Henry R., (M 1958, F 1964), Broadway & Sunnyside Lane, Tarrytown, NY 10591, Mallory Battery Co.
- Margiotta, William C., (M 1970), 3710 Mt. Everest, San Diego, CA 92111
- Marshall, Travis, (M 1972), 1301 E. Algonquin Road, Schaumburg, IL 60172, Motorola Comm. & Electronics, Inc.
- Martin, Julian S., (M 1965, F 1970), 2480 E. 7th St., Brooklyn, NY 11235
- Marx, Ernest A., (M 1949, F 1957), 333 East 53rd Street, New York, NY 10022
- Marx, Frank L., (M 1955, F 1964), Orienta Point Apartments, 490 Bleeker Avenue, Apartment 1-C, Mamaroneck, NY 10543
- Masavage, Irvin R., (M 1965), 18 Schuler Avenue, Waldwick, NJ 07463
- Mason, Robert A., (M 1971, F 1972), 15305 Elm Park, Monte Sereno, CA 95030
- Mather, Robert B., (M 1973), Ram Broadcasting Corp., 120 W. 57 St., New York, NY 10019
- Mathews, John C., Jr., (M 1972), 600 Wicks Rd., Rolling Meadows, IL 60008, Hallicrafters Co.

**Mathieu, Edward**, (M 1969), Westmore Rd R.D. 2, Box 81, Boonton, NJ 07005

**Mayo, Harry L.**, (M 1962), 280 Prospect Ave., Hackensack, NJ 07601

**Menegus, Alfred A.**, (M 1971), 563 Gregory Avenue, Passaic, NJ 07055

**Merriam, Robert W.**, (M 1963), Deep Peace Farm, Pillinghast Rd., East Greenwich, RI 02818

**Meserve, George D.**, (M 1971), 8212 Briar Lane, Prairie Village, KS 66208

**Meyer, Stuart**, (M 1956, F 1967), RCA Bldg., Room 953, Arlington, VA 22209

**Meyers, Ray E.**, (M 1971, F 1972), 717 Anderson Way, San Gabriel, CA 91778

**Meyerson, Art H.**, (M 1957, F 1963), 60 Knolls Crescent, New York, NY 10463

**Meyerson, Leo I.**, (M 1972), 414 No. 118 Plaza, Omaha, NB 68154

**Mezger, George R.**, (M 1956, F 1963), R. D. 2, Box 121 B, Boonton, NJ 07005

**Miessner, Benjamin**, (F 1963, L 1970), 680 N.E. 105th St., Miami Shores, FL 33153

**Mignault, Robert D.**, (M 1970), 8580 Damley Road, Montreal 307, Canada, Pye Electronics Ltd.

**Miles, Thomas C.**, (M 1970), Present address not ascertainable.

**Millar, Julian Z.**, (M 1971), 72 Blackburn Place, Summit, NJ 07901

**Miller, Arthur G.**, (M 1949, F 1964), 153 Awixa Avenue, Bay Shore, NY 11706

**Miller, C. C.**, (M 1970, F 1972), 1920 Latham St., Mountain View, CA 94040

**Miller, Donald H.**, (M 1944, F 1957), 177 Clinton Ave., Dobbs Ferry, NY 10522

**Miller, Kenneth M.**, (M 1970), 8915 Birch Lane, Prairie Village, KS 66207

**Minderman, Edward K.**, (Member 1971), 2 Philbrooke Drive, Oklahoma City, OK 73109

**Minter, Jerry B.**, (M 1942, F 1944), Normandy Heights Rd., Morristown, NJ 07960

**Missailidis, Nicholas S.**, (M 1972), 253 Longstreet Avenue, Bronx, NY 10465

**Mitchell, George J.**, (M 1970), 1082 Cork Dr., Bethel Park, PA 15102

**Moeser, John**, (M 1972), 251 Norma Ave., W. Islip, NY 11795

**Morelock, James**, (M 1937, F 1940, L 1971), 120 Basking Ridge Rd., R.D., Millington, NJ 07946

**Morrissey, John W.**, (M 1973), Joseph Plascencia, Inc., 521 Fifth Avenue, New York, NY 10017

**Morrison, Dearl O.**, (M 1969), 252 Cambridge Dr., Mt. Clemens, MI 48043

**Morton, William B.**, (M 1970, F 1971), 11114 Cedar Lane, Beltsville, MD 20705

**Moss, Abram W.**, (M 1971), 3235 Grand Concourse, New York, NY 10468

**Moss, George K.**, (M 1961), P.O. Box 463, Locust Valley, NY 11560

**Moss, Joel Frederick**, (M 1960), 205 2nd Anita Dr., Los Angeles 49, CA 90049

**Mullings, Sanford, A.**, (M 1971, F 1972), 69 Coolshade Drive, Kingston 8, Jamaica, West Indies

**Myers, Robert O.**, (M 1972), 15120 Alaska Road, Woodbridge, VA 22191

**McAndrew, Irving E.**, (M 1973), Department of Public Safety, Comms. Div. Redstone on Terrace Ave., Montpelier, VT 05602

