Complete Transcript of Business Sessions

THE ASSOCIATED POLICE COMMUNICATION OFFICERS INCORPORATED

1940 APCO Conference

Orlando, Florida

ASSOCIATED POLICE COMMUNICATION OFFICERS, INC.

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MONDAY MORNING SESSION

The first session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by the President, Mr. H. F. Wareing, at 11:30 a.m., December 3, 1940.

MR. WAREING: I will call on the Reverend Morris Book for the invocation.

REVEREND BOOK: Our Heavenly Father, in the name of the Lord Jesus Christ we thank Thee for government which provides instruments of welfare and service and protection. Help us to know that safety only, however, rests in Jesus Christ as the Son of God and that the Lord Jesus in the hearts and lives of men and women through the gospel provides our real security. We ask Thy protection and mercy on these who serve their several communities, in the preservation of life, the sustenance of the home, providing all things good and essential to the public welfare. We ask for the forgiveness of sins, and confessing our failures, we ask Thy blessings on this session, for Jesus' sake. Amen.

MR. WAREING: Unfortunately, Chief Smith of the Police Department is detained in court this morning and will not be with us until later, perhaps this afternoon. Now we have with us a very busy man, Mayor S. Y. Way, of Orlando. The mayor has a great many other things to attend to, so we will have his address of welcome first.

MAYOR WAY: Mr. Chairman and gentlemen, to begin with I wish to pay tribute to our local official, Jim Virden, who was so successful with his persuasiveness and with the blandishments which he must have offered to induce you gentlemen to come to Orlando. We appreciate the courtesy extended this city. We also recognize the fact that this aggregation of experts in radio transmission has a problem on its hands, working out the details and betterments of transmitting systems, which really I imagine is in its infancy. I want to say to you gentlemen that I hope and sincerely trust that with your interchange of ideas and your studies of this intricate problem, each of you may leave Orlando better equipped to administer your duties, whatever they may be, in whatever capacity you may be placed. We express the hope that your stay in Orlando may be delightful. Probably some of you have never been in Florida before and we hope that you will find it so attractive and its climate so enjoyable that future visitations will be made by you. Florida, we think, is just beginning to develop. During the past ten years it has been the fastest growing state, has made more rapid progress than any state in the Union, and we who have been in Florida many years, including myself who have lived right in this town for better than half a century, feel we are right on the threshold of big advancement. We hope that you gentlemen, representing your various firms and manufacturers, may get something out of this state, may benefit from the advances of Florida. I want to extend to each of you the most hearty welcome, the right-hand of fellowship, to let you know that Orlando, during your stay, is just as wide open to your entertainment as it is possible for any municipality to be. In other words, any ordinance infraction of the city will be forgotten if you just let me know about it. I don't know that any of you will be guilty, but I love to associate with those who do break an ordinance once in a while. With these few words I want to extend to each of you the heartiest welcome within my ability to express.

MR. WAREING: We will now call upon Supt. Gerald S. Morris of the

New York City Police Department for his response to the Mayor's welcoming message.

MR. MORRIS: Mr. President, Mayor Way, gentlemen, on behalf of the members of APCO and their friends here assembled we thank you for your words of wisdom and welcome. I can assure you right now that we will not take advantage of your generosity; we will not take advantage of any of the privileges that you have extended to us, but if we do, we know we can go to this gentleman, and that's a whole lot - to know who to go to at the right time. Thank you very much.

MR. WAREING: I think at this time perhaps we can introduce the exhibitors' representatives.

(Each of the representatives of the various manufacturers was introduced to the Conference.)

MR. WAREING: I think at this time we ought to introduce the delegates present. When we have some problem to take up with some particular man, if we know he is here and know what he looks like, we can usually find him.

(The members present stood and identified themselves.)

Announcements by Mr. Virden.

On motion by Mr. Morris, second by Mr. Kadow, the meeting adjourned.

MONDAY AFTERNOON SESSION

The second session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wareing at 2:05 p.m. on Monday. The president introduced the members and manufacturers' representatives who were not present at the morning session.

MR. WAREING: I believe our Secretary has some announcements to make.

MR. MORROW: I have a telegram here addressed to the organization - "Best wishes for a successful convention. Sorry I am not able to be with you." It is signed Louis R. Padberg, first secretary of APCO. I have another telegram addressed to James Virden - "I regret that it is impossible to reach Orlando before Tuesday night or Wednesday and if you wish me to make an address Wednesday, please advise." Signed by Senator Andrews, who is a member of the Naval Affairs Committee and will address us on Wednesday per the telegram.

MR. WAREING: At this time I would like to call on Colonel Edwin L. White for some announcements.

COLONEL WHITE: First, I want to say there are three very disappointed people in Washington. Mr. Jett wanted to come down, but this National Defense situation has him tied up and he knew he couldn't possibly make it. Webster had hoped to be down here until about 4:00 o'clock Friday. He had an appointment with the Chairman of the Commission and he had to go

to some other work so it was impossible for him to attend. For myself, I am very glad that I got to attend instead. My assistant would like to be here very much. He was at Knoxville for six years and has been with me a little over a year, handling police matters. If you come to Washington, Sharpe will take care of you.

I am glad to be here; I like this outfit. There is one thing about coming down here talking to you boys - you don't have to spend a lot of time finding out what the score is. The relations between the F.C.C. and APCO have been most happy. We appreciate your advice and assistance. I might mention a lot of little odds and ends that will come up, possibly later in the convention, in a little spare time. I may want to ask some questions. There is one particular matter that is appropriate to discuss at this time. It is in everybody's mind, that is national defense. The National Defense Committee has been very much in the papers. There hasn't been very much about the Defense Communications Board, which was established last September. This board of five members consists of the Chairman of the Federal Communications Commission, as chairman, the Chief Signal Officer of the Army, the Chief Communications Officer of the Navy, the Assistant Secretary of the Treasury in Charge of the Coast Guard, and the Assistant Secretary of State in Charge of the Division of International Communications. That board, since its designation, has been very busy trying to work out a scheme for defense communications, and the organization of all communication agencies of every kind in this country so that it can best serve the needs of this nation, if we should go to war. In furthering its organization, this defense committee has organized four main committees. There is a Law Committee, a Labor Advisory Committee, an Industry Advisory Committee, and a Coordinating Committee. Mr. Jett has been designated as chairman of the Coordinating Committee, which includes Mr. Francis C. deWolf, of the State Department, Major W. T. Guest, of the War Department, Commander Earl E. Stone of the Navy Department, and Commander J. F. Farley of the U. S. Coast Guard. That committee, as its name implies, is the coordinating committee; through that committee there are being organized eleven sub-committees: Amateur Radio Committee, Aviation, Cable, Domestic Broadcasting, Interdepartment Radio Advisory Committee, International Broadcasting Committee, Radio-communications, State and Municipal Facilities Committee, Telegraph Committee, Telephone Committee, and U. S. Government Facilities Committee. The last is different from the other committee in which I think we are most interested, the State and Municipal Facilities Committee.

Any committee to be satisfactory must be small enough so that it can work. We appreciate that in our conference here. If an important matter comes up it is very seldom any attempt is made to settle that question in convention. You appoint a committee which brings a solution to the convention, then you shoot holes in the solution, until you finally arrive at something. In starting this committee the announcement says -- "The duties of this committee include the study of all phases of State and Municipal communications facilities, including Municipal and State Police Radio Stations, Inter-City Police Radio Stations, State Forestry Radio Stations, Marine Fire Radio Stations, and state and municipally owned or leased wire facilities. With the requirements of national defense as a primary consideration, the committee shall recommend plans for the most efficacious use of all of these facilities in time of military emergency, giving due consideration to the needs of other governmental agencies of industry, and of other civilian activities."

In working up this committee idea, it was finally decided that the committee would be made up by selecting organizations and asking those

organizations to select a representative. There is quite a list of organizations on this committee at the present time: The Department of Agriculture, Associated Police Communication Officers, Association of State Foresters, who represent forest fire protection problems and also state conservation, the Federal Bureau of Investigation, Federal Communications Commission, International Association of Chiefs of Police, International Association of Fire Chiefs, International Association of Firefighters, International City Managers Association, International Municipal Signal Association, Navy Department, U. S. Conference of Mayors, Treasury Department, and War Department. Some of these organizations have already designated their representatives. The Commission has designated me; the Navy, Comdr. John R. Redman, and he knows what the meaning of compromise is; the War Department, Lieut. Col. R. B. Moran, a man of the same type; and the Treasury Department, Lieut. Comdr. R. J. Mauerman, a Coast Guard man whom I don't know personally, but I understand is also a fine type of chap.

There is one important thing that you will appreciate, that is the members of the committee must be well qualified people that are capable of seeing a broad picture, studying and understanding what it is all about, so if the War Department comes in and says here is a problem we have, they can appreciate the War Department's point of view and figure out an answer. If the APCO man says we have a problem, what ought to be done about it, the War Department man tries to help out. Another thing absolutely necessary is that the representative must be a man in whom his principal has confidence. He can't be a "Yes, but--" man. He must be able to come in and say, "All right, we'll go along with that." In this organization there are some rules set up. In the first place, each committee will elect its own chairman, place of meeting, and designate and decide how to carry out its own work. Of course, somebody will have to start the ball rolling; the Federal Government will probably call the first meeting, and one of the government representatives will act as president pro tem, but that will be decided after the membership is determined. Then the committee will meet in Washington, elect a chairman and work on the jobs that need to be given immediate attention, decide where to meet, how to handle matters, etc. It is my opinion that in case of a vote each organization has one vote, but each representative can bring as many people as he wants to enter into discussions. I feel on this question of voting that if the people appointed are the type they should be there will never be a vote taken. Of course, provision is made for the submission of a minority report to the Defense Communications Board if some don't agree with the majority. We have worked a great deal with committees, and when you get a good bunch of fellows together who know what the score is they figure things out, the way things look to them as a group. They don't have any votes or contests. Maybe every fellow doesn't get just what he wants, but if it isn't there to be had what can you do about it. They say each outfit will have its own representative. I don't think there will be any questions coming up that will have to be decided in a day. If something comes up involving a major matter of policy and the APCO representative is not satisfied how it should be decided, he certainly will have a chance to get in touch with people in APCO that are conversive in the matter and get their advice. Now a letter has been written to APCO, I don't know whether or not you have it, asking the organization to designate a member on this committee. I think it is very fortunate that you are meeting here in this convention so you will know what it is about. When you pick a man, pick one in whom you have complete confidence. There are a lot of good men here. It is a bit difficult to pick one, because there are so many that would be swell. I have gone over

this matter briefly and I think possibly I will stop for the moment and see if there is any discussion.

(No discussion).

MR. WAREING: Thank you, Colonel White. We haven't much time for discussion because we want to spend most of the afternoon with Professor Noble.

CAPTAIN LEONARD: I knew nothing of this defense plan setup until two weeks ago, when I was in Washington on another matter. Commander Jett very briefly outlined the proposal. The President of the United States, along with other national defense matters, designated this communications board. I have talked with several members of your organization since my arrival here yesterday, and it is quite apparent that this doesn't meet with unanimous approval. One gentleman spoke just a few hours ago and brought out the fact that the teletype service is not represented in this setup, and it is true. I think if we had years of planning or had been able to give this deep thought we would have reached the same goal. It is a step in the right direction as far as defense matters are concerned. The committee has been designated. As far as groups to be represented are concerned, if I.A.C.P. or APCO started to go off on a tangent and criticised the plan or urged that other groups be represented, it would be futile, because the committee is set up and our move might be misunderstood. As a representative of I.A.C.P., I say let's play ball by appointing the necessary representative to this committee and after the first session convenes in Washington and the formation of the committee is completed if it is apparent that other groups should be represented or some that are on should not properly be there, then the committee itself, by its own resolution, could take care of that. That is just a thought I wanted to bring because some members have presented these criticisms and I'd like to hear what anybody else has to say. I think that the best thing we can do is go on with the national defense scheme. Let's give our wholehearted cooperation, and if there is need for amending it at a later date or at the first organization meeting, then the committee itself can take care of that. This group is to be represented and so is the I.A.C.P., so I believe the police services will be fully protected; the F.B.I. has a representative, too, so there are really three - or four, including the Signal Association, that can talk.

COLONEL WHITE: Along the line of organizations that are not represented, this list of committee members is not necessarily closed. You spoke of the teletype services - I endeavored to find out something about this teletype supervisors organization, but could find nothing to indicate there was such an organization, other than a casual association. It isn't like APCO, an incorporation with regular membership, officers, and a publication. Now I am sure that if there is such an organization in the Nine State Teletype group, the Defense Communications Board would want that organization represented. They deliberately left out such groups as the Eastern States Police League and the Chicago Area Association, because if you took in all of those regional groups, the committee meeting would be like a convention and you wouldn't get anything done, so APCO was selected. The International Municipal Signal Association is a little different. They include a lot of radio communcations people and also the Gamewell people, and the other forms of communication.

MR. JOYCE: I am quite surprised that they didn't know we had a

teletype association. We appeared before the Radio Commission some few years ago. We have been in existence about ten years. We are the largest teletype police group in the country. We have an organization with president and secretary and we put out a bulletin. We meet once a year and discuss our problems. In fact, only a few years ago we met jointly with APCO to straighten out a number of police problems.

COLONEL WHITE: I knew you had it but I couldn't find out anything about it.

MR. MURNANE: I spoke to Captain Leonard today and I have spoken to most of those who are connected with teletype and radio communications. The nine states comprising this nine state teletype system have a total population of 44 million people. We are closely associated with various armed groups in those particular corps areas. I think we should be represented, however, I do not say that in criticism but merely as a suggestion that someone from that group be placed on the committee. If we select a man from APCO we should select the best possible representative. That doesn't necessarily mean that he will come from the teletype system and be familiar with the operations of the teletype system. He may be from the middlewest; therefore, I think there should be a separate representative, it will probably be an APCO man anyway that will represent the teletype system because most of those that take the greatest interest in the operation of the Nine State systems are members of APCO. This is merely given as a suggestion and not as a criticism of the individual or individuals who selected the groups to be represented on this National Defense Committee.

CAPTAIN LEONARD: What I meant to say when I got up was that the action has been taken and the committee designated as far as the groups represented are concerned, so rather than do anything that might look like criticism we should play along with them. Why wouldn't it be a good stunt to offer a resolution that a representative be elected from this group and couple that with the suggestion that the teletype services, you can designate the Nine State Group or however you want to do that, be officially recognized for the appointment of a representative from their services.

