



November, 1959

### HISTORY OF THANKSGIVING

In the fall of the year 1621 the Pilgrims at Plymouth had much to be thankful for. A lasting peace had been achieved with the Indians, a start of a prosperous fur trade had been established and the settlers themselves had eliminated dissension as they worked toward a common goal. There had been no sickness for weeks, a far cry from a few short months previous when half the colony was decimated by disease and the unaccustomed rigors of a New England winter.

In view of these blessings the Pilgrims declared a holiday so that all might rejoice together. They invited Massasoit and ninety of his braves to participate. For three days the settlers and their guests feasted on venison, duck, geese, clams, wild plums, and berries. Wine was plentiful thanks to the abundance of wild grapes in the area. It is safe to say that no roast turkey graced the menu at this first Thanksgiving. Wild turkeys are incredibly swift and were more than a match for the Pilgrims' marksmanship. Rounding out the festival was a military review staged by Myles Standish.

The celebration was such a success that it became an annual event, in time becoming traditional throughout New England. Restless Yankees carried this tradition with them in the westward movement of later years. In the midst of the Civil War, President Lincoln proclaimed the last Thursday of November as national Thanksgiving Day. The Pilgrims had held their celebration in October, more in keeping with harvest time. Congress has since designated the fourth Thursday of November as a continuing date for the holiday and so it is today.

In the words of Calvin Coolidge, "We have been a most favored people. We ought to be a most generous people. We have been a most blessed people. We ought to be a most thankful people."

BROADBAND CARRIER AND L CARRIER DEVELOPMENT - W. G. Albert  
D. D. Kimball

Perhaps one of the best ways to begin an article describing some of the activities of the L Carrier and video development subdepartment would be to start at the beginning. Probably one of the earliest types of carrier transmission was by means of the pigeon. This, however, is a far cry from today's "L3" carrier system which is capable of carrying 1860 long distance telephone conversations.

"What is a carrier system?" and "What does it mean to the Bell System and the Telephone Subscriber?" are probably some of the questions you might ask. We feel this can best be answered by briefly describing the past accomplishments in the broadband carrier field.

If it were necessary to run a pair of wires from every telephone to every other telephone in the United States (there are more than 50 million telephones in use) the amount of wire required would approach an impossible figure. This sort of system is not necessary, however, because a telephone conversation can be impressed on an electrical carrier wave and many of these waves combined so they can be carried together as one "big" wave, and yet be separated back into individual waves when they reach their destination. This makes it possible to carry a number of conversations over the same pair of wires or the same radio channel. One of our main objectives is to design circuits and equipment which make all this possible.

One of the oldest of the carrier systems still in service is the Type "C" which provides 3 two-way voice telephone channels. This was followed by the "J" and "K" carrier systems which are capable of carrying twelve channels over open wire or cable for "J" or "K" carrier respectively. Time marched on, and not too far behind was the "L1" system which uses coaxial cable and was initially designed for 480 telephone channels. However, with further development effort, this was increased to 600 channels and still further to 720 channels. Finally, the "L3" system was introduced which, as mentioned before, provides 1860 telephone channels or 660 telephone channels and one television channel.

In addition to the wire systems mentioned, subdepartment 2167 headed by Frank Hallenbeck is responsible for the terminal facilities for cable and radio systems. In this area of carrier terminal development much of the present efforts are being expended to modernize and miniaturize.

The first phase of the terminal redesign started with the "A5" channel bank. A channel bank is, as the name implies, a bank of twelve voice channels that are converted to higher frequencies and treated as a single unit. Since eventually all telephone calls start and end with voice frequency, you can see that the channel bank is the largest production runner of the terminal equipment and is one of the large users of valuable floor space in the telephone office. Even though the predecessor of the A5 was designed in 1953, it seemed worthwhile to seek further size reduction.