**McBurney, Frank J.**, (M 1971), 34 Sherwood Avenue, Greenwich, CT 06830

**McClure, Natan D.**, (M 1972), 233 Pearl Avenue, Apt. 3, Loves Park, IL 61111

**McCollum, Byron O.**, (M 1970), P.O. Box 145, Penns Park, PA 18943

**McCormick, John A.**, (M 1969, F 1971), Lynchburg, VA 24502, General Electric Company, Fort Ave. Bldg.

**McDole, Arthur E.**, (M 1971), 333 Tapadero Drive, Salinas, CA 93901

**McDonald, Ramsey**, (M 1970, F 1972), 159 Beacon Lane, Jupiter, FL 33458

**McHenry, Kenneth R.**, (M 1970), 310 Melody Circle, Swannanoa, NC 28778

**McKay, George E. Jr.**, (M 1972), P.O. Box 2100, Pomona, CA 91766, McKay Finance Company

**McKenzie, Alexander A.**, (M 1949, F 1953, L 1970), 245 Poplar Avenue, Hackensack, NJ 07601

**McLean, James D.**, (M 1968), Box D, La Jolla, CA 92037

**McMann, Renville H. Sr.**, (M 1920, F 1926, L 1971), 60 E. 96th St., New York, NY 10028

**McMann, Renville H. Jr.**, (M 1944, F 1952), 27 Whitney Ave., New Canaan, CT 06840

**McMillian, J. Rhett Jr.**, (M 1970, F 1970), 210 Downing St., New Smyrna Beach, FL 32069

**McQueen, Loren R.**, (M 1969), 2633 S. Bascom Ave., Campbell, CA 95008

**McVey, Wilson C.**, (M 1973), Chesapeake Electronic Service Inc., 6904 Carleton Terrace, College Park, MD 20740

**Nafzger, Lester H.**, (M 1970), 903 So. Roosevelt Ave., Columbus, Ohio 43209

**Nelson, Wayne**, (M 1963), P.O. Box 127, Concord, NC 28025

**Neubauer, John R.**, (M 1970), 1013 Lakeshore Drive, Collingswood, NJ 08108

**Niblack, David**, (M 1970 F 1972), 4860 18th Ave., Denver, CO 80220

**Nichol, William P.**, (M 1972), 60 Rochester Row, London S. O. 1, England, Directorate of Telecommunications

**Nieson, Norman**, (M 1969), 250 Crossway Park Drive, Woodbury, NY 11797

**Oefinger, Hawley C.**, (M 1968), 165 Hiag Ave., Stamford, CT 06905

**Offenhauser, Wm. H., Jr.**, (M 1936, F 1941, L 1970), Box 595, New Canaan, CT 06841

**Osborn, Perry H.**, (M 1944, F 1957), 1075 A Argyll Circle, Lakewood, NJ 08701

**Osterland, Edmund**, (M 1950, F 1957), Mountain Lakes, NJ 07046

**Ostrowski, Richard J.**, (M 1969), 136 Rock Road, Hawthorne, NJ 07506

**Otis, G. Edwin**, (M 1953), 923 Rollins Ave., Ormond Beach, FL 32074

**Owens, James**, (M 1973), Gabriel Communications Corp., 1329 N.E. Fourth Ave., Ft. Lauderdale, FL 33304

**Packard, Lucius E.**, (M 1940, F 1941), Melvin Village, NH 03850, Technology Instrument Corp.

**Pagano, Carmine**, (M 1971), 1807 South Gladys Avenue, San Gabriel, CA 91776

**Page, E. C.**, (M 1946, F 1957), 8027 Leesburg Pike, McLean, VA 22101, Telcom, Inc.

**Palmer, Charles W.**, (M 1935, F 1948, L 1972), 8701 Marble Drive, El Paso, TX 79904

**Palmer, Jack**, (M 1970), 433 Windsor Spring Dr., Kirkwood, MO 63122

**Papamarcos, George**, (M 1941, F 1953), 2861 South Seacrest Blvd., Boynton Beach, Fla. 33435

**Parker, John F.**, (M 1972), 9 Wawapek Rd., Cold Spring Harbor, NY 11724

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- Peck, Gordon V.**, 3529 Asset St., Garland, TX 75042
- Perretto, Armando**, (M 1954), 26 W. 251 Parkway Drive, Winfield, IL 60190
- Persson, Roger E.**, (M 1971), 147 West Street, Elmwood, MA 02337
- Peterson, Robert M.**, (M 1969), 882 Cordova St., San Diego, CA 92107
- Pfeifer, Clarence H.**, (M 1956), 53 Warren St., New York 7, NY 10007
- Pfeffer, Nathaniel**, (M 1970), 1085 Park Ave., New York, NY 10028
- Pforzheimer, Arthur C.**, (M 1970), 154 Verdi St., Farmingdale, NY 11735, Coastal Communication Service, Inc.
- Phillips, Harold L.**, (M 1972), 24333 Southfield Road, Southfield, MI 48075, RCA Corp.