MR. WARING: I would like to end this discussion on the National Defense Communications Board because Professor Noble is scheduled to talk at this time. However, it might be well to refer this matter to a group to meet tonight and report tomorrow about the time Colonel White is scheduled to talk. This group will collect and coordinate the ideas of the members. I appoint Bob Batts of Indianapolis as chairman of a joint committee to consist of the Frequency Allocations Committee and the Engineering Reports and Research Committee, together with any other interested persons who may want to attend this meeting which will be held here at the hotel.

At this time I would like to introduce Professor Daniel E. Noble, head of the Department of Research of the Galvin Manufacturing Corporation, manufacturer of Motorola police radio equipment. Professor Noble was formerly with the University of Connecticut as a professor of electrical engineering, and is quite well known to us who are ex-hams. We will take very great delight in listening to Professor Noble talk on the application of frequency modulation to the emergency services.

PROFESSOR NOBLE: Mr. Chairman, gentlemen: I applied a special definition to the radio amateur the other day and I think perhaps it applies to communcation officers, also. Every communications officer knows

that henry is a unit of self-inductance and according to my observation the communications officers are as enthusiastic about their work as the radio amateur is enthusiastic about his hobby; therefore, I should say that a communications officer is a man who thinks that "0. Henry" is a coil of zero inductance. I mentioned that to an amateur friend one time and he said that didn't apply to all amateurs because he knew "0. Henry" was the name of a candy bar.

To begin with, I want to assure you that frequency modulation is not a cure-all and it is not a "staticless" radio system. You have a matter of degree to contend with. It is superior in certain respects to amplitude modulation. I am going to point out the superior aspects of the system, but I don't wish to ballyhoo frequency modulation. I want to give you a straight picture of what I think it is capable of doing and I shall welcome questions that you can fire at me. If you have an AM system which is already functioning, providing service, and service is what you want, then changing to FM might be a waste of time. Almost anything is a waste of time if you select your conditions properly. For example, it might be said as a general proposition that eating a delicious chicken dinner is not a waste of time. Friday, on my way down here, I boarded an airplane and the plane loomed high in the air and everything was sweetness and life. I ate a delicious chicken dinner. As we proceeded toward Florida the wind blew and the plane did all sorts of things - and I can assure you that eating the chicken dinner was a waste of time.

Some of the audience here today have heard much of the discussion I am going to present here. I am going to use slides to a large extent to illustrate and describe the Connecticut system, and I shall follow up with a brief discussion of some of the elementary theoretical considerations of frequency modulation. To begin with, I would like to give you something of the history of the Connecticut system. I have been working with FM since 1936. I had some equipment in operation at the University of Connecticut and with WLXPW on Meriden Mt. in operation it was possible to make rather extensive observations on the behavior of the system. When Connecticut thought something of putting in a statewide system I was approached and of course I immediately thought of FM as a possible answer to the problem. I journeyed down to the Federal Communications Commission, I think it was the winter of 1938, to see Colonel White about it. I had had very little to do with the emergency services, and I approached the F.C.C. offices with a feeling that I would have to force through my desire to experiment with this system. I want to say here that I was very agreeably surprised. I was given every possible encouragement. I found no obstacles. Colonel White gave me every possible assistance in setting up my proposed investigation and in following through in the FM setup that we now have in Connecticut. In fact, I found Colonel White eager to assist anything which would seem to increase the effectiveness of police communication systems. I would also like to say that Colonel Edw. J. Hickey, Commissioner of State Police in Connecticut, backed me on the project and it was necessary for him to back me on blind faith, since there was no FM equipment available - there was no system in operation and he had to believe me when I told him the system would work. At a meeting early this summer he told a group of communications men that he had suggested that if the system didn't work I might find it necessary to catch a fast boat to China. But as I pointed out at the time, he wasn't fooling me because if I was on the boat he would be there too. I want to say also that I had complete assistance throughout the development of the system, particularly from Sid Warner. Mr. Warner is the State Supervisor of Main-

early in the development of the system. Now if we can get the slide system in operation I will go through as rapidly as possible the general setup in the Connecticut system.

Slide No. 1 is a map of the State of Connecticut, which is not a large state as you all know, about 90 miles across and about 60 miles high, so that the total area we must cover is not particularly large. It is a state, however, with rather rough terrain. The hills vary in height from 2400 feet down and we have many hills 900 ft., 600 ft., 400 ft. There is very little flat land, therefore there is ample opportunity for the production of radio shadows. The state is policed by a troop system and these black lines divide the state into ten troop areas. There is a separate barracks and organization for each of the areas enclosed by the black line. For example, you notice the headquarters of this area at Hartford, and that is one of the largest areas covered by a single troop. A two-way system was required, one that would enable a car anywhere in the state to talk to some headquarters. In order to insure operation with a large factor of safety it was thought best to limit the talkback distance to approximately 24 miles maximum. In general then, the selection of the details of the system required that we determine the location of each pickup point, that is, the location of the various station points was determined by the talkback requirements rather than by the requirements for the transmission of the message to the car. It seemed also desirable that in setting up our system we provide a reasonable overlap of the service in one area to the service in adjacent areas, so that in case of a failure it would be possible for one or more adjacent areas to take over the territory in which the failure occurred until the communication system was placed back in operation. Simultaneous operation of stations was desirable, since it would permit the carrying on of communications with a minimum amount of delay. With an amplitude system, of course, we would encounter a large amount of interference between adjacent areas; in the use of the frequency modulated system we decrease the amount of possible interference between adjacent areas. It is possible for the Hartford station to carry on communication with its mobile units and ignore the transmissions from the areas which are not adjacent to the Hartford territory. In other words, this station here in the Westport area may carry on communications with its mobile units simultaneously with the operation of the Hartford station, and the Westport and Hartford stations do not interfere to an extent that calls for any special precautions. It is true that with these two stations operating simultaneously you may get either one or the other station in this territory; which station you will get is a matter which cannot be predicted since it is a matter determined by the effect of heights and the relative field strength. In general it may be said that in the territory between two areas there is very little interference in the sense that you can't receive messages from either station. Rather than interference you will find that you will get one station or the other.

To provide a system with a maximum flexibility, two frequencies were used for the entire state setup. An examination of the requirements and the operations of the mobile and fixed stations will show why two frequencies will provide maximum flexibility. More than two frequencies would mean that mobile units attempting to travel about the state would leave a territory supplied by a fixed station using a frequency to which the mobile unit was adjusted and go into another territory on another frequency on which the mobile unit could not pick up its signals. With two frequencies, one for the fixed stations and one for the mobile

stations, it is possible, with all fixed stations on the same frequency, for a mobile unit to travel the length and breadth of the state and using one frequency for reception always be in touch with the fixed stations. Why two frequencies? Why not use one frequency? We would have had a similar situation where it would have been possible to travel and still maintain contact with all stations. But note this possibility. This station up here at station 'D' could be communicating with its mobile units. Down here in this part of the state some mobile unit might be at that time attempting to reach into headquarters on the same frequency. In general, the mobile transmissions will be of low power and the energy reaching this headquarters station might be small compared to the amount of energy supplied by the fixed station. Therefore, the transmissions from this fixed station would wipe out the possible transmissions from these mobile units in the area of the distant station. With two frequencies, one for the exclusive use of the mobile stations and one for the exclusive use of the fixed stations, it is possible for the mobile units to transmit to stations in this area on 39,180 while a station is communicating with its units on 39.5 megacycles, since fixed stations using 39.5 will not interfere with the 39,180 reception. Where car to car communication is desirable, it is possible to install a switch and a second crystal so that a flip of the switch enables the officer to change from mobile to fixed station frequency. He can then talk to other cars without interfering with the general operation of the system. Another desired characteristic of the system was that every fixed station should be capable of hearing every other fixed station and to achieve that at each fixed station location we installed two receivers, one at the mobile frequency and one at the fixed station frequency, and at the headquarters point the operator would hear anything that came in on either frequency. In other words, an operator at Hartford would hear any fixed station as it went on the air, and he would also hear the mobile stations. But if the operator desired to listen to mobile stations only, it was only necessary for him to lift the handset off the hook and a relay would disconnect the fixed station receiver at the receiving location and leave the mobile station receiver in operation alone, so that by the simple process of lifting a handset it was possible to communicate with its mobile stations without encountering any interference from the fixed stations. We used a relay system with pairs of relays in series to accomplish that switch for reasons of economy. We had two wires only connecting each remote fixed station to each headquarters location. The wires served to carry voice from the headquarters location to the fixed station and the wires also served to carry the output of the receivers from the fixed station location back to the headquarters.

(Slide No. 2 of car.). I want to emphasize the desirability in setting up emergency communication systems of selecting quiet locations for the receiver locations, the receiving stations. In setting up the Connecticut system we had, in determining our locations, three main requirements. The location must be quiet, that is, the amount of interfering noise should be at a minimum at the location selected. Second, the location should be as high a point near the center of the area as we could find. Third, the location should be reasonably close to telephone and power connections. Since each transmitter and receiver was to be operated on the power lines, and since the control was to be accomplished by means of telephone connections, this last requirement was necessary. We surveyed the entire state of Connecticut to determine the locations for our stations. Our equipment and our procedure were fairly simple. We outfitted ourselves with the necessary transmitter, a complete mobile installation,

and, as you see, a portable antenna mast system. That mast is made up of a series of window-washers' ladders which come apart readily and will fit in this truck, the radio service truck. At the top of that antenna we have a coaxial cable antenna with a flexible coaxial feed to the transmitter. We would scan the area near the center of each troop district, using a topographical map. We would select likely places on the map and then scout the places. When we had found what appeared to be a desirable location we would set up an installation of the type shown. We have the transmitter mounted in the back of the truck, feeding this antenna system which is connected also with a switch which would enable us to throw from the transmitter to the receiver. In this car we have a complete FM installation, a 25-watt transmitter and a receiver. On the roof of the car was our roof-top antenna.

(Slide No. 3) This is another view of the installation, with Mr. Warner and Mr. Sheeler, who were with me throughout the development. Mr. Sheeler and I traveled together some 20,000 miles over the state of Connecticut while Mr. Warner sat on top of the hills and nearly froze to death.

(Slide No. 4) This shows you how cold it was on that particular day I made this picture Notice the accumulation of ice on the antenna. That was our experimental model of a roof antenna and it is well iced up, but even with that condition we succeeded in communicating over distances of 15 or 20 miles.

(Slide No. 5) This shows the snow. Mr. Warner had the transmitter set up outside and every time I called him he had to pile out of the warm car and throw the switch and talk to me. When we got back we found Warner almost too stiff to walk and we had to dismantle our equipment and get out of there to get warmed up.

(Slide No. 6) This is another survey day when we were set up and it is snowing and the wind is blowing. The transmitter and receiver are covered with snow.

(Slide No. 7) Later on we abandoned our collapsible antenna system in favor of a simple installation in this truck, because on tests we found that we could achieve nearly the same distances with this roof-top antenna, which you can't see very well, on top of the truck and the installation of a simple mobile unit inside the truck. Throughout half of the survey work we used this installation in preference to the more elaborate one. Our coaxial cable feeding the higher antenna lost so much energy that we were just as well off.

(Slide No. 8) This shows the inside of the truck and gives you an idea of the sort of installation we had. This is the receiver, and this is the mobile transmitter. We had this gas engine generator available for the operation of a larger transmitter but we found a larger one was unnecessary.

(Slide No. 9) This is a snapshot of the back of the Ford car you saw It was the first FM mobile installation in the system, with an 807 power output tube. This is the receiver. The procedure, as I suggested, simply required that we park the truck at the proposed transmitter location and then proceed to run a circle around the area, and also explore possible difficult areas with our mobile unit, while

with I used an RCA field strength measuring unit to run field strength measurements, but it soon became apparent that the measurement I was getting in traffic areas was a measurement of ignition noise rather than signal, and it was impossible to tell just what reception conditions would be in the presence of the ignition. At least, it was impossible to tell by means of field strength measurement, so we abandoned that and depended on listening tests. What we wanted was intelligible communications, so we surveyed with that end in view.

(Slide No. 10) In order to set up a test installation to find out how the system was going to behave, we planned to set up our first transmitter in the Hartford area, near the center of the state, with the transmitter located on a mountain. This is our first experimental 250-watt transmitter and its simplicity is indicated by the fact that the total radio apparatus is covered by this chassis and this chassis. This is the complete transmitter with an output of 250 watts. That transmitter was installed on Avon Mountain. Unfortunately, I couldn't get back far enough to take a suitable picture of this installation because as you backed away from the transmitter you went down hill, so I couldn't get far enough away from it with the lens I had available to get a sizable shot of the installation. This is a steel house 8 x 8 x 8, completely welded throughout. Over here at the left you see the base of the antenna mast. Looking up the antenna mast you see our rigger on the pole. You can see the coaxial antenna at the very top, and we have 7/8-inch coaxial feeder going down to the transmitter.

(Slide No. 11) This is a profile of the terrain between Avon Mountain, the transmitter location, and Grosvenor Dale. The distance as indicated here is about 48 miles; the transmitter at Avon is approximately one thousand feet above sea level. We succeeded in maintaining two-way communication, secondary in character, by that I mean we couldn't go down in the valley here and communicate, but it is indicative of the varying elevations between the two points on this particular diagram. We did transmit two-way from this location back to the transmitter and we could not transmit from here but we could get back from here or here. When we got back to approximately this location, the transmissions were solid. We could get back each time we attempted a two-way contact. It simply indicates that when you are a long distance from the transmitter you can't go down in back of a hill, close under a steep incline, because the radio shadows produced will cause you to have difficulty in getting back. But even in the areas where you are limited by the shadows, by selecting your locations you can still maintain communication.

(Slide No. 12) This represents a particularly difficult two-way communication situation. This again is the Avon Mountain transmitter and down at this point we have another mountain. We have an FM broadcast transmitter on the top of the mountain. There is a difference in elevation here of 600 feet between the point where the car is located and the top of the mountain. It is really a sheer granite cliff. The car was close under that sheer granite cliff and with the car in that location we found it possible to carry on two-way communication with the transmitter back at Avon. At the location in which the car was stopped there was quite heavy traffic; cars were passing by and there was ignition noise. I don't want to imply that we didn't have some noise at the receiving location, however, we still had intelligible communication. Throughout this talk I don't wish to give the impression that we have noiseless reception; what I am talking about is intelligible communication.

(Slide No. 13) This slide will show our emergency service truck. This is one of Commissioner Hickey's pet projects; it represents an emergency truck which is ready for anything. It has two-way radio installation; you can see the search lights on top; it is equipped with welding equipment, pulmotors, first aid equipment, stretchers, and whatnot; also all sorts of artillery.