The development of the A5 channel bank was carried on by the L carrier terminal group under the supervision of Jim Evans. Through the use of improved design and packaging techniques, the channel units have been reduced in size and a space saving of two-thirds has been achieved. To illustrate the effect of this, consider the installation of 1860 channels in a telephone office. This requires space for 52 bays which house the channel bank. When the new A5 is available, room need only be found for 18 bays.

In addition, voice amplification is now obtained by means of a transistor amplifier instead of the vacuum tube circuit used in former channel banks. This is the first application of transistors in the L carrier terminal. The new amplifier provides improved stability, better over-all performance, and also reduces the power dissipated to one-fourth of that formerly required. As you can see, with these forward-looking accomplishments, the redesign of the terminal is well on its way.

From the channel banks the L terminal progresses to Group and Supergroup equipment and here lies the main work load for the group under the supervision of Shiels Graham. Just as the channel banks have been redesigned and brought up-to-date, so will be the Group and Supergroup equipment when designs are completely developed. This "up-dating" will also take advantage of the latest advances in semiconductor techniques, i. e., transistors and modern day diodes will be used extensively. The latest mechanical and electrical designs of transformers, capacitors, resistors, filters, and the one thousand and one other components that go into a system, will be found in the "new look" of the L terminal equipment.

Two of the outstanding features of the new equipment will be its smaller physical size and its greatly reduced power requirements. For instance, one group bank presently occupies one-half the available space on a standard bay. It is anticipated that the new group bank will occupy one-tenth the available space on a standard bay. At the present time, one group bank requires about 70 watts of power to operate. This power takes on two forms, a high voltage and a low voltage. A transistorized group bank on the other hand will use only about 5 watts, all from a low voltage supply.

Supergroup equipment will be redesigned in a similar manner as the Group is being done and will realize about the same advantages.

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"We now return you to our studio in New York." At this "cue" from the announcer, the smiling face of the weatherman in Chicago disappears from the screen of your television set and is replaced by that of a well-known news commentator. This change in originating point of a television program is a familiar phenomenon to viewers and similar "switches" are performed in each television network many times a day. However, back of the ability of the various television networks to originate or receive programs almost anywhere in the United States lies a large web of intercity and local audio and video transmission and switching facilities leased by the Bell System to the television networks. These facilities are constantly being expanded and improved, and this responsibility falls on the video and L3 carrier system group under the supervision of Ed Taylor.

An important phase of the Bell System video network is the Television Operating Center (TOC). At the TOC, the broadcaster's video signal can be fed to various other centers which are located in all large cities and some of the smaller ones. As many as 30 incoming and 30 outgoing channels can be handled simultaneously at the larger television operation centers. Each channel is monitored and adjustment made to insure high quality transmission. Most of the equipment at a TOC, other than d-c switching, has been designed and developed by the video group.

This group is also responsible for line equipment used in the L3 carrier system. In transmitting over an L3 coaxial cable about 4,000 miles long, a signal is amplified about ten million times. To do this in both directions requires 200 kilowatts of power for the 2000 or more repeaters along the way. Operating this two-way system for one day requires enough electricity to supply the average household for four years.

New designs are presently being developed that will provide even more reliable circuits. One such design will prevent distortion when automatic switching changes cables during a program. Another example is a new relay that will prevent errors during switching.

A new group under the supervision of Don Williams has recently been formed. One of the many jobs handled by this group is current development on C, H, J, and L1 carrier systems. Current development might best be described as that which is concerned with improvements in existing circuits. As you might have guessed, current engineering is a large job by itself, but other jobs such as a logic circuit for the group combiner, Wire Line Entrance links, and BMEWS, are on Don's grocery list.