- Poppele, J. R.**, (M 1941, F 1942, L 1970), 9 Crest Circle, South Orange, NJ 07079
- Prault, George A.**, (M 1969), 1054 Bristol Road, Warminster, PA 18974
- Prystup, Edward**, (M 1970), 1624 Old Bayshore Highway, San Jose, CA 95051
- Quinby, Edwin J.**, (M 1959, F 1963), 30 Blackburn Rd., Summit, NJ 07901
- Quist, Andrew Jr.**, (M 1940, F 1957, L 1972), 1106 Aileen Rd., Brielle, N.J. 08730
- Ragland, Maurice A.**, (M 1972), 9501 Montgomery Drive, Bethesda, MD 20014
- Randall, William R.**, (M 1972), 12435 Euclid Avenue, Cleveland, OH 44106, Antenna Specialists Co.
- Raser, Edward G.**, (M 1957, F 1964), 19 Blackwood Dr., Wilburtha Gardens, Trenton 8, NJ 08628
- Redding, Paul B.**, (M 1972), 51 Hilltop Avenue, Berkley Heights, NJ 07922
- Redington, Edmund B.**, (M 1960, F 1964), 5218 Light St., N. Springfield, VA 22151
- Regan, Thomas A.**, (M 1969, F 1972), 41 Hamilton Ave., North Babylon, NY 11703
- Regan, Thomas O.**, (M 1970), 293 Blake Ave., Bohemia, L.I., NY 11716
- Reigner, William** (M 1969), Route 2, Box 1430, Riverview, FL 33569
- Reiner, Alvin** (M 1972), 11243 Bybee Street, Silver Spring, MD 20902
- Reinert, Donald O.**, (M 1970), 103 Marble Drive, Bridgeville, PA 10517
- Reinhardt, Nicholas J.**, (M 1956, F 1961), 150 Bard Ave., Staten Island 10, NY 10310
- Renner, John J.**, (M 1971), 5501 North 15th Street, Arlington, VA 22205
- Replogle, D. E.**, (M 1937, F 1937, L 1971), Route 1, Box 299, Lake Wales, FL 33853
- Rettenmeyer, F. X.**, (M 1928, F 1929, L 1970), 740 Stanwick Rd., Moorestown, NJ 08057
- Richardson, Avery G.**, (M 1941, F 1944, L 1971), 115 Vreeland Ave., Boonton, NJ 07005
- Richardt, John W. Jr.**, (M 1952), 94 Bald Eagle, Hackettstown, NJ 07840
- Rider, John F.**, (M 1932, F 1937, L 1970), 350 W. 57th St., New York NY 10019
- Rietzke, Eugene H.**, (M 1969, F 1970), 1629 K St. N.W., Washington DC 20006
- Rifenberg, Charles J.**, (M 1969), 1138 E. 3rd St., Brooklyn, NY 11230
- Risse, Joseph A.**, (M 1965), Scranton, PA 18515, International Textbook Co.
- Ritter, Floyd O.**, (M 1972), 958 Laurel Lane, Noblesville, IN 46060
- Rivkin, David H.**, (M 1970), 27 Stonecrest, Menlius, NY 13104
- Roberts, William W.**, (M 1952, F 1959), 212 India Rock Rd., New Canaan, CT 06840
- Rockett, Frank H.**, (M 1949, F 1957), 908 Rosser Lane, Charlottesville, VA 22903
- Rodgers, L. M.**, (M 1968), 23 Bettwood, Norwalk, CT 06851
- Rogers, Albert P.**, (M 1970), Box 15025, West Palm Beach, FL 33406, Florida Highway Patrol
- Ronald, T. T.**, (M 1946, L 1971), 77 Stocker Road, Essex Falls, NJ 07021
- Rosenberg, Arnold**, (M 1970), 1026 - 16th St., N.W., Apt. 705, Washington, DC 20036
- Roth, Richard F.**, (M 1960), 6 Tobie Lane, Jericho, NY 11753
- Rowe, Fred**, (M 1969), 1255 - 44th Ave., San Francisco, CA 94122
- Runyon, C. R. Jr.**, (M 1920, F 1926, L 1957), 130 East End Ave., New York 28, NY 10028
- Runyon, John B.**, (M 1955), P.O. Box "D", Eatontown, NJ 07724
- Russell, W. Gordon**, (M 1947, F 1953), 2000 E. Ocean Blvd., Apt. 103-10, Stuart, FL 33494
- Rutherford, R. E., Jr.**, (M 1961, F 1964), P.O. Box 13, New Canaan, CT 06840
- Ryan, George A.**, (M 1972), 23 Willow Road, Mapleshade, NJ 08052
- Rypinski, Chandos A.** (M 1973), RYDAX, 76 Belvedere St., San Rafael, CA 94901
- St. Clair, Byron, W.**, (M 1969), 12120 New Hampshire Ave., Silver Spring, MD 20904
- Samuels, Ruel P.**, (M 1972), 2 Lismore Avenue, Kingston, 5, Jamaica, W.I., Ruel Samuels, Ltd.
- Schlachtenhaufen, John E.**, (M 1970), Xerox Square-102, Rochester, NY 14644, Xerox Corporation
- Schnoll, Nathan**, (M 1928, F 1953, L 1971), 132 Dimmig Road, Upper Saddle River, NJ 07458