Now I want to give you some idea of what we were able to accomplish with the system in operation. At first we had one transmitter located here at Avon Mountain. While that particular transmitter was in operation we were surveying these outlying districts, and we constantly checked our transmissions back to the Hartford station with two-way communications. I can state, without stretching a point, that we had what I shall call secondary coverage over the entire state of Connecticut. I shall define what I mean by secondary coverage. I mean if we were down here quite distant from the station we could not maintain two-way communication if we were down under hills, but if we selected any sort of suitable location we could get back to Hartford. It wasn't a question of getting back once - I have communicated with these regions dozens of times. I have communicated dozens and dozens of times from all areas. On one particular occasion I communicated with Hartford from New Haven, Connecticut, a distance of about 35 miles airline. I was in the center of the city, tied up in a traffic jam. There were cars in operation on all sides of me and buildings between me and the Hartford location. They had a message for me at Hartford and sent out a call. I heard the call while in a traffic jam and I was able to reply and get my message back to Headquarters. The distance is not phenomenal, but it indicates some of the noise reducing characteristics of FM which permitted me to receive that message under such extremely bad conditions of ignition interference. Now the message as it came through to me was not free from noise by any means, but the point was I did get the content of the message and was able to send back an intelligible reply. There was noise, however. We have carried on car to car communications over wide areas and I indicated that we were using a typical car setup during much of our survey work for the proposed transmitter sites. Therefore I can state, because I have actually tried it, that we can place a car at each one of these locations that we have selected, using a mobile transmitter, and using no other antenna system but the roof top antenna, a part of our car system, we can maintain a reasonably satisfactory two-way communication system over each area, using such a limited installation as that. I say reasonably satisfactory service. I shall qualify that by saying occasionally we will run into dead spots where there is a 900 ft. hill between us and the receiver location, but in general we are able to circle the territory without finding many spots where we can't get back. In fact, I can state that finding a spot from which we couldn't get back was something rare. In this communication system the fact that we can cover the territory with reasonable success with a car installation at the transmitter site gives us a high degree of protection against possible failures in the system. In the event of the total loss of our wire communications and power services, we could still run mobile units to the transmitter location and if the poles were still standing with the antennas on them we could plug in the transmitter or if not we could use the roof-top antenna and still maintain a state-wide emergency service. If in any particular area we wish to set up a temporary headquarters and control several cars from that headquarters it would only be necessary to run a mobile unit up on some hill; using that as a dispatching station we could then dispatch the cars and maintain car to car communication over distances of 12 or 15 miles or more. In regard to distances covered, we transmitted two-way

from Hartford to Nashua, New Hampshire, a distance of somewhere near a hundred miles. Sid Warner was in the car up in Nashua and I was in the headquarters station in Hartford. While I was talking with some of the officers in the office, someone opened the squelch and called the station. I didn't pay much attention to it, I thought it was one of the mobile units out in the area until my attention was called to the fact that it was Mr. Warner. I answered and he informed me that he was up in New Hampshire. He was at the foot of a mountain ready to start up. We communicated while he traveled up to the top of the mountain. The only difference in the communication was that when he got to the top of the mountain a slight amount of hiss which had been present during the transmissions at the bottom was removed when the unit was at the top. I do not wish to imply that indicates an expected transmission range; that is merely a particular instance where we communicated over that distance. I would not advise anybody to set up a two-way system where the distance to be covered would be a hundred miles.

There is one other demonstration that I might discuss, because it indicates the difference between the installation used in this system and the conventional installation used in amplitude systems. Down here in Westport we have the transmitter located on about a 400-ft. hill. In Stamford there is a new amplitude modulated 250-watt job which is comparable to the 250-watt jobs used in our state police system. Colonel White was up to look us over and he wanted to compare FM and AM. I said it was impossible because we had no setup to permit such a comparison, but we could get the Stamford AM outfit to cooperate with us and we would listen to AM and FM but I assured Colonel White and I want to assure you that this is not a scientific comparison. It is no reflection on AM whatsoever. The difference in performance is largely due to difference in locations. We met the Stamford AM job and we communicated with Stamford and we communicated back to our FM location. They were both providing very satisfactory service. We proceeded to the end of Merritt Parkway, which is a road highly traveled, with high-speed traffic, 50-mile-per-hour traffic. At the end of Merritt Parkway, when we were seven miles from the AM station and 20 miles from the FM station we talked back to the FM station without difficulty. The amplitude station could not get back seven miles to Stamford. Why? Because the receiver was in a noisy location. They had to close the squelch down to where they required a strong signal to open it up and when it was open they still had to fight the noise. The AM setup was not on a hill and it was not in a quiet location, as was the case in the FM installation. We asked the operator of the Stamford mobile unit to turn around and face the AM station and he succeeded in opening the squelch and carrying on communications. The noise, however, had pretty much the best of him. Colonel White then suggested that we travel down toward New York to find out how far we could go before FM reached its threshold. Every two or three miles I would call back to the fixed station at Westport on our way down toward New York City. Again I want to assure you that we had plenty of noise at the mobile unit but we could understand what the transmitter at Westport barracks had to say and we could get back without difficulty. Our reception back at headquarters was better than our reception at the car. At headquarters they were receiving in a quiet area and even with our weak transmitter it was getting through well indeed. We were in high-speed traffic and combatting ignition noise that has much the characteristics of fluctuation noise. Impulse noise is supposed to occur and then leave a blank spot and then occur again. You get enough ignition noise and you have nearly a continuous spectrum, which will push your reception down. There was one spot about 30 or 35 miles away, where we were momentarily under a ridge, where we didn't get back immediately. We had to

move away from the ridge to get back, but we did maintain consistent communication. We got down opposite Washington Bridge and the Parkway and in fact had better reception, in spite of the heavy traffic. It was getting late and it was necessary for me to get back into Connecticut so we called a halt in our test. While we were stopped and standing outside the car a call came through giving the numbers of a stolen automobile. We had no difficulty in picking up those numbers while standing outside the car, and comparatively little interference. I am not comparing that with AM. I don't wish to be misunderstood on that point. The AM installation was not comparable to the FM installation in this case at all. I have had some experience with AM under conditions which are comparable to the conditions set up by the Connecticut system. I installed the Connecticut State Forestry AM system and there we used high quiet locations for the fixed stations, and we used mobile units with AM. I found that we could get reasonably satisfactory two-way coverage over distances which are comparable to some of the distances covered with FM. It isn't the distances covered that is so important a difference between the two systems, it is the difference in the reliability of the coverage. With AM I found that if I were parked with my car stopped on some roadway and if I was using a very weak signal from the AM transmitter, so weak in fact that I had to operate the squelch manually, I could still get satisfactory reception if I cut off the ignition system of the car. Then when there was an approaching car the signal would be washed out until the car passed, because of the ignition noise. The AM set I was using had the usual peak limiter. With FM in a similar situation the noise level might increase but it was still possible to maintain communication. One other characteristic of FM is its internal automatic volume control. Since the system is carried by changes in frequency, the volume of the recovered signal is independent of the signal level. Therefore, whether you are receiving one microvolt or one hundred microvolts makes no difference insofar as your audio is concerned. The only effect you might be conscious of is a rise in noise if you are in a noisy area and you change from 100 microvolts to 1 microvolt. I have gone over some areas with both AM and FM. The FM holds up, there is no essential difference in service over the entire service range while with the AM you drop down under a hill and very frequently the signal comes close to going out and the noise rises to swallow the signal. There is a wide change in volume because in the usual set it is not possible for the AVC action to take control of the wide ranges of signals encountered in hilly country.

I would like to discuss with you very briefly some of our problems of noise; tell you how much FM will reduce noise. We deal with two types of noise, one we shall call fluctuation noise, which is continuous in character, and the other type we shall designate impulse noise. Ignition is the best illustration of the impulse type. In the case of fluctuation noise we achieve an improvement by using a frequency modulated system which is equal to the square of three times the deviation ratio. The deviation ratio is simply the ratio of the change in frequency or deviation of frequency to be employed in the FM system. Our signal to noise ratio with FM is 8.6 times better than the signal to noise ratio in an equivalent AM system where the signal to noise levels are equivalent in the intermediate amplifier. In other words, if you took out an AM transmitter, a mobile unit, and an FM transmitter and set up receivers at a location where your signal received was greater than the noise level, that is important because we do not achieve this unless the signal is greater than the noise, the signal must be one and a half to two times greater than noise to achieve improvement; if we are receiving under those conditions, then to achieve the same results with an AM mobile transmitter it would be necessary to increase its power by a factor of

75 times. That is not hypothesis; it has been proved. It is quite true that you can achieve that much reduction in noise under the conditions cited. Since with our transmitter we can produce a 30 watt output with the same battery drain required for 15 watts with an AM transmitter, we can multiply that gain estimated from the battery requirements by two so that would mean that so far as battery is concerned we would have to increase that power by 150 times to get something like FM transmitting and receiving. That is the case of fluctuation noise. Then in impulse noise the improvement over AM that you have a right to expect to achieve by the use of FM where the noise is equal to or less than the carrier would be two times the deviation ratio or an overall power improvement of one hundred times. In other words, it would be necessary to increase the power of your transmitter by a factor of one hundred times in a mobile unit using AM to achieve the same results that you would achieve with an FM transmitter where you have the conditions set up that I have specified. This data comes from a paper on noise reduction prepared by Mr. Murry G. Crosby, and it is available in the RCA Review if any of you care to look it up. It is also available in a summary of high frequency transmissions, used by RCA Review. We know that such decreases in noise can be accomplished, but again I say that is a special situation where your signal is greater than the noise, and we all know that in a police system we usually have noise peaks which are greatly in excess of the signal. What happens then? In the case where the noise peaks and impulse noise exceed the signal level, we still do achieve a decided reduction in noise. That reduction in noise is achieved because the impulses knock holes in the signal but at no time is it possible to produce a noise response which is greater than the desired audio signal response at the output of the receiver and because of the characteristics of the system and the low-class filter used, the actual output in an FM receiver where we are dealing with impulse noise and the impulse noise exceeds the level of the carrier, the minimum signal to noise ratio is equal to the deviation ratio. In other words, you never get a signal to noise ratio under conditions where your signal is adequate but where you have noise peaks your signal to noise ratio never drops below five to one if you use a deviation ratio of five. Under threshold conditions, our minimum signal to noise ratio is five to one. In the case of fluctuation noise that is a different matter. You get into a threshold condition because fluctuation noise has something of the characteristics of - let's say an AM carrier. As a result when the fluctuation noise exceeds the carrier level it is going to smother the signal. There is nothing you can do about it in either AM or FM. You know if you have a carrier which exceeds the desired signal you are not going to get the desired signal. However, in the case where fluctuation noise is less than the desired signal, we achieve a very remarkable reduction of noise.

(Slide No. 14) This shows a receiver under test. We have a signal generator and are measuring fluctuation noise. The fluctuation noise was the noise produced in the grid circuits of the first RF stage and the first converter.

(Slide No. 15) This is a top view of the receiver that I am discussing. In this receiver we have an overall gain of something over 300 million times. By that I mean if you take the individual gains on stages and multiply them all together you will get a figure greater than 300 million. Why we use such a very large gain I shall explain presently. This diagram will help me to explain; this simply represents the signal at the input of the receiver, one microvolt, two microvolts, three microvolts, as we increase the signal at the antenna terminals at the receiver. The amount on the other side represents the increase of noise. This particular recei-

ver of which I am about to tell you was carefully designed for low noise at the input circuit, in order to achieve the maximum signal to noise ratio when a carrier was present. This is an AM receiver of the communications type with all the volume control. The curve simply means that as we increase the signal input to the receiver the noise decreases. Notice in the case of the AM receiver when we put an input of approximately half a microvolt we still get as much noise as when we started. In the case of the FM receiver the introduction of a half microvolt in the input of the receiver drops the noise to one tenth of its former value or twenty decibels reduction. Now what has the enormous gain that we are using to do with it? Just to find out we cut the overall gain by a factor of ten, reduced the gain by ten, then repeated this investigation. To obtain the same noise reduction it was necessary to inject four microvolts to provide the same noise rejection. That is all tied up with the limiter action and I will not go into details, but it indicates that a properly designed FM receiver will achieve a noise reduction that will make it possible to receive a very weak signal at a quiet location. You don't need FM in a location where you have a strong signal, but unfortunately we can't always have that.

The squelch action in the receiver is a point I would like to mention. My experience with FM indicates that the squelch is a very important part of the system. In fact, my experience in police systems leads me to believe that perhaps the squelch is the biggest sore spot; since you don't want the squelch to open when there is no signal it is put down so that the receiver would not open unless you get ten or twenty microvolts input and you have decreased the possible range of the effective use of the system. In actual practice, I set up a system and put the squelch down to where it would stay closed and found the range of transmission had cut to seven miles from thirty or forty. It seemed desirable to have a squelch system which would differentiate between noise and signal. With this receiver we have a squelch which operates on a different principle from that used in the conventional squelch and this particular squelch has a high degree of discrimination against noise. I might explain this projection of the curve.

In the signal generators, when you turn the vernier adjustment to zero you have still a slight residual signal. That residual signal is estimated by the projection of this curve and it seems to be in the order of a tenth of a microvolt. Whether we have one tenth or .150 doesn't seem important. The projection does seem to indicate that it is of the order of one tenth to two tenths of a microvolt. The squelch on this particular receiver will remain closed with the signal generator turned off and will open on that tenth of a microvolt. We can set the squelch at approximately two tenths of a microvolt, let us say, and in a test driving through the high speed districts of Chicago, the squelch would remain closed, but it would open readily on the application of a signal of the order of two tenths of a microvolt. The adjustment on the squelch is provided on the dash and if the squelch is turned up to minimum sensitivity, that is, closed to its tightest closing, then it requires six tenths of a microvolt to open it and we haven't found any noise impulse that will open it at that adjustment, but it opens readily when a carrier is applied. In view of my explanation of the fact that the reduction of the gain by a factor of ten makes it necessary to put in four microvolts to achieve the same reduction of noise, this curve seems to indicate the necessity for very high gains in FM receivers if you are to achieve the maximum response at the very low signal levels. It also indicates the possibility of noise reduction at very low signal levels in comparison to the AM receiver. I should mention here that

at this point the AM receiver has a signal to noise ratio of 5 to 1 with a one microvolt input, so the AM receiver isn't too bad either.

(Slide No. 16). This shows the setup used for making measurements on deviation ratio on an FM emergency service transmitter. The process is somewhat involved. It is very easy to determine the percentage of modulation on an amplitude transmitter but in an FM receiver the process is a rather complicated one. This gives you a view of an FM transmitter, showing the crystal oscillator tube, the tube used to provide phase modulation, the first quadruple, the second, the doubler and the final output unit. This power supply unit may be lifted off and AC provided and the unit becomes an AC operated fixed station. By placing a second 807, we have a 50 watt AC operated station unit. This is a rather old slide of the phase modulated transmitter, it is not the type I am using now. This is a crystal oscillator that provides the phase shift network so that the voltage supplied to the grids is 90 degrees out of phase. The carrier has been rotated 90 degrees with relation to the usual position in an AM transmitter so that when we combine the voltage output from the mixer and the voltage modulator we get a phase modulated signal.