The logic circuit that Don's group is developing is part of the group combiner. More explicitly, it is the brain of the combiner. First, let us determine what a group combiner does. Short interruptions, much less than one second long, can't be detected during a telephone conversation. However, these short disturbances may cause trouble when the telephone circuits are carrying messages in the form of pulses. The combiner will permit the simultaneous use of two different paths to the same receiving point, both carrying the same information. At the receiving end, if both paths are in good condition, the signals are merely combined to form a single message. However, if trouble develops in one path, it must be disabled and only the good path allowed to transmit. It is the logic or brain circuit which decides what to do, and it must be quick enough to do this in one ten-thousandths of a second. Briefly, a logic circuit is a device that tells other circuits what to do and when to do it.

The Wire Line Entrance Link is a facility for connecting a radio system to the telephone terminal where they are some distance apart. BMEWS stands for Ballistic Missile Early Warning System and some work in this field is being done by this group in conjunction with the Western Electric Defense Engineering Division.

As you can see, this article merely touches on some of the many jobs currently under development by Department 2167. No attempt has been made to identify individuals working on particular projects since, for the most part, Systems Development requires a team effort.



YUMMY!



SPEAK NO EVIL  
TRIPLE EXPOSURE



CHICKEN HATER



THE GIRLS CORNER



FRED'S FROLIC

CHOW HOUND #1



THE BIRDWATCHER A. C.

Each fall Mr. and Mrs. Fred Monell extend a cordial invitation to all Bell Labs people, their friends and families, to join in their hospitality for the annual Bar-B-Q. This year, as in past years, a great many took advantage of the invitation and drove through a brilliant Saturday afternoon to Fred's hilltop home in nearby Boxford. Fred's home and grounds are particularly gorgeous at that time of year as they nestle in the multi-colored splendor which is autumn in New England.

As you drive into the Monell's shady driveway on Bar-B-Q Day, you are rewarded by the savory aroma of succulent chicken broiling to a golden brown on the large outdoor spit. The overseer of this stage of the operation is that virtuoso of the rotisserie, Mr. Henry Nason, Fred's friend and neighbor.

Eating is the first order of business so the chow hounds start lining up early for the chicken and the various salads which are donated by the Bell Labs wives. Since this is the only opportunity the womenfolk have to show off their culinary magic, each tries to outdo the other. The result is enough to make any gourmet's saliva glands work overtime. After downing the first course, most people would normally sit



BARNYARD GOLF

HEY BUDDY,  
YOUR HALO SLIPPED!

back and digest awhile, but the culinary achievements didn't stop in the salad line but rather spread into the pastry department also. So, tossing the calorie counter over the shoulder, most people marched back to the dessert section to sample such delights as deep dish apple pie, chocolate brownies, and the like.

After all this indulgence, many forms of athletic activities sprung up. Many of the BTL people were seen getting their yearly (?) dose of exercise by the medium of such games as barnyard golf (horseshoes), hula-hooping, and just plain old fashioned hiking. In the horseshoe department, a couple of ringers by the name of Ted Collins and Waldo Hensel took on all comers successfully. Hula-hooping was a little more difficult for, after such hearty overeating, not many adult frames could squeeze into the hoop. But Sy Berger managed to get his svelte figure into it and retain his championship. Hiking proved to be the most strenuous of all as the path led over Fred's back forty, Mount Everest, Jr., but the climb proved very profitable as the view from the top was extremely beautiful. When the exercise was over, the scavenging for the left-overs began, and then with full stomach and pleasant memories, the guests said good-bye to the Monells and started wending their way towards home, the Bar-B-Q again a smashing success.



REPORT - FOSTER PARENTS CLUB

The Merrimack Valley Foster Parents Club has been in operation for about eight months now and correspondence has been moving in both directions. The Club has written fifteen letters to Wladyslaw and we have received six from him. Each letter from Wladyslaw acknowledges receipt of the monthly money grant which is paid directly to him and is made possible by our contributions. He receives \$8.00 in cash each month out of the \$15.00 that it costs to sponsor a child. The remaining \$7.00 is made up in allotments from the Plan of food, clothing, and medical care or supplies.