- Schoeffler, Robert P.**, (M 1971), Room 104, 1515 NW 7th St., Miami, FL 33125, General Electric Co.
- Schomburg, Richard A.**, (M 1957, F 1971), 1322 S.E. 37th Avenue, Hillsboro, OR 97123
- Schulman, Harold J.**, (M 1971), 1041 Edgebrook Lane, Glencoe, IL 60022
- Schwartz, Milton**, (M 1971), 166-36 24th Road, Flushing, NY 11357
- Schwede, Harold F.**, (M 1969, F 1970), R.F.D. 2, West Redding, CT 06896
- Scoggins, Joseph E.**, (M 1970), 195 N.E. 131st St., No. Miami, FL 33161
- Selenius, Eric O.**, (M 1971), P.O. Box 440, Apple Valley, CA 92307
- Shackelford, Benjamin E.**, (F 1943), 743 Mosswood Ave., Orange, NJ 07050
- Shand, William**, (M 1970), 177 Worcester, Wellesley, MA 02181, Urban Sciences
- Shenier, Henry L.**, (M 1952, L 1971), 230 Park Ave., New York 17, NY 10017
- Shepard, F. H., Jr.**, (M 1936, F 1942, L 1970), P.O. Box 332, Summit, NJ 07901
- Shortt, Hubert L.**, (M 1945), 3018 Cambridge Rd., Winston-Salem, NC 27104
- Shunaman, Fred**, (M 1968, F 1972), 933 E. 7th Street, Plainfield, NJ 07062
- Siegel, Seymour N.**, (M 1967), 870 United Nations Plaza, Apt. 14C, New York, NY 10017
- Sieminski, Edward**, (M 1935, F 1953), 134-14 Franklin Ave., Flushing, NY 11355
- Simkins, Robert**, (M 1970), 69 Auburn Lane, East Norwich, NY 11732
- Simmons, A. C.**, (M 1971), 1647 Bar Harbor St., Dallas, TX 75232
- Sims, Joseph R.**, (M 1970, F 1971), 302 Country Club Drive, Tequesta, FL 33458
- Sirls, Robert E.**, (M 1971), 9977 Winlake Drive, Cincinnati, OH 45231
- Skipper, Lionel C.**, (M 1946), 5 Warner Ave., Roslyn Heights, L.I., NY 11577
- Smith, Arthur V.**, (M 1960, F 1969), 276 Riverside Drive, New York, NY 10025
- Smith, George E.**, (M 1968, F 1969), Brevard Spring, 1816 Brevard Plaza, Camden, SC 29020
- Smith, J. E.**, (M 1930, F 1942, L 1971), 3939 Wisconsin Ave., N.W., Washington 16, DC 20016
- Smith, Myron T.**, (M 1934, F 1942, L 1970), P.O. Box 36, Cape Rd., South Casco, ME 04077
- Soreny, Ernest, V.**, (M 1969), 4036 Denman St., Elmhurst, NY 11373
- Stantley, Joseph J.**, (M 1920, F 1926, L 1971), 213 Harvard Ave., Point Pleasant Beach, NJ 07842
- Steen, Jerome R.**, (M 1947, F 1957, L 1971), 472 Sidney St., Madison, WI 53703
- Stevens, A. M.**, (M 1928, F 1930, L 1971), 539 Prospect Ave., Mamaroneck, NY 10543
- Stites, John W.**, (M 1972), 2737 N. Terrace, Wichita, KS 67220
- Stockton, Charles**, (M 1970), Atlantic Research, Alexandria, VA 22314, Jansky & Bailey Engineering
- Stodola, E. King**, (M 1958, F 1964), P.O. Box J, Boca Raton, FL 33432
- Stokely, Robert G.**, (M 1972), 3519 Bellaire, Shreveport, LA 71109
- Stokes, Houston, H.**, (M 1972), 1450 E. 55th Pl., Chicago, IL 60637
- Stokes, W. E. D. Jr.**, (M 1909, F 1926, L 1971, Honorary 1972), Thistlewood Farm, Box 864, Lenox, MA 01240
- Stong, Clair L.**, (M 1963), 32 Hunton St., Staten Island 4, NY 10304
- Storm, Kenneth H.**, (M 1971), 1747 Columbia Turnpike, Castleton-on-Hudson, NY 12033
- Stover, Jerry S.**, (M 1972), 511 N. Akard, Dallas, TX 75201, Communications Industries, Inc.
- Strehle, John E., Jr.**, (M 1970), 1515 N.W. 7th St., Suite 104, Miami, FL 33125, General Electric Corp.
- Stuart, John F.**, (M 1969), 4267 No. 9th Ave., 79946 Pensacola, FL 32503
- Styles, Thomas J.**, (M 1915, F 1926, L 1926), 160-01 84th Drive, Jamaica, NY 11432
- Summers, Charles E.**, (M 1972), Old Orchard Road, Armonk, NY 10504, IBM Corporate Hqtrs.
- Swift, Frederick W.**, (M 1972), 2717 Colt Run Road, Oakton, VA 22124
- Swigart, James F.**, (M 1972), 3815 Baldwin Avenue, El Monte, CA 91731
- Swinyard, W. O.**, (M 1941, F 1957), 3612 Kempner Road, Salt Lake City, Utah 84109