With phase modulation if you double the frequency of the audio input you change the frequency. In FM, a change in frequency is independent of the frequency modulated wave. To achieve all the noise reduction we can with a system of this kind, it is common practice to use pre-emphasis at the transmitter. In other words, what we do is to allow the deviation to increase with the frequency of our modulating wave, that is the audio input, so that under normal conditions we get an increase of approximately 12 to 15 decibels from 500 to 3000 cycles and at the receiver we provide a network of inverse characteristics which reduces that pre-emphasis to its normal relation in the audio frequency spectrum. Since noises are not pre-emphasized when we de-emphasize at the receiver we also de-emphasize the noise. We achieve a gain in the signal to noise ratio by providing that pre-emphasis.

Now I have given you a brief account of the subject and I have attempted to point out some of the gains that may be achieved by the use of FM. In closing I wish to say, however, that what it is we are after is intelligible communication, and to my mind if you already have a communication system, be it AM or FM, in which you are achieving intelligible service there is no use in switching. Where it is necessary to work under difficult noise conditions, where AM isn't satisfactory in state systems where you must achieve the maximum in distance, it seems that FM does have a decided edge. FM will always have the edge, but as I pointed out it is a question of whether you need that edge. I should be glad to have you ask questions; I will give you as straight answers as possible. I am not here to ballyhoo FM.

MR. CURRY: With regards to band widths, have you run any experiments to tell whether increasing band widths will give you increased noise reduction?

PROFESSOR NOBLE: In general, increasing band widths and increasing deviation ratio does give you an added reduction of noise. In other words, reduction in noise is directly proportional to deviation ratio. Change from 15,000 to 20,000 and you will be changing your deviation ratio from 15 divided by three to 20 divided by three with proportional decrease in noise. However, we also increase noise peaks when we increase band

widths and therefore we raise the threshhold at which we get improvement over fluctuation noise. I can't answer that without going into technicalities. In achieving a reduction of noise in the case of fluctuation noise it is necessary to have a signal to noise ratio of approximately four decibels, something more than one and one half times.

MR. FRANKLIN: Just what height were your receiving antennas?

PROFESSOR NOBLE: We used the same installation, 180-foot steel pole, guyed, with a coaxial antenna on top of that pole and 7/8-inch gas-filled coaxial. If anybody is interested, we paid $1450 for a 180 foot steel pole, painted and installed, and with the coaxial antenna on top installed. It was not supplied, but installed by the riggers. The only receiving locations are with the transmitting locations. We thought we might need such additional locations but after the system was placed in operation they seemed to be unnecessary.

MR. FRANKLIN: What was your reason for selecting that height?

PROFESSOR NOBLE: The signal level at the receiving point will go up directly with the height of your transmitting antenna. In general the equivalent of power goes up as the square of the transmitting antenna height. Double the antenna height and you have the equivalent of four times. If you had one hundred watts with a 100-ft. pole, if you raised the elevation to 200 feet then you would have the equivalent of 400 watts.

MR. FRANKLIN: That applies to transmitting, but does it apply to receiving as well? The reason that I am asking these questions, I am installing some new receivers in Houston and we have onereceiving location that we have been using for some time, a noisy location. We have a coaxial antenna about 230 feet in the air. Our good service range with quite a bit of noise is around ten miles. I am going to put in more receivers and I went out 6½ miles airline from this location and put up a pole and tested a receiver. We couldn't receive the cars down town so I raised it to 55 feet and the cars came in fine, but California and east coast cars came in much louder than our down town cars. That is at 55 feet, but at 230 feet we never hear an out of town car.

PROFESSOR NOBLE: You were using a much higher level signal down town but you may not have known it because it was masked by the noise in the area.

MR. FRANKLIN: In this 6½ miles we have cars that we can't hear on the 55 foot antenna receiver and they are much nearer the 55-foot antenna than they are the 230-foot.

MR. CURRY: In connection with these towers being on top hills, does the height of the hill add to the height of the tower? I mean if you put a hundred foot tower on top of a 2000 foot mountain do you have the equivalent of a 2100 foot tower?

PROFESSOR NOBLE: Unfortunately, that can't be answered by yes or no. If your mountain were in the middle of a plain it might have the characteristics of a tower; then putting the hundred feet on the top of a 2000-foot mountain would give you 2100 feet. But if the mountain were in the midst of other mountains, then putting the 100-foot pole would

raise it above the level of the other mountains -- it becomes quite complicated and there would be a difference for each location. It isn't a question that can be answered in a simple fashion.

QUESTION: You show a rather unconventional antenna on top of the car - will you discuss its construction?

PROFESSOR NOBLE: In setting up the Connecticut system I was given permission to set it up the way I wanted to and any radio engineer, if he is given permission, would put the antenna on top of the car. He can get a good ground system and a quarter wave antenna, so I put it where it should be. We designed a spring at the base of the antenna so that when it hit an obstruction it would spring back and not be damaged. I arranged some data on the antenna and set up an RCA field strength measuring outfit. We set the car half to a mile away over flat territory and arranged to have the car rotate through 360 degrees, first using the roof top antenna and then using an antenna on the back of the car while I read the field strength. The back of car antenna provided a very pronounced directional field pattern. The greatest amount of energy was radiated in the direction in which the car normally travels. There is something like a sixteen to one power difference in the energy radiated toward the front of the car and that radiated in all other directions. With the roof top antenna the radiation pattern was a perfect circle. With equivalent lengths of antenna the field strength from the roof top antenna was better in all directions than the radiation from the back of car antenna in its best direction. Therefore, the antenna worked out pretty well for transmission, and if you can use it it helps to increase your talk-back distance.

MR. FRANKLIN: Was it much greater than the maximum field strength in the best direction of the back-of-car antenna?

PROFESSOR NOBLE: No, it wasn't much better. I don't remember exactly the figures, and you could probably reduce the difference by using a longer antenna on the back of the car. But the only way you could get the strong signal was to point your car toward the receiving location. The roof antenna is a quarter-wave. It is fed with a coaxial cable between the roof and the upholstering. The coaxial cable runs under the roof and back into the trunk and doesn't show. The coaxial has a surge impedance of 34 ohms and for 39,180 kcs. approximately 6 feet was required. If I cut off a foot I lose half of the radiated power. It produced a mismatch at the base of the antenna and I was losing all of the energy in the coaxial.

COLONEL WHITE: I think the boys would like to know something about the beating it will take.

PROFESSOR NOBLE: The antenna is made of Canadian steel and it is tapered. It occasionally breaks the rear window of the car, at least that has happened. I think Sid Warner can testify as to the strength of the mounting since he arranged for a test in a garage. He raised the garage doors to a level where they would just clear this portion and hit the antenna at the base. He succeeded in breaking the window and the garage door, but not the antenna. If you hit a tree going 50 miles an hour it may put a curlique in the end. The car I used had one on it and we used it for some 20,000 miles.

QUESTION: What is the difference in propagation characteristics

PROFESSOR NOBLE: For all essential purposes, the propagation characteristics of FM and AM are the same.

QUESTION: How many stations did you need to cover the State of Connecticut?

PROFESSOR NOBLE: It is a question of degree - how well you want the state covered. The state of Connecticut is set up with ten barracks units and each has a commanding officer and the troop operates as an independent unit, so it was convenient to have a station for each unit. We made no attempt to cut down to a minimum the number of stations for several reasons. One reason is that the location of these stations is determined by the talk-back requirements rather than transmitting. If you have proper talk-back you have to put up poles and a station to hold the receivers and it costs only a little more to stick a transmitter in. By having so many transmitters it is possible to achieve maximum protection. For example, I was surveying this area, "C", up here and there was an escaped prisoner, two as a matter of fact. The officers were looking for the prisoners while I was running this check. We had just put this station in operation and while I was out the Hartford station went off the air. Mr. Sheeler suggested I call station "C" and tell them to take over the territory at the upper half and call station "K" and have them take over the lower half. This was done and a few minutes later they reported that the prisoners had been located. In a case like that, if we didn't have that overlapping of coverage we would be in a bad way. That was a particular situation. As it happened, the only difficulty was a stuck relay, but that will happen, and it is nice to have that extra coverage.

QUESTION: You actually have ten stations?

PROFESSOR NOBLE: That is right - one for each area with two receivers at each location and it is possible for every barracks to communicate with every other barracks by means of fixed station communication.

QUESTION: From your main stations, what are about the maximum distances over which you can get reliable communication? I mean in fairly flat land, not mountainous country.

PROFESSOR NOBLE: I can only tell you distances we have covered. I understand that we supplied primary coverage in a New Jersey town from six of our stations. It is necessary to have that large amount of power because while a transmission from Hartford might reach to New York State or New Jersey, under a mountain you may just have enough to reach your car. You have to overpower the stations in order to provide for transmissions under those bad conditions.

QUESTION: We have a relatively large state with rather long distances to cover. I wonder if it would be practical to figure on say 250 watt transmitters built up as you suggest with high antennas - do you think we could maintain station to station contact over distances of 200 miles with reliability?

PROFESSOR NOBLE: I would hesitate to say that you could. I know that you can maintain communication over distances in this case of 85 miles or so, but you would have to examine the particular territory and conditions before you could make a positive statement.

MR. BATTS: Do you have any definite opinion as to difference in characteristics of the various other high police frequencies between 30 and 40 megacycles?

PROFESSOR NOBLE: I have some ideas because I selected 39.5 and 39,180. In general, in a state police system you are going to attempt to use very weak signals. That is agreed, I believe. If you are going to use weak signals you don't want any out-of-state signals coming in and hashing them up. In using 39.5 megacycles we do not usually expect to have many California stations sending in sky waves that will bother, while if we use 30 megacycles or frequencies in that region, while we are trying to receive a very weak signal we might find it completely covered by an out-of-state sky wave. I have taken a general point of view that for state systems it might be better to use the high frequencies and for the municipalities and towns to use the low frequencies because in a town you can provide a sufficient signal at 30 megacycles to ride over and prevent interference by sky waves.

MR. FETTWEIS: I don't think you clarified the comparison in this respect. I have been working with AM receivers for the last few years and I have arrived at the conclusion that a limiter is one thing you can't do without. In one receiver, I went so far as to use a limiter in the detector section of the circuit to even cut out 25% of the modulation and also to use a separate amplifier and limiter which cut off the noise above the carrier level. In other words, the receiver would function before the signal was intelligible and the noise would not open it up.

PROFESSOR NOBLE: Our receivers had audio peak limiters, the usual type of limiter that nearly all of the communication AM receivers had. The limiters were not in the RF section. I would like to add to what you said that as you improve the action of the audio limiter in the AM set you come closer and closer to approaching the advantages of the FM unit. However, so far as I know no one has been able to achieve any type of limiter with an AM set that it is possible to achieve with FM. Perhaps future developments will produce a more favorable picture.

QUESTION: How do the two receivers compare as to stability?

PROFESSOR NOBLE: They both use IF amplifiers, crystal controlled oscillators. I should say there is no problem in either case. The FM receiver achieves stability by double convection. That is, we amplify at 5 megacycles and again at 55 kilocycles and the feed-back is reduced by that method of amplification, that is the double convection system, so that overall stability is equivalent to that in a good amplitude job.

QUESTION: What amount of noise suppression do you have to do in the cars in comparison with AM installations?

PROFESSOR NOBLE: We did put in suppressors on the spark plugs in Connecticut. That method was not used with any great amount of enthusiasm on the part of the officers. We tried suppressors on the distributor and they added to the noise. We tried a number of resistances but we didn't succeed in reducing the noise by use of any resistors on the distributors. In general, the spark plug suppressors help some. I have been investigating the advisability of using spark plates and in the new receiver that we are running tests on we have spark plates to prevent the noise from get-

ting back in the receiver through the connecting wires to the power source at the storage battery. I expect to be able to forget about ignition suppressors. I don't know whether they are still using the suppressors in the cars in Connecticut.

QUESTION: What about the bonding of the different parts of the car?

PROFESSOR NOBLE: We haven't found it necessary to do that. We didn't pay any attention to that. The receiver is not especially susceptible to noise.

MR. FETCHER: In your opinion, in an area of five square miles, where there is no appreciable noise, there would be no advantage of FM over AM?

PROFESSOR NOBLE: I would simply say that if AM gives you good service why worry about FM, unless you have some reason for putting it in.

QUESTION: When you reduced the sensitivity of the receiver did you not also reduce noise?

PROFESSOR NOBLE: About two decibels, that is all because you see there is so much gain that the fluctuation noise, varying in peak, would completely saturate the limiters. We wanted to operate the limiter on its saturation curve then the application of a little additional carrier, so long as the carrier was in excess of the noise peak, would knock down noise.

QUESTION: Would it be reasonable to assume that you could increase the sensitivity of the set ten times again and get improvement?

PROFESSOR NOBLE: No. You reach a point where the voltage input to the receiver is equivalent to and less than the noise at the input of the receiver. No matter how much amplification you would have, you still can't amplify that.

QUESTION: You have answered the question of why worry about FM if AM is working out - what if you don't have radio at all?

PROFESSOR NOBLE: I prefer FM. We have another factor in relation to the allocations problem, and that is an important problem. It might be possible with several cities separated by comparatively short geographical distances to operate on the same channel on FM. It would give you a short area of interference and if that occurs out in the "sticks" some place, it isn't going to bother either one.

COLONEL WHITE: In the FM hearing, I think one of the witnesses gave some figures, if I remember correctly each of two stations with AM gave a service area of two or three miles. With both stations on FM they have a service area of 16 miles.

PROFESSOR NOBLE: It is a fact that with FM you can draw a service area and you just get interference in a small strip except in the exceptional cases where you deal with shadows; while with AM you get interference all around in between.

QUESTION: I notice that you went as high in frequency as you could and one reason was that your signal would more likely be lost for distant receiving points. As you increased your frequency, you would be able to use a shorter antenna on your car and still get the same coverage as you did with a longer one on a higher frequency. Would there be any advantage to having a signal on 50 or 60 or even 100 megacycles?

PROFESSOR NOBLE: Beyond line of sight for 50 megacycles, but for 100 or 200 megacycles it may work inversely.

QUESTION: One reason that I asked is that we have a great deal of trouble with our antennas and the garage doors. It is really a serious problem.

PROFESSOR NOBLE: I should like to decrease the size of the antennas in the Connecticut police system, but in order to cut down the antenna you must put in a loading coil, in order to match the feed line, and if you put in a loading coil and it doesn't match you may lose energy in the coil.