To date, he has mentioned receiving canned food, clothing in the form of underwear and a sweater from the Plan, and from the \$8.00 monthly cash grant his mother has purchased shoes (which he wore for his first communion), a shirt, and a pair of trousers. The Club has sent along a 30-pound package of food, clothes, candy, kitchen utensils, and toys which should arrive in time for Christmas. To date our financial obligation of \$180.00 for one year's sponsorship has been paid in full and a \$20.00 cash gift was sent for his birthday August 14. He has not as yet acknowledged receipt of the birthday gift. In addition, a gift of \$20.00 has been sent to be used as he wishes for Christmas.

At the time the package was made up there were several items which were donated too late to be included. These items will be included in a future package. If anyone has anything in the form of good used clothes, canned food, or toys to donate, please contact Pat Dignard on Ext. 3515. The latest reminders have been sent out by the correspondence committee to those who indicated a desire to write. This is being done to insure that he receives letters at monthly intervals, and does not mean that anyone is restricted from writing; in fact, the correspondence committee would be happy to handle more correspondence. From Wladyslaw's letters, it appears that he really looks forward to our letters, so let's keep them going.

Don Haigh, Chairman  
M. V. F. P. C.

PIONEER TRIP TO EUROPE

On August 27, the Willises and the Cases joined a group of about 90 enthusiastic Pioneers and their wives in the new KLM Airline terminal at Idlewild. We were off for a tour in Europe and no finer hosts could have been selected than the Royal Dutch.

They outdid themselves to put us in a holiday mood. Our wait at the terminal and our overnight flight to England were both enlivened by welcome refreshments in between meals. An excellent dinner was served soon after the take-off and breakfast -- well, for those whose watches still followed New York time, breakfast came at about 2:30 A. M. next morning. It was daylight, no doubt about that, and it wasn't long before all were awake and eagerly scanning the clouds for a glimpse of Ireland.

Once at the London Airport, our tourist agency Travelong took over. They helped us through English customs and acquainted us with English currency which they claimed to be the simplest in the world. Never say the English have no sense of humor; we met it at every turn and found it really delightful.

We spent a busy week end in London, stopping at the Mt. Royal Hotel near Hyde Park. Then when the Pioneer group started for their scheduled tour on the continent, the Willises and the Cases each left London for a week of travel through England and Scotland.

We had a most enjoyable trip by private car visiting the colleges of Cambridge and Oxford, old cathedrals, Roman ruins, the country and castle of Sir Walter Scott, the Lochs and Trossachs of Scotland and the Lake District of the English Poets. The sunniest weather in over 200 years made the English countryside particularly lovely.

Back in London, we joined the second Pioneer group. A part of this group was scheduled for Scandinavia and the other part, including ourselves, for Western Europe. Leaving Harwick on the night steamer, we arrived the next morning at the Hook of Holland for a solid Dutch breakfast of ham, eggs, rolls, cheese, and coffee. Then in comfortable Dutch buses, each driven by a pleasant, skillful Hollander, we started on our tour by driving through Holland, stopping at the Hague, Amsterdam, and Arnheim where our troops first entered Germany in 1944. This time the German customs official welcomed us and warned us not to lose our hearts to Heidelberg -- which many of us found it easy to do.

Through Germany via Dusseldorf, Cologne, and the Rhine. The entire city of Cologne except for the beautiful Cathedral was destroyed by war bombing. It has all been rebuilt since -- a tremendous accomplishment. In Cologne three of our group bought the New Contaflex Super Reflex Camera but to our disappointment the camera was price fixed all over Germany, or so they claimed, and cost as much as at our discount places in New York.

From Cologne we journeyed via Wiesbaden and the Spa of Baden Baden, home of the finest casino in Europe, to Lucerne in Switzerland -- voted the most scenic country by our mountain enthusiasts. Over the Alps by deluxe electric rail coaches, averaging some 89 miles per hour for the two-hour trip, we came to Lugano in southern Switzerland. Here we again boarded our buses which had taken all day for the trip going over the narrow winding mountain roads.