**Tall, Robert E.**, (M 1970, F 1971), 561 National Press Building, Washington DC 20004, Industrial Communications

**Talley, David**, (M 1949, F 1957, L 1970), 40 E. 9th St., New York NY 10003

**Taylor, Willis H., Jr.**, (M 1920, F 1927, L 1971), 330 Madison Avenue, New York, NY 10017

**Thomas, Leslie G.**, (M 1928, L 1971), 1410 Horizon House, No. 4, Fort Lee, NJ 07024

**Thomas, W. I.** (M 1971), 24049 South Frampton Avenue, Harbor City, CA 90710, Pathcom Inc., Pace Division

**Thompson, John R.**, (M 1972), 177 Worcester St., Wellesley, MA 02181, Urban Sciences, Inc.

**Thompson, Owen E.**, (M 1972), 1050 Ralston Ave., Belmont, CA 94002, I. Herman Co.

**Thorp, Wilbur E.**, (M 1948, F 1953, L 1971), 2714 Balboa Blvd., Port Hueneme, CA 93041

**Thrower, Ray D.**, (M 1972), 3575 25th Street S.E., Salem, OR 97303, Microflect Co., Inc.

**Tillson, Benjamin F. Jr.**, (M 1971), 139 Orchard Place, Ramsey, NJ 07446

**Tischler, Louis**, (M 1965), 785 Hyslip Ave., Westfield, NJ 07090

**Tongue, Ben**, (M 1972), 41 Ferris Drive, West Orange, NJ 07052

**Treado, Marshall J.**, (M 1972, F 1972), Law Enforcement Standards Lab., Washington, DC 20234, National Bureau of Standards