MR. MURNANE: Are there any other FM systems in the State of Connecticut using 39.5?

PROFESSOR NOBLE: There are no other FM systems in the State of Connecticut.

MR. MURNANE: Are there any adjacent?

PROFESSOR NOBLE: There was one up in Massachusetts 35 or 40 miles from one of our locations, using FM. We didn't think it should be there if we were going to occupy that location so we agreed to pay for the cost of changing frequency.

MR. MURNANE: That brings us back to the allocations matter. In the state of New Jersey at this time there are over 80 police departments using ultra-high AM. A frequency selected for a state system would have to include some one of those frequencies already in use. What would be the solution of that problem?

PROFESSOR NOBLE: If you have a state-wide system, obviously you need at least two frequencies clear in that state.

QUESTION: How do you go about broadcasting a general alarm in that system?

PROFESSOR NOBLE: Well, it would be possible to have each station repeat if we wanted to do that, but in the State of Connecticut they have a state-wide teletype system and each barracks is tied to every other barracks by teletype. They can use station to station radiotelephone or use teletype.

QUESTION: What I'm getting at - do you have one central point with audio lines to all transmitters that can broadcast the message from all transmitters simultaneously, or is it necessary that the operator at each point repeat the dispatch on the individual station?

PROFESSOR NOBLE: We have no system by which all transmitters

may be modulated at one time. The main stations are tied in by teletype and if a general alarm were broadcast it would be necessary to transmit by teletype first or use a sequence broadcast.

MR. WARNER: We rely entirely on the teletype system except in the case of a holdup and then the broadcast goes out from Hartford and then all stations repeat it. If it is just a stolen car, the usual procedure is to send it out by teletype and inside of a minute or so all stations have repeated it.

PROFESSOR NOBLE: Mr. Warner will be with you during this Conference and will be glad to answer any questions you have.

MR. FRANKLIN: Would it be possible to modulate all these transmitters simultaneously without undue interference?

PROFESSOR NOBLE: We would like to spot cars over the state of Connecticut and arrange for several tests. One would be to have all the transmitters go on simultaneously while our cars observed the reception. Then we would like to have them go on successively and then have the mobile units go on while observations were made at the fixed stations.

QUESTION: Were your experiments on AM made on ultra high, both cases?

PROFESSOR NOBLE: Yes, in both cases, both AM and FM. If we were using intermediate frequencies we would still get better results and better service than with AM. We can provide superior service with FM, but we go back to whether it is necessary.

QUESTION: How do you limit audio response to 2000 cycles?

PROFESSOR NOBLE: The male voice does a pretty good job at the input.

QUESTION: How do you prevent drift?

PROFESSOR NOBLE: It is almost necessary to use crystal control on the receiver to prevent drift.

QUESTION: If you have a 40 kc. band and you drift 15 or 20 kcs. on AM you would still get your signal. Would you still get your signal on FM?

PROFESSOR NOBLE: Yes, but of course you don't want drift in either case if you can avoid it. As far as FM is concerned you can get your signal; as a matter of fact, you can get the signal on adjacent channels if you have strong enough signals.

MR. MORRIS: Does Professor Noble feel that this group has displayed a unique interest in this subject

PROFESSOR NOBLE: Yes, I am certainly pleased to have some questions shot in my direction. I wish I could stay here and answer all possible questions. If there are more you can have them answered just as effectively by Sid Warner, who is here, so you corner him and he will answer your questions.

MR. MORRIS: I would like to make a motion that we arise and give a vote of thanks in addition to the applause. I make a motion that the Association address a communication to the people that are responsible for Professor Noble's presence here today, and thank them.

PRESIDENT WAREING: Professor Noble, allow me to extend our thanks for your complete presentation of some of the details of this first application of frequency modulation to a state-wide police communication system. We appreciate your coming very much, and we are sorry that you can't remain with us; we would also like to ask you to keep in mind that we would like some contributions for the Bulletin.

Upon motion by Mr. Morris, second by Mr. Franklin, the meeting adjourned.

TUESDAY MORNING SESSION

The third session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wareing at 9:55 a.m., Tuesday morning, December 3, 1940.

PRESIDENT WAREING: We will have the invocation by Father Bishop of St. James Catholic Church.

FATHER BISHOP: Almighty and everlasting God, we Thy servants humbly invoke Thy blessings on this group. Grant that their sacrifices may be appreciated and that they may reap fruits a hundredfold and that this meeting may have Thy guiding hand and direction. May Thy blessings descend upon them as a symbol of justice for which they stand. Amen.

PRESIDENT WAREING: We will have to pass by the report of the committee on the revision of the constitution because they have had no opportunity to get together for a meeting so far. I would like to make some temporary appointments to the committees. Eugene Brown of Iowa will act as temporary chairman of the State Systems Standards Committee. Get the members together and draw up a report for Thursday morning. I will also appoint Mr. Kadow as acting chairman of the Resolutions Committee, and temporarily appoint E. L. Harper of Evansville, Indiana, to that committee. He is representing Captain McConnell of Evansville and has his information with him. I will appoint E. F. Henning of Little Rock, Arkansas, as acting chairman of the Operating Procedure Committee and also appoint Lt. James Teeter of St. Louis temporary chairman of the Committee on Chapter Promotion. I would like to have these chairmen, as well as the regular chairmen, get their committee members together in order to present a report.

At this time we will call on Mr. E. H. Wasson, General Sales Manager of the Southern Bell Telephone and Telegraph Co., Atlanta, for a talk on "Teletype Equipment and Applications."

MR. WASSON: Mr. Chairman, gentlemen: As a representative of the Bell system, I would like to say that we appreciate the opportunity of meeting with you for a little while. We in the communications business such as you have this date and for the last few years had increasingly complicated problems. The expansion of business in general, the highly departmentalized layout such as we didn't have a few years ago, has certainly brought its problems and certainly law enforcement is no different from a

commercial type of business. I would like to talk for a few minutes, very non-technically, about the subject of communications in general and with particular reference to private line teletype service with which I am sure some of you are very well acquainted and have used for some time. Others possibly might get something from my limited remarks. Today, we in the public utility business, just as you in the law enforcement business, as a public service have a real duty to perform, more so today in our opinion than for a long while. I couldn't help but be influenced by the first article I saw in your magazine Communications. Primarily for that purpose I would like to digress for a moment to say this. We here in our own southern nine states in which we operate are very much involved in the program for national defense. It might be of general interest to know that we have such a large portion of the air training fields and army bases, of which Colonel White is even better acquainted than I; some seventy-one projects are in the deep south. We have on the way something over three million dollars worth of actual construction work and another million in sight within the next few months. This gives, I believe, some idea of the magnitude of the job.

Now as to communications proper - a word about telephone service. Certainly the very hub of communications today is telephone service. I believe I would be correct in saying that the majority of all reports of crime, of whatever nature it might be, would develop from a telephone at some point, remote or in some metropolitan area. Certainly we are all well acquainted with the importance of having adequate service and let me say that my title might in some way give the idea that I have an ax to grind - I don't. I would like to go on record as saying that the company is anxious to render a complete service, a sufficient service but certainly not an over abundance of service. There are a number of things about long distance service other than the conventional use that I thought might be of interest. First is what we call sequence calls. I mention it because I know of some law enforcement groups that have used it and it might some time be an advantage to you, particularly in contacting a number of small surrounding communities or towns. Sequence calls consist of filing with the chief operator a list of points or individuals, if necessary or deemed wise, so that in the event of some need to contact all points quickly, it is possible to do so. In a sense the operator becomes your secretary for the moment and she puts up these calls just as quickly as possible without having to go to any further trouble. In other words, all of the preliminaries are done and she is ready to go to work when you ask her to. Of course, there is no service charge for that sort of service and we do handle a large number of calls on that basis.

Then we have long distance conference service. The difference between that and sequence service is that all parties are connected and talk at the same time. That service is limited to the number possible to have good transmission on the call. For example, we originate a call here from Orlando and I would think that possibly six or a few more points connected throughout the nation would be about tops.

Now insofar as teletype service is concerned, to those of you who have been using one style or another of that service for a period of years this is old stuff, but just for the sake of being sure, there are two types of teletype machines generally used. One is known as the page type machine that prints a message on a letter size paper, and the other is known as the tape type machine, sometimes referred to as a simplex machine. Those two types are used interchangeably and we have some

14,000 of them in commercial use, aside from the private line nets throughout the country. Of course, a teletype machine is nothing more than an electrically driven typewriter. In many of the more thickly populated states of the country there are now in existence and have been for a number of years private line teletype nets. I am sure that many of you are familiar with those. You have heard reference to the Eight State Teletype Network, comprising many of the eastern states and we might for the sake of illustration endeavor to set up in Florida what might be a miniature, very simple private line network. Assuming that Orlando was the headquarters for whatever law enforcement group would have jurisdiction throughout the state, or would be responsible for some sort of communications network such as this with some rather definite agreement with municipal authorities. No doubt there would be, assuming we wanted to build such a net, a switchboard arrangement similar to that in the hotel, possibly smaller, adjacent to which would be a teletype machine possibly a perforator and a reperforator, which is typing the message in advance. Also, at whatever selected points are necessary would be the locations of teletype machines comprising part of the net, so arranged that here in Orlando if a message was received from small community advising of some catastrophe, possibly by long distance telephone or otherwise, it would be possible within the space of a very short time to immediately transmit that information to all of these connected points or to part of them or to one of them as desired by the operator at the switchboard. In turn, assuming that there was a machine such as this in Miami, that operator there could possibly ask a question, might have further information on the very same thing that is being transmitted over the teletype machine. In turn there might be a city which had a network apart and not directly connected with the state, which is true in many of our larger cities. It is a local or county arrangement for disseminating news of vital importance to substations or whatever particular affiliated group that might be. That is the very simplest illustration that I can think of - A police net or any kind of a normal network of teletype machines so synchronized that they will operate satisfactorily when they are coupled together or any particular group.

Now as to a few advantages and disadvantages of teletype service in general and particularly to private line teletype service. First is speed. From the simple illustration it is obvious that getting that report to the various important spots throughout the state is handled within the space of a very few minutes. Second, as you express it, is broadcasting and cancellations. My rather limited experience with you has led me to believe that cancellations are sometimes as important as giving the report of what has happened. In other words, to avoid false arrests and other such things that might happen. The fact that it is two-way is certainly an advantage. As I mentioned in the case of Miami, certainly if there is additional information that might be secured from that point that might be of interest to the headquarters it is vital that it be possible to get that information promptly. It so happens in the State of New Jersey at one time most of the machines other than at Headquarters and one or two selected points were one-way. They could only receive. It wasn't so long ago that they changed to two-way teletype, for the reasons that I have mentioned. Automatic reception seems to be of importance to your group, particularly because so frequently the people who would normally operate the machine would be busy using the telephone or something, so the message is received any way without direct assistance, and it would be only in the event you wanted to make a reply that your actual time would be required. Last is the fact that it is private, of course. In this day and time I think we can all without any reluctance state that privacy is of considerable im-

Now there are some disadvantages to any service, as we have learned. You cannot communicate with mobile units. Certainly radiotelephone is the answer to that sort of condition. Yes, there have been some experiments along that line, but they have not reached a stage where it would be possible for me to say they are sound and the Bell system has no intention of coming out with it until it is sound, if we would be the proper ones to handle it. New York, Massachusetts and Rhode Island had a complete radiotelephone net prior to the introduction of teletype service. They have found that it was wise to retain the radiotelephone setup as well as to have the teletype service. In other words, as one of their people expressed it, the teletype net was the backbone of their law enforcement communications system and radio and sundry other methods were used in getting the information down to the proper parties. Third, a system requires a substantial network of wires and machines that cost substantial sums of money. This means that for such a network in areas involving a great many miles it does cost a real sum of money. I would say those have been the principal disadvantages to private line teletype service.

Now a word about exchange teletype service. The easiest explanation of what that means would be to say that in lieu of a telephone instrument connected by a pair of wires to a switch board we put a teletype machine. It is limited, of course, only to the number of customers to that service throughout the United States and I mentioned a little earlier that there are some 14,000 of that sort. There is a directory printed for all the United States, which might be of interest to you. There is a teletype service primarily for use with adjacent states. It is used considerably by the various automobile manufacturers for identification purposes and I am told occasionally by underwriters associations and so on. It might be of some general information to say that the states now using private line teletype comprising the Eight State Network that I mentioned include New York, New Jersey, Pennsylvania, Rhode Island, New Hampshire, Delaware, Connecticut, Massachusetts. Virginia and California also have private line nets. There are some states using exchange teletype service that I referred to: Texas, Missouri, Washington, Indiana, Oregon, and Georgia more recently in a small way has gotten into this type of communication. That is not entirely complete but gives you an idea.

Now what I have said is a very scanty review of teletype service. I think you will agree with me that it would be impossible to stand here and in the space of a few minutes discuss such a large subject and do a good job of it. In talking with Mr. Virden it was thought best that I limit my remarks to a few minutes and if there was any general discussion we could get into that. I would like to make myself available to you to present anything that might be of assistance to you. In closing my few remarks, allow me to say that while teletype service is comparatively new, it has really been expanding only the last ten years, although we had it some five years prior to that; we are keenly interested in working with you and furnishing whatever your need might be. Now if you have any questions that I am capable of answering I would be mighty glad to hear them.

PRESIDENT WAREING: Are there any questions?

MR. McMURPHY: Would you elaborate on the difference in costs.

MR. WASSON: On an exchange teletype service your minimum original period is three minutes. The average call on a circuit, or machine rather, is from 40 to 60 words a minute, giving a range from 120 to 180 words for

driven and can be operated just so fast for good service. Now insofar as comparison with traffic load, assuming that both machines were 60 speed, we do have a 40 speed machine which is sometimes used where speed is not essential, rates on exchange teletype service are generally lower than long distance rates. There is no exact percentage differential. On private line teletype the rates are measured on an air line mileage basis at so much per month per air line mile, on the 40 or 60 word speed. I can give you more detailed information on that.

MR. McMURPHY: We have an all-state teletype network; there are about 50 on our circuit. When we go up to Sacramento to the Department of Motor Vehicles, they cut us and call us back. I think the operators entertain the teletype operators up in Sacramento and when San Francisco calls they hold the line. In one system you also have access to another teletype if it is not busy. If one or the other of us is busy we have to sit and wait until he clears. There are five machines on our line to one destination. If any one is on the line we have to stand by, but on the other system if two divisional stations are talking we can still go around and get through.

MR. WASSON: Yes, on an exchange system you could. If you found it necessary on a private line it would be possible for you to separate your circuit to the headquarters and get the same result.

MR. MORRIS: We found that in operating duplex service we could use one line for two separate circuits. It took a long time to get that service but we have it. We operate both ways on one pair of wires. Duplex might be an answer to Mr. McMurphy's problem.