From Lugano, it was a relatively easy day to Venice with its canals, gondolas, and beautiful paintings in the palace of the Doges, rulers of old Venice in its days of power and glory. Then to Rimini on the Adriatic, Assisi, and Rome, the most southern point of our tour in Italy.

In Rome one is fascinated by the ancient civilization, the Colosseum with its enormous size and state of preservation in spite of the vandalism of the centuries, the forum and the temples. Then there are the medieval marvels, St. Peter's and the Vatican, and last the city of modern times.

Our return trip took us through Florence, another city of great medieval culture, particularly in art, to Pisa where the tower still leans, slightly more each year. The tower can still be climbed by the winding stairs unless the weather is bad when it is closed as being unsafe.

From Pisa via the coast and the Riviera to Monte Carlo for a visit to Princess Grace's palace (she wasn't there at the time) and on to Nice where the girls change on the beach to their bikinis and the tourists snap pictures of the process from the promenade.

At Nice we bid good-bye to our buses and flew to Paris with its Eiffel Tower and "Eye-Full" Folies Bergere. Then a grand banquet on the Seine River steamer for all the Pioneer group -- Scandinavian and Western Europe. While the Seine and the wine flowed on, the band played, and the skipper journeyed up and down the Seine and the photographers shot the works, a most memorable finish to a grand trip.

R. L. Case

BOWLING

The 1959-1960 Bowling Season has gotten off to a very fine start -- for candlepin bowlers, that is. Tenpin bowlers will have their chance to start as soon as the Haverhill alleys are completed.

The candlepin alleys at the Lawrence Recreational Center have had quite a face lifting. New benches and wall-to-wall carpeting have added a great deal to the appearance of the alleys and to the comfort of the bowlers. New ball returns without hand moisteners have made the community hand towel a thing of the past. If only there is enough money left in the current appropriation which can be applied to the repair of the "automatic" pin setters. Breakdown time seems to have reached a record high. Additional alleys being built right now may very well solve this problem. BTL league games are scheduled for the new alleys as soon as they are ready.

Harold Foreman stepped to the head of the league on the first night of bowling and, to date, has retained the league high individual average with a seemingly comfortable margin. The Vanguards have captured high team standing in the league and also have held it since the first night of bowling.

Close cooperation between incoming and outgoing officers has resulted in the compiling and adopting of a complete set of bowling rules to be published shortly. The rules govern both candlepin and tenpin bowling.

So far, the candlepin league has enjoyed smooth sailing and, with tenpin bowling soon to get under way, this season promises to be the best bowling season on record. Good luck, bowlers!

DALE OWENS REPRESENTS U. S. A.

Dale Owens, Department 2621, represented the United States at a meeting of the International Electrotechnical Commission (IEC), held in Ulm, Germany, in October. He served on the committee dealing with the standardization of terms, measurement measures, and dimensions of transformer and inductor cores of ferrites and other magnetic materials.

Dale was named U. S. delegate by the United States National Committee of IEC, which is an arm of the American Standards Association.



The "History of Baseball" was the discussion topic at the September 28 meeting of the American History Club. A three-man panel, consisting of Bill Adams, Jim Donoghue, and Dick Leahey (the latter two will be recognized as editors of the Merry Mack) reviewed the National Sport from its earliest days. Bill enlightened the group on some of the game's oldest rules and Dick reviewed the greatest of the World Series. Jim closed the program after citing a famous sports writer's opinion of the "Ten Greatest Moments in Baseball."

On October 26, the results of the Club's annual election were announced by Steve Korba, Chairman of the Election Committee. Scheduled to take office November 1 is a new Executive Committee consisting of:

Mac Plante - General Chairman  
Bill Adams - Vice Chairman  
Bill Frawley - Literature  
Bob Powers - Special Events  
Ben Cahoon - Past Chairman

At the same meeting, Mac Plante and Bob Powers discussed the highlights of the Battle of Leyte Gulf. The fifteenth anniversary of this World War II battle -- the largest naval engagement in history -- was observed October 24 to 27. The battle involved 208 capital ships and covered over 500,000 square miles of ocean. As a result, Japan's reign as a naval power came to a close, and thus commenced the beginning of the end of World War II.