**Tsao, T. C.**, (M 1966), 351 E. 84th St., New York, NY 10028

**Tuckerman, Lucien P.**, (M 1928, F 1942, L 1970), 3001 Veazey Terrace, N.W., Washington, DC 20008

**Turdo, Malcolm M.**, (M 1973), 3106 Harrison St., Wall, NJ 07719

**Turnbull, James C.**, (M 1969), Cromwell Road, Cambridge, England, Pye Telecommunications, Ltd.

**Tuxen, Niels**, (M 1953, F 1972), 24 Nordica Drive, Croton-on-Hudson, NY 10520

**Tyne, Gerald F. J.**, (M 1966), 40 Kline Place, So., Berkley Heights, NJ 07922

**Ulm, Ernest H.**, (M 1950, F 1957), 372 Demarest Drive, Orange, CT 06477

**Van Beuren, John M.**, (M 1942, F 1944), Van Beuren Rd., Morristown, NJ 07960

**Vaughan, Carroll B.**, (M 1964, F 1969), 647 Springdale Ave., East Orange, NJ 07017

**Vogel, William H. Jr.**, (M 1940, L 1971, F 1972), Strawberry Lane, New Preston, CT 06777

**Voorhis, Harold V. B.**, (M 1940), 105 New England Ave., Summit, NJ 07901

**Vorporian, Harry**, (M 1941, L 1971), 602-B 194th Street, Flushing, NY 11365

**Wachsmuth, Erich W.**, (M 1970), 608 - 61st Ave., N.E., St. Petersburg, FL 33703

**Wahlin, William S.**, (M 1972), 144 West 86 St., (12B), New York, NY 10025

**Walker, A. Prose**, (M 1971, F 1972), 12200 Pendercrest Court, Fairfax, VA 22030

**Walker, Robert E.**, (M 1971), 610 Truett Drive, Tallahassee, FL 32303

**Wallenburg, Robert C.**, (M 1970), 4911 Western St., New Orleans, LA 70122

**Wallin, Gary P.**, (M 1970), 490 Kennard Road, Manchester, NH 03104

**Walsh, A. LaFayette**, (M 1953), 509 Madison Avenue, New York 22, NY 10022

**Walsh, Stephen T.**, (M 1971, F 1971), 3911 Avenue J, Brooklyn, NY 11210

**Walters, Charles W.**, (M 1970), 3658 Colebrook Drive, Jacksonville, FL 32210

**Walton, Robert C.**, (M 1972), 680 South 15th Street, San Jose, CA 95112

**Wand, Harland**, (M 1969), 4677 Kirchoff, Apt. 22, Rolling Meadows, IL 60008

**Watson, Herbert M.**, (M 1971, F 1972), 76-955 Sandpiper Driver, Indian Wells, CA 92260

**Watts, W. Walter**, (M 1960, F 1964, H 1972), Ocean Reef Towers, Apt. 5 SW, 2066 N. Ocean Blvd., Boca Raton, FL 33432

**Wayman, N. J.**, (M 1970, F 1972), 3704 Bent Branch Road, Falls Church, VA 22041

**Wehner, John H.**, (M 1962), 172 Bogert St., Totowa, NJ 07512

**West, H. William**, (M 1971), 7 Harbor Green, Red Bank, NJ 07701

**Wheeler, Harold A.**, (M 1935, F 1936, L 1971), 59 Derby Place, Smithtown, NY 11787

**White, Lowell E.**, (M 1972), 32 Rutgers Street, Closter, NJ 07624

**Whiting, William E.**, (M 1972), 1629 Country Club Drive, Bakersfield, CA 93306

**Wicks, Wayne**, (M 1970), 82 E. Halley Lane, Central Islip, NY 11722

**Williams, Dorsey C.**, (M 1971, L 1972), 6446 SW 10th Street, Miami, FL 33144

**Williams, Val J.**, (M 1970), 1330 New Hampshire Ave., N.W., Washington, DC 20036, NABER

**Wilson, John W.**, (M 1972), 119 Broad Ave., Palisades Park, NJ 07650

**Wilson, William A.**, (M 1970), 1569 Seashore Drive, Tacoma, WA 98465

**Winslow, Louis J.**, (M 1971), 15 Monmouth Terrace, Deal, NJ 07723

**Winter, David W.**, (M 1971), 84-26 87th Street, Woodhaven, NY 11421

**Witt, Frederick E.**, (M 1961), R.F.D. 1, Clapper Hollow Rd., Jefferson, NY 12093

**Witt, Leonard T.**, (M 1972), 144-35 222nd Street, Springfield Gardens, NY 11413

**Woodin, Roy H.**, (M 1970), 3800 South Congress Avenue, Boynton Beach, FL 33435, Dynamics Corp. of America-Electronic Systems Div.