MR. WASSON: I would like to say if in your own home state there is any more concrete information that you would like to have I would be glad to assist you any way that I might or, of course, you gentlemen are all aware of the fact that we locally are anxious to work with you on it. I might say that all private line nets are pretty much custom built. It would be foolish for me to say how one should be set up. Certainly Mr. Morris' net work in New York would not be comparable to our network in Atlanta.

MR. MORRIS: We are vitally concerned with the cost for service. My advice after about 12 years of experience is that whatever you do with these men in this part of the country they should consider that we are jointly serving the public to the best of our ability and they should get the best rates possible on the machines and on the lines. It is up to you people down here to encourage the expansion of the teletype service through giving them special rates if possible because of the service that we are interested in to expand this network.

MR. WASSON: I appreciate that remark. Allow me to say that while rate conditions are very touchy sometimes, I am anxious to talk about them and I believe in the next few months in our company you will find that our rates are the same as your rates in New York City and elsewhere in the nation. There will be no better rates. It might be of interest in the next few months for some of you who are in need of teletype service to ask a few questions.

PRESIDENT WAREING: Thank you, Mr. Wasson. We know that you will be with us throughout the rest of the session and you will probably be called upon again. I will call on Lt. Martin Joyce to tell us about the teletype

MR. JOYCE: I want to try to condense this as much as possible and get in the main points, to let the other states know what we have and what we would like and the coverage we make. As you know we have about nine states with teletype, covering nearly eight hundred points. What we call a teletype point is wherever there is a teletype machine - we count each machine a point. The eastern states we cover have a population of 44 million, which gives you some idea of the amount of messages we handle. Some are quite surprised and doubt the number of messages we handle. In our own state we handled over 270,000 messages last year of all kinds. Any messages requiring filing in those 270,000 were filed. In addition to the Nine States, Maryland will shortly be in the net. The bill has passed but they haven't the money just yet. They expect sometime in the next three or four months to install police teletype and connect to Pennsylvania and New Jersey. In addition, they will also connect direct into Washington, D. C. That will give us a solid connection through Virginia. New Jersey, Virginia and Massachusetts and maybe one or two others have TWX service therefore if you have any message that you want put on the Nine State circuit that you don't care to send over the air or want more speed, rather than send by telegram or mail you can send by TWX direct to any station here and we will retransmit over our system. Now if you are without TWX you can find in most any city in the country some form that you can use, and also can be fairly well sure that it is confidential. There have been a number of cases where we have called firms in cities in distant states asking them to relay a message direct to the police department, where speed was essential and so far we have not experienced any one of these concerns violating the confidence of the message. We had a number of occasions to use this in our own state a few years ago, sending TWX messages throughout the country to local departments or business concerns that were more or less confidential and required a great deal of speed and our relations have been very good.

Another thing I would like to call to your attention is the filing system we have in the teletype network. Throughout the nine states we have file systems that are very complete and we are quite proud of them. In our own particular state they say we can file every message and we can find every message. If you have a message coming through, for instance, concerning a house break and a number of articles listed, each article is filed with a tab in an individual system. Therefore, if a person is picked up with an article, if you give a description we can check our files and if it has been reported it will be there and we will find it. By that you may be able to link up a number of other breaks. Also, in these files are our number files, anything that covers: watches, guns, etc.; we have also an initial file, anything which has initials on it. If a watch is reported stolen with the numerals and also initials, it is filed both ways and the watch itself. On the stolen cars we have what is known as the stolen car and wanted car files. Of course, stolen is wanted but what we consider wanted is a car used in the commission of a crime. If it is stolen, it is filed under stolen and also wanted. Incidentally, on wanted cars we file the motor number and serial. In case the car at a later date is picked up we try to make a connection. Stolen cars are listed under the registration tag number, serial number, and the motor number. Now in most of the states I have found in my experience, in our own state particularly, when we go to the registry of motor vehicles the serial number is not filed numerically. If you haven't the motor number you can't find the car. We have, as I said, a stolen goods file. Everything is filed individually. We carry a gun file - by name and numerically. In our state we have a law concerning firearms. In order to buy a firearm you must get a permit. In order to sell it you must have a permit and in order to carry it you must have a license. Any gun bought or sold in our

state is listed in this kind of file under number and name. Now we have a number of messages coming through particularly into Connecticut and Massachusetts, the Colt and H & R companies, requesting information on the dealer to whom a gun was sold. On the Colt, if we have make and serial number usually we can do business. On the H & R, when you send through for a listing on that type of gun, we must have length of barrel and number of shots, otherwise they can't do a thing, and apparently they have the same series of numbers running through. The H & R system is not nearly as complete as the Colt system, and when you send through a request on such a gun, bear with us if we send back for complete information. We must have a complete description on an H & R to get anything on it.

The amount of information contained in a message is one of our headaches. We should get all the information possible that we can work on. We like to get a description, if a person, any marks they have. If it is a crime, what the crime is, and, of course, if you will extradite. We would like to know particularly what the crime is. It may be a felony in one state and a misdemeanor in another, or vice versa. We will not take a message "hold for investigation." If you want to know something about a person, request a character check. It may be a hit and run - we can go and look the car over, but we simply won't hold them for investigation. We will dig around and find out about his character. Now in regard to missing and wanted persons and cancellations. In our system serving a large number of departments outside the system, our greatest difficulty is getting cancellations. They seem to think that after a person is found that is all there is to it. We keep one clerk busy doing nothing but sending out postcards to check for cancellations on wanted persons. Getting back to missing and wanted persons, we have what is known as the abnormality file. Under this file we list anything that will single out a man, nose, mustache, teeth, amputations, any disfiguration of any kind. That is very important on a wanted person. We have been able to identify missing and wanted persons by their teeth through the abnormality file. Along that line, we like more information than his name. On requests for information on motor vehicles as we get near the end of the year, in our state our registration expires December 31 and new ones start January 1 with no days of grace, therefore, when you are asking for information at this particular time we would like to know whether it is 1940 or 1941. If it is 1941 you will have to stay with us until we find it because it takes some time. You all have practically the same system where the cars are registered in outlying districts and they pile up. If it is a major crime the Registry of Motor Vehicles will assign a number of persons to try to find it for you.

Now on the delivery of messages, each of the nine states guarantees delivery of any message received. Any message coming in for a police department outside the teletype net we will deliver by telephone or by messenger.

There is one other thing that I would like to take up at this time and that is the transfer of messages from the radiotelegraph network to the teletype network and vice versa. We in our state are very shorthanded on radio men, and for that reason we have been unable to keep a 24-hour watch on CW. We hope to have more men shortly. Our radio men not only maintain the stations but it works so that one man is in the station and another might have to go out to the substation and may be gone a day or two and for that reason we cannot keep a continuous 24-hour watch on CW. We try to keep a watch as much as possible. We have contact back and forth on CW with WCK and they have a good idea what the schedule is - WCK or WPGQ in Ohio. One of

the things we would like to get at is the delivery of CW messages into the teletype network. Ohio is loaded with it and if there could be some arrangement for part to go through North Hampton and part through Ohio, it would take a load off Ohio.

I have touched on only a few things we require because Searle is going to speak on the regulations, etc. Now if there is any question I would be glad to answer it.

PRESIDENT WAREING: I would like for you to talk a little about the network itself - how you get a message from one point to another or to multiple destinations.

MR. JOYCE: In the state of Massachusetts, at General Headquarters we have three boards in tandem and they radio information out to troop areas. The state is divided into four areas and each troop is divided into substations running from five up. Each troop headquarters has a switch board which has a line back to general headquarters and we have direct connections to Connecticut, New Hampshire, and Rhode Island. We have direct connections into New York but we terminate our connection into New York at North Hampton through the fact that the type of heading changes. In order to send out a general alarm covering Rhode Island, Headquarters in Connecticut, and New Hampshire, we indicate a general broadcast coming, give a bell and allow the operator in each troop headquarters to connect his stations into us which is normally 20 seconds and at the end of that time we start sending the message. We have entire coverage through the State of Massachusetts within 20 seconds. The teletype is operated by the radio dispatcher in the troop headquarters. We could have direct connections into New York State but their file system on messages changes and rather than mix it up we terminate there and put the new heading on at North Hampton. In Connecticut they write on a tape and rebroadcast throughout the state. We can cover Rhode Island, Massachusetts and half of Connecticut. Everything is confidential. All machines are two-way. Incidentally, on messages concerning fingerprints we still like to have the individual classification on each finger rather than the primary classification. Most of you know that with a primary classification you can break down to fifteen or twenty prints, but as you go down to the individual classification we are able to get down to one or two prints.

MR. SCOTT: If we want information on a gun, do we address the message to the Boston Police Department?

MR. JOYCE: No, address it to the State Police, Boston; if a Colt, direct to Hartford, if it is an H & R direct to us. But remember that the H & R records are not too good and neither are the Stevens rifle records. We have been able to trace a Colt that was sold 25 years ago. The Colt records are almost perfect.

PRESIDENT WAREING: I believe we had better hold the questions until all three of these gentlemen get through speaking and perhaps the questions will be answered by them. I would like to call on Deputy Chief Inspector George M. Searle from the New York State Police.

MR. SEARLE: I haven't this talk too well prepared for the simple reason that although several don't believe me I didn't know I was supposed to do this until I got my Bulletin shortly before leaving Troy. I want to try to run through some of the main points that we find about teletype and

if I miss anything or get off the track, either stop me or ask me a few questions and I will try to straighten them out a little later.

Now I am really pleased and it is just a little amusing to me to be able to come here this morning to talk to you and be scheduled on the program to talk on the subject of teletypewriters, because when this organization was founded in St. Louis, and I believe there are two or more who will bear me out, there was some question about my eligibility for membership on the grounds that being a wire man I had no place in an organization which was merely interested in radio. However, we convinced them that we had a little radio in New York which created eligibility so I became a member. That thing has changed, as you know. We are all communications men regardless of what our particular interest is. I say that because I want to clear up a few doubts in the minds of some of you people about teletype. Teletype is in no way in conflict with radio. There is absolutely no conflict. As we look over the list we find there are many means of communication available to police departments: telegraph, telephone, teletype, radio-telegraph, radiotelephone, facsimile and let me even add air mail. I say that because I have a good reason for mentioning that at this time. Each one has its own particular use. There are certain advantages to be obtained by the use of a certain thing. For example, under certain conditions a telephone call to another point where you have a contact would accomplish more than telegrams, teletype and everything else. If I, for instance, wanted some information very badly and I wanted to be sure that it was taken care of I could pick up the telephone and talk to Morrow or Wareing. Here is what we want - what can you do for us! You know that you can accomplish a great deal on that basis. Therefore, there is a distinct use for every one of these types of communication. In our state, and I think that the balance of the Nine States that have it in the East and in California will agree with me, we consider teletype our basic system. It performs a function somewhat different from radio. Radio gets out into the cars, which teletype can't do. However, we can carry traffic from one point on the teletype system to another point in our state or some other state connected without having to worry about frequency or without worrying about what is put in the message. We can say things, we can describe a crime, particularly sex crimes or things of that kind, which you wouldn't dare put over the air, to bring that information from one point to another point. We have advantages in that respect; we can put that stuff over the wire that we can't put over the air.

A teletype instrument is located in a station and after it gets to that station it is of no use. If you want to get out to the cars on patrol then you have to use radio. Each has its own particular function and place in the setup. I was interested yesterday in hearing Professor Noble talk and I might say that I got a kind of quiet little smile to myself when somebody asked how they operated when they have a certain kind of condition and Sid Warner said "We send it over the teletype."

Now it has been our experience that some classes of connections are best accomplished over the teletype. I am not trying to plug teletype. I know that for some of you people the cost of wire is prohibitive, you couldn't pay for it; and at other places wire facilities do not exist. I am simply trying to paint a picture of what we are doing in the eastern states on teletype and why we do it. One gentleman asked how we arranged to get these messages around from point to point, from one state to another, how does the routing go, etc. We have in our system supervisors who are responsible for the operation of their own particular system.

We have a nine system wire interconnected through the states. It is clear that we could not possibly, in New York state for example, make a rule or regulation or even pass a law which would be binding on the State of New Jersey if the State of New Jersey did not want to accept it, and it is likewise true that the State of New Jersey could not pass a law or make a regulation binding on the State of New York, nor could Massachusetts or New York or anybody else do it. It is not done that way. Therefore, we have a meeting about once a year at which the supervisors of the various states meet to discuss our problems, and like everybody else we do have problems. That meeting is one of the outstanding meetings held in this country, because we have a lot of men there who are sincere and honest. They are there not for any personal gain or glory but to promote police communications and they sit down and take off their coats and roll up their sleeves and get up on their feet and if Martin Joyce is doing something I don't like, I say "On such a date your outfit said such and such a thing and you know that is not according to Hoyle. What have you to say?" and he gets up and says so and so and that brings to mind that on such a date you, etc. Now what are we going to do to arrange so it won't happen again and everybody goes out the best of friends. I might say that Lt. Thomas down in Virginia said on the train coming down, and the gentlemen who was him talked about it, that they had found teletype one of the most useful things in building a police department, both city and state, of anything they had yet encountered. Now if I had time I would try to show some of the things we carry over the system. Martin Joyce mentioned about gun numbers. We furnish a number of other things. A police department is out on a limb. They want some information, material, or something, maybe from the War Department, and that is handled and taken care of and it all goes to build up a lot of good feeling.

There is another point I want to speak of. We said that we carry a lot of things over the wire which you couldn't put over the air. I want this to be understood because some of you people sometimes have sent things in that we couldn't handle and we want you to know why. After our Nine, or perhaps I should say Six or Seven, State system was going along in good shape we attracted the attention of several other agencies. As a result of that the F.C.C. wanted to know how we were operating and said that we were interstate in nature, they felt they had control over the system and they should formulate rules and regulations for the guidance of the system. We didn't want that because we had been going along very nicely without any red tape. The only red tape is when we have our meeting and sit down and try to find out how to reach from one point to another. We were afraid we couldn't operate as well as before. We were graciously received by the Commission in Washington and there were representatives of Postal Telegraph and Western Union and they were concerned about competition. We gave examples of the messages handled and other points about the system and gave the Commission assurance that we would never at any time carry information over our system which was in conflict with private enterprise, that is commercial telephone or telegraph companies, because our system is designed to be an emergency police system and not a system to carry information for some private company. We had an undertaker come into our Waterloo station to make arrangements for a couple of hearses or coaches at a funeral. He said if you send that down there it will save the price of a telephone or telegraph call. Many other occasions of that kind - will you do this or that. John Smith wants to communicate with a truck driver; go and get something out of a hotel. We can't do it unless it is a police matter. If somebody has been killed and there is no other way of notifying the relatives or something of that kind we will handle it, but otherwise we can't handle messages which

would in any way compete with private companies. When that thing was done, or rather at the meeting when we outlined our procedure, the F.C.C. gave assurance that so long as we continued to function in the manner we had been up to that time, they would give us no interference and they gave us their blessings and said go ahead. That accounts for some of the messages that you may have had turned back that we couldn't handle on the system.