### AMATEUR RADIO CLUB

Another VHF field expedition has come and gone for the Radio Club. This one, in September, proved the most rewarding weather-wise and operating-wise. The 144 megacycle (two meters) tent talked their way to 105 contacts in 10 sections. The gabbers in the 50 megacycle (6 meters) tent vocalized through 168 contacts in 12 sections. The grand total score for the effort was 6006 points which was close to three times the score obtained in the June VHF contest - progress.

One of our fine members KLHDV, Claude Cronburg, is at home convalescing from eye surgery. To help pass the time, Claude is working on 2 meters through the kindness of Howard Bailey W1--- who provided the transmitter and receiver.

Dick Thompson W1IHM is sporting a sparkling new mobile set-up, it's the Gonset "Twins," very nice. Dick reports that the equipment not only looks nice, but operates nice, too. Good luck, Dick.

Our code classes have almost reached the nonexistent stage -- how about it -- let's conquer that code -- don't give up.

About this time of year the ham prepares for the long winter nights and the DX starts to pick up. You members that are not active, why not devote a couple of hours to the rig and get on the air? It is somewhat surprising to find that a large number of hams are not on the air. Everyone must have an hour a week that he could devote to operating without sacrifice to family or job. Come on, let's make an effort this week.

Also, about this time of year the proposed budget is being anxiously awaited. The Radio Club's intelligence agent tells us things look good and it is suggested we will get just about what we wanted.

A welcome goes out to Charles Ruggles W2--- who has settled down in New Hampshire with his 2 meter rig. Hope you enjoy the VHF activity ever present in New England, Charles.

Speaking of new members, where are the old-timers I see in the call book? Why not bring your charming self to the next club meeting? The Radio Club greets everyone, ham or nonham, with open arms. How about some young ladies to keep Beth Storrs and Marie Backard company at the meetings.

W1, 73 fer nw hpe to cuagn at the club meetings.

Steve Korba

CAMERA CLUB NEWS - John Radcliff and John Toivola

Past Programs

The Fall Slide Contest, which was held October 7, was the most successful contest to date, from the standpoint of the number of submitting photographers. Twenty-seven people entered a total of 54 slides. The contest was attended by over 120 people, who voted the following slides as the top three: John Toivola's "Autumn Reflections," Howard Thomson's "Isolation" and George Ames' "Bridal Veil at the Flume."



The Camera Club presented two extra programs during October in the conference room on the first floor. Bob Banks showed movies and Andy Hamori showed slides taken on a canoe trip through Quentico Provincial Park in Ontario, Canada. They made the trip as leaders of a group of Explorer Scouts. They gave an excellent description of their trip to an enthusiastic S. R. O. audience.

The November 4 program was an Eastman Kodak slide show titled "Ideas for Photo Christmas Cards." The narration was given by the Club Chairman, Dale Owens.

#### New Photo Directory

Our Club Librarian, John Radcliff, has a copy of the 1960 Popular Photography Directory. If you are interested in borrowing it, see John at 3S-27.

#### ENGAGEMENTS

Donald Durand\* - Nanette Leclerc - September 5

#### MARRIAGES

Dale McLean - Mary Louise Shaw - October 17  
Margaret Clark\* - Richard Fry - October 31  
Pierre Gerondeau - Anne Adams - November 7

#### BIRTHS

David Allen to Mr. & Mrs. Walter Norris. - September 28  
Laura Elizabeth to Mr. & Mrs. W. C. Barnes - October 12  
Matthew Robert to Mr. & Mrs. R. L. Billings - October 24

\*Western Electric Employee Assigned to the Laboratories