**Woodworth, Frederick B.**, (M 1971), 102 Brixton Road, Garden City, NY 11530

**Worthen, Kent J.**, (M 1972), 19301 Harleigh Drive, Saratoga, CA 95070

**Wunderlich, Norman E.**, (M 1970), 2220 Avenue of the Stars, Los Angeles, CA 90067

**Yakubowich, Harry**, (M 1970), 1173 Tanglewood Lane, Scotch Plains, NJ 07076

**Yeager, Clair J.**, (M 1972), 502 Davis St., Endwell, NY 13760

**Yellen, Anthony F.**, (M 1957), 84-46 117th St., Richmond Hill 18, NY 11418

**Yefsky, Sheldon A.**, (M 1971), 5033 Morse St., Skokie, IL 60076

**Yocum, Charles H.**, (M 1937, F 1952), 463 Adamsville Rd., Central Village, MA 02790

**Zam Iz**, (M 1969), 570-7th Ave., New York, NY 10018

**Zaret, Matthew E.**, (M 1951, F 1961), 221 Ashland Avenue, Springfield, MA 01119

**Zarris, Walter A.**, (M 1972), 223 10th Avenue, Waseca, MN 56093, E. F. Johnson Co.

**Zauderer, Jerome**, (M 1970, F 1972), Greenlawn, NY 11740, Hazeltine Corporation

**Zayac, Frank R.**, (M 1948, F 1955), R.D. 3, Box 55, Boonton, NJ 07005

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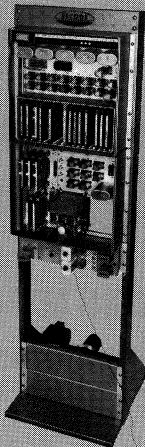
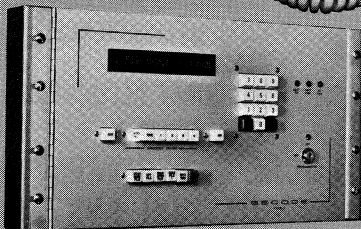
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## McMILLAN GOES TO APCO

J. Rhett M. McMillian Jr. of New Smyrna Beach, Florida, very recently Major McMillian, Chief of Communications for Florida's Game and Fresh Water Fish Commission, is a Fellow of the Radio Club of America, and all his friends and associates in the Club and out are pleased with his latest move to the full time Executive Secretary spot for the Associated Public Safety Communications Officers (APCO).

Major McMillian will be APCO's first full-time Executive Secretary, and APCO's decision to fund a permanent headquarters office and staff, and to seek a full-time staff officer, was described by outgoing APCO president Wm. M. Lee of the Virginia State Police as "the biggest single step in APCO's history."

Rhett's contributions to the great advances in Police Communications thru his work in Florida, later his Presidency of APCO, with the many committee functions, and his interim handling of the important duties of APCO Executive Secretary while still handling the very important State position in communications, have made him an internationally known figure. If a single member of APCO would have to be singled out for his effect on the organization and contribution to Police Communications, that one person would be Major J. Rhett McMillian. We of the Radio Club of America are happy to acknowledge this contribution, and wish him well in his new career.

## OBITUARY

Dr. Lee Chestnut, formerly of General Electric Co., passed away in his sleep September 14, 1972. Not himself a member of the Club, he was well known by many of our members and remembered for his contributions to two-way radio and the land-mobile industry. He is especially remembered for the incalculable assistance he gave the taxicab industry in the preparation of the case for taxicab radio before the FCC in the mid-1940's.

## FRED LINK IEEE FELLOW

Fred. M. Link, President and a Fellow of the Club, has been elected a Fellow of the Institute of Electrical and Electronic Engineers (IEEE) as of January, 1973.

## LARSEN CONVALESCING

Our best wishes go with member Leland J. Larsen on his recovery from his recent illness.

## NEWS FROM RALPH HEINTZ

Ralph M. Heintz, one of the really early pioneers in radio communication, now retired and living in Los Gatos, California is one of our latest distinguished new members. We are happy to have Ralph in the Club as he brings to us a wealth of communications lore that fits well the contributions of so many of our distinguished members of the Club. Possibly only the real "old timers" will recall the work of the Heintz & Kauffman Co. back in the 1920's when the company founded by Ralph was the keystone in the radio communications

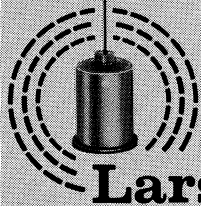
program of the then world-famous Dollar Lines shipping empire. The H & K group operated effectively against great odds and pressures of the established patent-cartel then dominating the field of radio communications, and many of the innovations out of H & K facilities became the foundation for later-day marine and long-range landside communications. In fact I believe one of the later-day power tube boy wonders of the WW II era, EIMAC, came into being when Bill Eitel and his later partner Jack McCullough were both working for Ralph Heintz at H & K. It's an interesting bit of nostalgia, and maybe we can get Ralph Heintz personally to give it to us.