Another point I would like to make, and I think it goes for radio, too, is that there is a great tendency on the part of all persons who are police communications men to try to take radio and teletype and everything else and use them to carry all manner of police communications. We should bear in mind that these systems are emergency systems. They are to carry information which is of an emergency nature and not a catch-all for everything. There are many cases, especially in a state system, where a letter or a telegram or a telephone call is the proper method of transacting the business at hand. This idea of sticking everything that comes along on the teletype is out. Some messages of an administrative nature which are not urgent have no place on the teletype, yet we have a tendency to want to put a great big long message on the teletype that takes maybe fifteen or twenty minutes to write. We frown on that; we don't want that kind of thing. Where some other means could be used just as efficiently as radio or teletype, I believe you would find that you would get a lot better results in the end.

Along with that I want to call attention to the telephone company, the TWX. I guess you are all acquainted with a teletypewriter that works the same as a telephone. If you want to go to somebody else who has TWX you get the operator and ask for a connection; the connection is set up and you teletype back and forth and do your business in that way. We have been able to establish connections with some of the people who are not a part of the system in that way. We have traffic back and forth with Virginia, Cleveland, we have on occasion gone out west to various points and we find that works very nicely. Jack Murnane at Tranton has one, Joyce has one, we have one. If you ever get stuck and it is a message, pick up your teletypewriter book and you can send to Joyce, Murnane or me, and we will put it on the Nine State system for you.

Now there is another way you can get into us if you find it necessary. We continually make an effort to sort of stream-line our system and keep it up to date. The most recent improvement, we have direct wire connections between Hawthorne barracks and Connecticut which cuts out a lot of round-about messages we used to handle. We also have a connection between Hawthorne and New Jersey for the purpose of speeding up the system. It gives you an idea that we are continually trying to make the system more efficient. There is another thing about teletype. You hear an awful lot of talk about frequencies - we have to have this and that or somethihg else. Well, now, that is one thing that you don't have to worry about with teletype. We started off in Albany with four machines and one switch board and an outfit that we thought would take care of everything. Today we have two switch-boards and ten teletype machines and all kinds of changes have been made. Where we had a single wire we now have duplex systems. Where you have teletype you have an opportunity to keep building on and adding on. It would take a long time to explain the improvements made since we started our system. We added wires, machines, switchboards, and we continually build up and make it bigger where necessary. There is another item to this teletype business - It begins to sound as if I am plugging teletype, but I want you to know what we are doing - This item of secrecy. We can control a message, more

or less. Send by radio and it goes to everyone capable of getting it. If we don't want to send everywhere we just send from Hawthorne to Connecticut, for instance, and all the others can do the same. That doesn't bother any of the other circuits. If you send by radio it goes on the frequency and nobody else can use it. If we do it on the teletype only that particular point is reached without annoying or bothering anybody else.

Now I have talked to you about some of the things we send out, I want to give you an idea of the volume of traffic. In 1939 we originated 267,300 messages on the New York State system to which were added many "added information" which carried the same number, so we must have had well over 300,000. I have a note here that the City of New York alone originated 26,624 messages to the state system. Of course, some came from other states when Morris was handling the Jersey connection. Some of the information we handle over that outfit is for dog licenses. In our state, dogs are licensed, numbers are filed in Albany and if some police department has a dog running around and they want to know who owns the dog, in a very short time, probably fifteen or twenty minutes, we send back the name of the owner of the dog. When hunting accidents occur information about them is handled to the conservation department. Vital statistics - you'd be surprised how many police departments want to know when somebody was married, or born, or if he is dead. That is all obtainable over the teletype system. We have crime reports and there is a point. We have a system in our state where a felony has been committed, if the person who commits that felony has not been apprehended within five hours it becomes necessary to make a general broadcast. A certain police department for three days withheld information about a triple homocide and nobody knew anything about it. They were milling around in a hopeless way and eventually three days later when everything was pretty well messed up they told the world about it. You couldn't blame them but today if a felony of that kind occurs, it must be broadcast on the teletype and of course carried into other cities and states. It is really surprising to note the wonderful results accomplished by sending out information of that kind. Where a parole is involved we contact the Division of Parole and furnish information on that. Any important happening throughout the state is furnished immediately to the governor's office. I don't know how you stand in your particular state, but we have a governor who is very interested in police work, one of our supporters and backers and he has always been our good friend. There are certain things a chief executive is entitled to know. If we have a stickup or something going on some place in the state, or anything of that kind that would be of interest to the chief executive, it is placed on the teletype system and when we get it in Albany we immediately send him a copy of the message. We are able to keep our chief executive informed as to what is going on. If he gets this information hot off the wire, he thinks his state police is a pretty good outfit and he gives you a lift if he can, and we certainly need that. We cooperate with federal agencies regarding airplane accidents with reports to the C.A.A. They want to investigate those accidents so when something like that occurs we put it on the system. We have a working arrangement with the C.A.A.; we send to their headquarters and they take steps to investigate. Another thing we do is to furnish road and weather information to automobile clubs. As a result of that we have built up a lot of good will and good feeling with the various automobile clubs throughout our Nine State system because they are in a position to give accurate and up-to-date information on various road conditions and things happening throughout the state. We work very closely with commercial broadcast stations and news agencies. I could tell you two or three very nice jobs that Murnane did with WOR in Newark. I know that New York City is doing something like that

now. You see, fellows, after all this is a communications talk but when you start doing police work, the more contacts you have, the more people that you know and can go out and talk to, the better cop you are.

We figure with our teletype, and I suppose you fellows do the same with radio, we sort of put ourselves a little further than just being communications agencies, we make a sort of public relations outfit of it. We furnish automobile clubs with the things they want - we build good will. They get a chance and put in a plug for the police department and you are able sometimes to get things that you otherwise wouldn't be able to get because after all the people pay the bill. We have even arranged a system in our state where we work with hotels on skippers and that is very interesting. These hotel associations have key men in various cities and when somebody passes a phony check or skips out, they give the information to the police department and a warrant is issued and the information put on the teletype system. The New York State association, the first year that thing was in operation, cut down their losses by 51 percent. They made that statement in a public report at one of their conventions. So you can see they were tickled to death and that was another good contact we had.

Another thing that we carry on our teletype system which I don't believe you can carry over the air is administrative messages. We can move stations and send out orders under certain conditions - fill in the time of receipt and time sent and send it around to perform an administrative function and that again is done secretly without any trouble. Another thing you might remember. Some of you fellows want to get information from some large eastern city, New York, Philadelphia, Boston, places of that kind. If you come in and make contact with us we can get that information over our network. We are hoping that Virginia who now has a system will be able to tie in with us. The missing link is the State of Maryland which has passed a bill providing a teletype system. When that is accomplished and they hook in with Delaware and then with Virginia, in that way we hope to have a tie into the FBI in Washington, and when that is accomplished you know the vast amount of information obtainable from the FBI as far as fingerprints and other information of that kind is concerned. We hope that will be accomplished very soon.

A few side-lights here. A teletype wire or circuit cannot be tapped by telephone. A fellow can't go to work and put a tap on a teletype system and get anywhere. As soon as he got on there he would throw the circuit out of balance and you would only get a lot of stuff that looks like Greek or "junk." That is one advantage. We have something else that we use. I don't know whether other people use it or not. We use water marked paper with the state seal and when we take a message in to court in order to show it is official we take it on this water marked paper and the court is very liable to take notice of the fact it is a bona fide teletype message over the state police system. We have had the attorney general give a ruling that the teletype message will have the same force and effect as a telegram. Even test rooms cannot come in on our circuit. He can come in but not listen without an OK. Some of the points on the system have a dial system. We don't have that but if anybody wants it, it is available. We have 24-hour maintenance. If we have any trouble with our machines or circuit, we immediately notify the control room and any time, day or night, the telephone company fixes it.

Automobile transmission is available. There is a machine that prints tape and when you catch up you can feed the tape to another machine

and send it along. We also have an arrangement for making two or three copies at a time. Where two or three agencies require a copy of the message, we simply put it in on that machine. We might have to send one to our headquarters, to the governor's headquarters, the PSC or FBI, or the Labor Department. For instance, when the Lake Shore Limited went off the track at Little Falls this spring, about 150 or 160 people killed and 200 injured, there were a great many agencies that required information. The Interstate Commerce Commission, the Public Service Commission, the Governor's Office, and so on down the whole list. We simply had the operator tie on a couple of additional machines and each printed three copies and as soon as they came in they were dispatched to people who were concerned, so they received first-hand information immediately and continuously.

Another thing that works out very nicely where somebody gets a whole lot of stolen property and doesn't know what to do with it, very soon the Police Department starts checking records and they discover it may be stolen from them and it gives them an opportunity for a recovery. Swindles, frauds, and forgeries go out over the teletype system so as to keep everybody on the alert. We also know when our messages reach their destination because we have a system of acknowledgment. You can do that with two-way but not with one-way outfits. Suppose you have storms that damage your wires, etc. The telephone company has a very good system of repairing and patching circuits. You might want to send a message down to the city and find it was going by way of Buffalo, but it would get there.

I have a couple of maps here which I don't believe anybody can see, but they show the New York system. I will make the same statement that has previously been made - if you get a message into the State of New York we will deliver it by telephone, teletype, or messenger. We absolutely guarantee delivery in the State of New York any time you reach our system. Once you get on we will take care of it, and we will get you an answer. Some departments such as Albany, Buffalo, New York City, and the county police at Mineola, have their own separate systems, so anything coming over the state system they put on their own. Since that map was made we have a connection through Hawthorne to Connecticut and a couple or three others. We keep building it up all the time and it is pretty hard to get a map that will show everything. However, you just get into us and we will do the rest of the work. Here we have a map which gives you an idea of what the Nine State System is like. In some cases we have a little difficulty, for instance, many of the points in Pennsylvania have one-way systems. They can receive a message but can't send you an answer, so they send to a point and that point either telephones or sends a letter back which in some cases causes a little delay. I think that Pennsylvania is the only state with that particular type system and they will probably make some changes in the near future. That may give you an idea of what the Nine State system is. If any of you want to look at the maps you are at liberty to do so. There are many other things we could discuss on the subject of communications. I have tried to touch on a few of the points in which I thought you might be interested, but if there are any other matters perhaps we will have a chance to answer questions. Thank you for your kind attention and the opportunity to tell you something about our system.

PRESIDENT WAREING: Thank you, Chief Searle. I would like to ask Lt. Jack Murnane of the New Jersey State Police if he could add anything to the discussion.

MR. MURNANE: All I have to say is that Inspector Searle and Lt.

ication method that we happen to use in the State of New Jersey which might possibly fit in with your systems, that is the use of telautograph between the master station at Trenton and the Motor Record Bureau. It is an inexpensive method of communication and does not require a teletype operator because it is simply a handwriting method. Last year we handled 93,000 completed messages, that is 93,000 requests and replies on automobile drivers' licenses and registration numbers. Some of your departments which are located within two or three blocks or half a mile of the record bureau in your state capital might possibly make use of that means of communication.

PRESIDENT WAREING: I would like to ask Mr. Morris if he has any other points to add from the standpoint of municipalities.

MR. MORRIS: No, I just agree that the previous speakers covered the situation very well and will just add this. Before anyone undertakes the installation of a system, if it is a state wide system, it would be well to contact any of the states that are part of the system at the present time because with all due respect to the telephone companies, they don't know enough about the operating problems of a police department to advise them fully.

PRESIDENT WAREING: I wonder if Mr. McMurphy from California would care to add something.

MR. McMURPHY: No, I believe it has been thoroughly covered.

MR. GENO: I recognize the Chief's ability, but there is one condition for which I am hated in the CW network. I don't want to embarrass anybody, but I was really crucified in Cleveland and Detroit. That information went out over my name but I had the pressure on me. That is the main object in my being here. We have a bad mess up there now. Traffic goes through Ohio and I want to say that the real portion of the jam was due to the Ohio-Pennsylvania traffic. If it wasn't for the Ohio traffic, Buffalo would be glad to handle all traffic. I have found out that it was a blessing to Ohio that I put the "bee" on them. What I would like to iron out is this, and perhaps I am doing it the wrong way. While a representative group of all of us is here, I believe it is necessary that the teletype men get together with the points of contact. I know Mr. Joyce from Massachusetts would be very much interested. I believe all on the contact ends would be - so that we could get a definite arrangement for handling traffic. We get a message by telegraph and pretty soon we get the same message by teletype and the first thing we know we have the same message three times from different ways and it is no end of trouble. I believe it would be a very good accomplishment and very beneficial to the entire APCO, especially the boys in the west and south where they are not so fortunate as to have a teletype system. We are moving into a new station along the first of the year, so I assure you that we won't have to back down and won't back down. I would like to recommend that the chair appoint a committee of representatives of a sufficient number to cover this entire picture. Perhaps representatives from the northern section of the United States, central and perhaps southern section to get together with representatives of the teletype system and the contact points between the two systems to get some method of approach for all of us.

PRESIDENT WAREING: Thank you, Mr. Geno.

MR. SEARLE: I would like to say a word. When I was talking on

the teletype, I purposely avoided making any reference to the Buffalo connection for the simple reason that there was no reason in the world that anybody should feel embarrassed. To give you a little background on that, originally the connection between teletype and radio was made in Columbus or rather in Massillon. We had a wire running out of Pennsylvania over into Ohio. They had a tremendous amount of traffic. Mr. Geno very kindly came in voluntarily and offered to help handle that traffic. He got on and the situation was a good deal more healthy for a while. Eventually there was a little trouble in Ohio from the standpoint of finances and Ohio was forced to discontinue their wire. Therefore, very kindly and graciously the Buffalo Police Department and Mr. Geno undertook to carry the entire load, and that got to be terrific. It was at the breaking point. The Commissioner out there, who was a very fine gentleman, appealed to us several times and for a long time we didn't do anything about it; we didn't know how. But eventually the system got so loaded and reached the point where Buffalo was forced to take drastic means and did so. The fault was with the teletype outfit in throwing the load over to Buffalo, but we were not able to get any remedy, although Joyce decided to take some of it as soon as he could get running. Ohio again got hold of some dough and put in some wire and I think that is the way the connection is going at the present time. I regret learning that Mr. Geno was embarrassed - he certainly had a good reason to stop that service. Commissioner McClelland in Buffalo told us once and a lot of times to please do something. We didn't, so eventually they had to do the same thing any of the rest would do. Morris has the same situation - acting as a link. If it weren't for Morris we wouldn't have a system. It is only within the last month that we were able to establish a Hawthorne-Newark connection and relieve him of some of the work. I don't think anybody should be embarrassed except perhaps the teletype people and anybody who has the ax out for Geno should throw it in the lake; it is not his fault. At these teletype conferences we have devised a written schedule of routings so there is no confusion. I don't know what the situation is at the contact points but if something like that exists, I should think we could get a ruling and handle it that way. We allow no variations.