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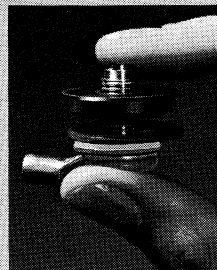


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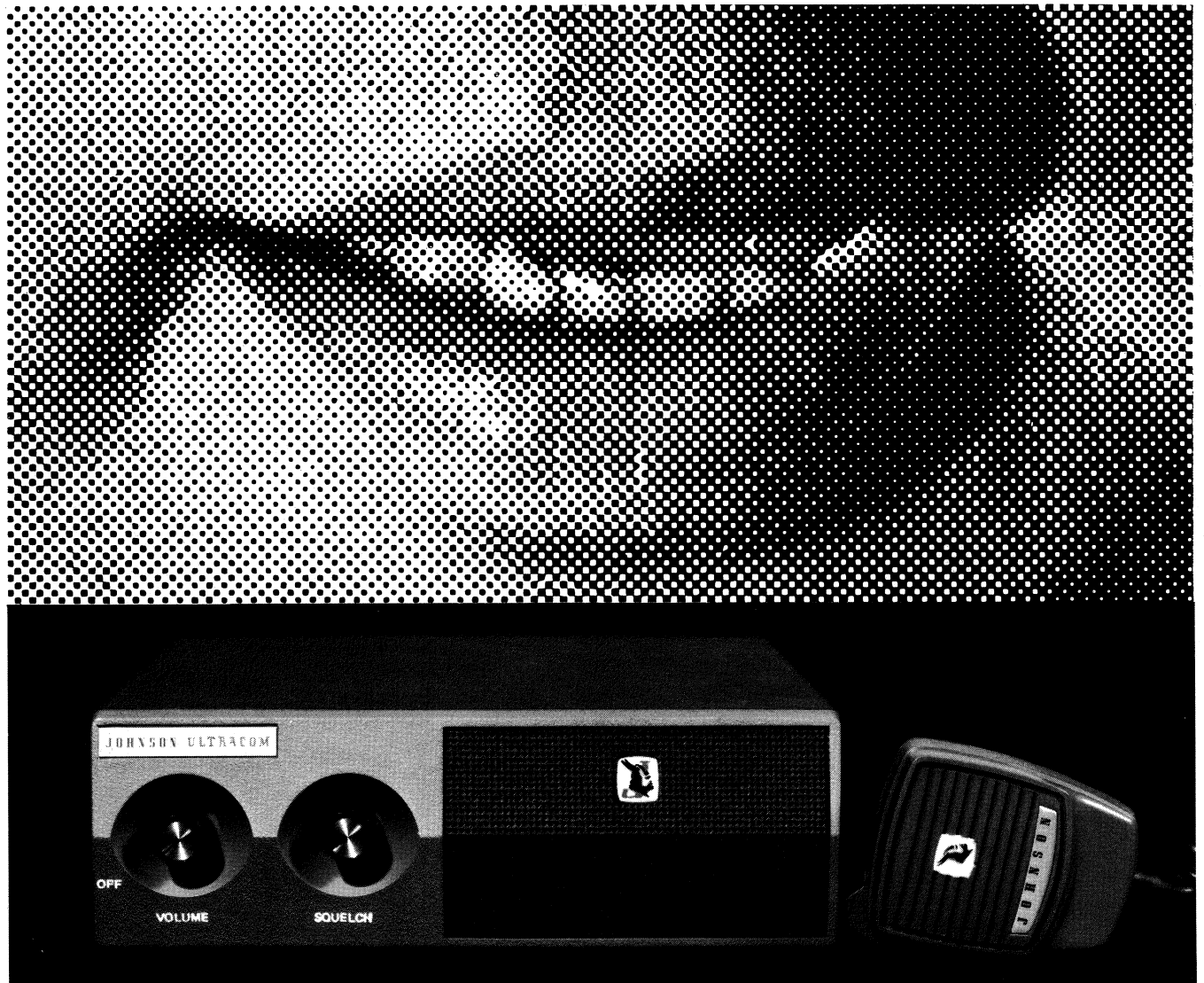
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