MR. KINSEY: I suggest that this convention give a vote of thanks to Buffalo for pulling our chestnuts out of the fire.

MR. SEARLE: I would be glad to second that.

PRESIDENT WAREING: I am sure we all appreciate the work Buffalo did and I am happy to record a vote of thanks to Mr. Geno and the City of Buffalo for the excellent service.

MR. MORRIS: We have talked about this but nothing has been done about it. I wonder if Geno and George Searle could make some suggestions. While I have the floor, my thought is that there might be something inserted in the message to indicate the routing to be followed in connection with the message, that is via teletype or via radio. I am not familiar with this problem but the men that are familiar might make a suggestion to that effect.

PRESIDENT WAREING: My idea on Mr. Geno's suggestion for a committee is that this problem is right down the alley of the Procedure Committee, and I would suggest that Mr. Henning get together with a number of the teletype men besides Mr. Joyce, who is a member of the committee, and straighten out that business. It seems to me that the teletype-radio contact will never be satisfactory until every state in the teletype network has its own interzone station and takes messages from the radiotelegraph

system direct. If you are going to shoot it through one state like Ohio to cover the entire nine states you are going to overload key stations and circuits until it will wreck the whole thing eventually. I have hoped for a long time that Chief Searle and Murnane and a few of the others would get a little more interested in putting in an interzone station just to carry traffic from the telegraph network to their own state. I think some day we will have a system like that - it is going to take a lot of selling.

MR. GENO: We are perfectly willing to do our share. The trouble is not in the teletype system and not in the telegraph, necessarily, but the combination of both. What we must have with the volume of business is some definite routing. If Searle wants to start a message out of New York State, he should know just how it is going, via Buffalo or Massillon or via Massachusetts. It would be a simple matter to dig out just which section of the country should go one way and which section should go another. That is what I am interested in at this time.

PRESIDENT WAREING: The Procedure Committee has teletype and telegraph men on it and I would suggest that Mr. Henning call a meeting and invite teletype men to the meeting and see what we can find out about that. We have just a little time left to ask any of the previous speakers any questions you have on teletype. As you all know, the New York State Police intervened in the application of the No-Bel Burglar Alarm Company for construction permit to operate on two police frequencies. Chief Searle has been handling the attempt of the police to protest against any such assignment. I would like to hear something about that.

MR. SEARLE: I won't take so long on this, but I just want to bring out a little matter which has developed since the last meeting and I think everybody interested in radio as a police service should know something about what is going on. I want to preface my remarks by saying I come with malice toward none. I don't want you to construe any of my remarks that I have any grievance with the F.C.C., because I haven't. I don't want you to think that I have any grievance with the opposition or their attorneys who handled the case for them, because I haven't. I have been in the police business about nineteen years and I have learned a thing which I think is important and that is the fact that when a lawyer comes on the opposition and that is what he is paid for - to straighten out his client's affairs - if he is smart enough to do it, remember his name so if you get in a jam yourself you can go and hire him to get you out. I say again, I want it distinctly understood that I come with malice toward none. There has been no decision in the matter at the present time, but I just want to inform you on how the thing works.

There is an outfit out in California, the No-Bel Burglar Alarm Company, which proposes to operate - as near as I can find out they have a lot of small transmitters set up in stores which they protect and if somebody breaks in a signal is sent out through that transmitter or some central agency to a police or patrol car. I don't know just exactly how they work. The thing I do know, however, is that they took it into their heads that they wanted to use a frequency that was assigned to police and government, 1658 and 2466. They proposed to use those frequencies, which are police frequencies. As the thing went along we discovered that in order to do anything about that - as I understand it when an application is made to the F.C.C., regardless of what frequency is asked for, and this may be a surprise to some of you fellows who have applications for construction permits returned to you, when the application is made the Com-

mission cannot deny it without a hearing. They have a hearing to produce a reason why it should be granted or denied. So the only way to get on a hearing is for somebody to file a petition of intervention.

Well, the American District Telegraph Company filed one of those and their quarrel was altogether different from ours. They said they had sufficient wire to handle that, and that is something we are not interested in as far as commercial outfits are concerned. When they wanted to get on a police frequency, although we know a 50-watt transmitter in California is not going to bother a 5000-watt transmitter in New York State, we filed a petition of intervention. A very dangerous precedent would be set if this company could take this frequency and put a burglar alarm on it. They might take any other police frequency in the country, which I believe you will agree is a dangerous thing. It would upset the work we have been doing for years. On account of that precedent, although it didn't affect us too much, we filed a petition. One thing that I want to say here and now is that we got a wonderful response from police agencies all over the country when we sent out a circular to heads of state police and some municipalities; the support they gave us was overwhelming. Everybody wrote to the Commission; everybody said they didn't want to see that happen. Incidentally, I want to express the appreciation of New York to Captain Leonard, who is Chairman of the I.A.C.P. radio committee and also an attorney, who made a trip to Washington and supported our petition. He acted as the attorney for the State of New York. I was very much in the dark about all of this. I found out that all our resolutions and all our letters of protest cannot be accepted in the record of the F.C.C. unless the people making them file a petition of intervention. I am not questioning the rules and regulations, they know more about it than I do. If you do have a similar case in the future, I want to warn you that all that stuff you pile up you might just as well use to start a fire; you can't get it in the hearing.

Another mistake I made, when we got down there for the preliminary hearing one of the owners pleaded that he had no counsel and asked for an adjournment so that he could give his counsel more information to proceed with the hearing. I believe the hearing was scheduled for 10:00 o'clock and his lawyer was not hired until 9:15 and he asked for a continuance, so we said OK, go head and take it. In a conference with Mr. Bell, he indicated that he was sorry they had asked for 1658, that they didn't want to quarrel with the police. He went on to say that they would operate their own private cars and regardless of what they had they wouldn't send messages into police cars. We tried to be sporting about it. We thought here is a fellow trying to do the right thing. We signed our names on the papers allowing the continuance. The thing went on for a little while. They were supposed to have another hearing in October. Just shortly before this hearing, I received some papers from the attorney in which he asked for a further adjournment and also asked for permission to take affidavits and testimony in California. We said OK and I signed my name on six or seven papers, and he got the adjourment or continuance and the right to take depositions. Suddenly we discovered that instead of being on the offensive we are on the defensive. The attorney came down with a flock of depositions which were introduced into the record. He had no witnesses for us to cross examine, but I had to get up on the witness stand, and I want to pay tribute to Ted Lowe in this connection, but all we could do was take a licking. We couldn't get back on the other fellow because he had his in writing and he had no witnesses to be questioned. I

wasn't the least bit proud of the way I performed. There we sat in a sort of hopeless way just letting ourselves get kicked around and we couldn't do anything about it; I am blaming that on myself because i wasn't smart. I do think that you fellows should know what went on. On November 22, a transcript of that hearing was tendered the Commission and the Commission will deny or grant the application. If the application is denied that is swell; we will have no more to worry about on that particular score. On the other hand, if it is granted then I am very much afraid that you are going to find a lot more of these outfits. I have talked to a lot of people and I find they are very much concerned about this thing. They feel if the thing is granted we will immediately have a bunch of these outfits over the country, taking police frequencies and making you like it. Now I want to add this, the Commission allows the power of appeal and should that thing be granted we are going to our Attorney General and fight it as long as we can. We are not through yet. We will certainly appeal it - we will take it to the U. S. Supreme Court and find out whether they can have it. This thing doesn't particularly concern the State of New York, but if it comes up again and any of you fellows are attacked, I want you to know how it goes so you will be prepared to fight it a little bit more intelligently than I did. There we were on the fence and taking a licking when it should be the other way. It is not the fault of the Commission. I don't blame anybody. That is the way to learn - the hard way. I think maybe Captain Leonard would like to say a few words on the legal end of this thing. I wanted you to know what we are up against so that we can get out and fight it if it comes up again.

CAPTAIN LEONARD: I think we all owe a vote of thanks to George Searle for taking the interest he did in the whole matter and bearing the brunt of the police work in that particular hearing. There are a few angles that should be cleared up and some of my remarks may be repetition. In the first place, apparently a waiver of any objection was obtained from the then chief of the San Francisco Police Department by this outfit, because the operation in San Francisco would not have been on the San Francisco frequency, therefore they had no objection to it. The first I knew was when somebody wrote to me and explained the picture, saying they vitally objected to the licensing of a private commercial company on a frequency allocated to a police service. This frequency is also assigned to the New York State Police so they jumped into the battle immediately and a letter was sent to every police licensee in the country. I want to say here that in many respects it is a good thing this came up. A lot of dangers were pointed out, and above all the significant fact that when the occasion arises the police chiefs of the country and the communications officers can spring up in a united effort to combat that danger. As George said, hundreds of letters were received from all over the country. I know I received a good many; individual chapters of APCO such as the Wisconsin Chapter went on formal record with a resolution opposing the encroachment on police services by any private company. At the time of the first hearing I went to Washington and met Searle there and the night before the scheduled hearing, we talked with Nobel and he appeared to be every bit of a gentleman. In an apologetic attitude he explained that he wasn't desirous of using a police frequency and that if his system drew the objection of any police department in the country he would rather throw the whole thing out the window. He had the apparatus and showed us how it would work, and we left him with the impression that there was a fellow that through some stroke of fortune or misfortune had wandered over on a police frequency. What the true story behind that is I don't know. We were surprised because the statements then did not tally with the testimony later. We left Washington in June with the belief, and if you will refer to the APCO Bulletin and

the I.A.C.P. News Letter - we left there with the belief that the No-Bel Company was going to modify the application and ask for experimental frequencies rather than police frequencies. We left there in the belief that his method of operation was to provide a service to the business concerns of a community; that they would operate with a signal that would not go into the police squad cars but the private cars of the No-Bel Company; that the messages would be received by their own men and would not interfere or conflict with the existing police radio stations in the country. That is the picture we had at that time. That is why we left with a very charitable attitude.

At the Executive Committee meeting of I.A.C.P., and subsequent to that meeting at the convention in Milwaukee, I decidedly did not believe it proper to go on record as opposing anything which might offer additional protection to a merchant in a locality. We would, so to speak, go out on a limb. Why should a policeman object to a private company hiring a watchman? If an automobile concern hires a watchman, it lessens the load on the police department. Why should we take the attitude that we would exclusively do the policing in the community? We would be criticized for that. Our only logical stand would be to welcome any additional police protection to merchants in a community, provided that in the giving of that protection the vital government police service was not interfered with and in that I think we had a very sound stand. Now as Searle said, the hearing was scheduled for October and it was postponed, releases were signed and depositions permitted in California. The substance of these depositions was not known to either Searle or myself when we arrived in Washington on November 14 and 15. Actually, because of our talk earlier in June with the No-Bel Company, I had firmly fixed in my mind that the hearing was merely surplus and they were not going to ask for that frequency and not going to operate so that messages would be received by squad cars. I went over at 10:00 o'clock only to find an entirely different setup there. Now the I.A.C.P. or APCO did not file an intervenor, the New York State Police did, and we saw no reason why the police departments should not support the intervenor of the New York State Police rather than file separate intervenors. We found that it was necessary to have legal counsel and witnesses and that it was necessary to cross examine them and also, in order to get our story properly in the record, to have Searle, who was the intervenor in the case, be examined and cross examined in the record. So at the last moment, Searle not having brought legal counsel from New York, I represented him. I had previously filed application to practice law before the FCC in the event such a thing should arise,and it did.

The A.D.T. representative took the stand and brought out the existing wire facilities, attempting to show that there was no need for putting it on a radio basis. There were several significant things brought out. I say this because I think that George Searle in his enthusiasm of criticising himself overlooked some salient points that I feel optimistic about. The A.D.T. representative brought out this fact of the wire facilities and in cross examination we asked him what the ratio was between alarms received and bona fide calls, that is, in a community of a certain size over a period of one year, using an A.D.T. burglar alarm system, how many calls were received and how many calls were actually based on a theft, larceny or burglary. The ratio was astounding. Out of 170,000 there were only 17 actual calls that should have been made. All others were improper wire connections, or the cat tipping over the milk bottle - calls that actually required no police response. From that we asked the question -if a

radio system would cut down and the answer was in the negative. If a wire system would produce such a ratio of only 17 good calls to 170,000 received, radio wouldn't cut that down, but there was a chance of greater error than in actual wire connections. I think there was agreement on that point. We found that the way this company intended to operate was not to put on their own men in their cars but they expected the regular police and the regular governmental operated squad cars to receive on regular police frequencies and answer the call. Searle was a police officer and later took the stand, and I examined myself as a police officer, and we brought out that unless the dispatcher knows what the squad car is doing, any system would be detrimental to public welfare. We pointed out that when the squad car was patroling, if they answered one of the automatic burglary alarms, went directly to the scene of the alarm and the men got out of the car and went into the building to see what the trouble was and the dispatcher didn't know of that and in the meantime there was a bank holdup or a burglary in a home or some other emergency police call, he would dispatch that car without the knowledge that it was tied up on this private call; therefore, the car that he was depending upon to answer the call would not be available and the call missed. That would be decidedly against public interest and interrupt the entire scheme if we permitted such a system to creep in. We also brought out that according to the rules and regulations of the F.C.C. these frequencies are exclusively allocated to the police services. I don't know where this started and you can take it in the way of criticism of the F.C.C. if you wish; basically, anyone has a right to apply for a frequency, and if the F.C.C. attempts to deny it before they can do so, they must grant a hearing to the applicant. Now this is law. However, I know of many cases, as you do also, where an applicant in the police service might apply for a frequency that the F.C.C. did not think they should get or obtain and they would be informed that was a frequency allocated for another service. Now if that is the case when No-Bel put in that application, I don't see why a communication should not have been returned to them indicating that they were asking for a frequency allocated to a government police service, as distinguished from any private police agency, and the proper procedure would be to apply for a construction permit on an experimental frequency. If that had been done in the first place, we would have had no trouble at all. Because that was not done and because No-Bel did not conform to promises to Searle and myself that he would withdraw his application and ask for a different frequency that would not conflict with government police frequencies, we were forced to the expense and trouble of going in and contesting the application.

That brings out a consideration which I think is fundamental for the police services. When someone comes in and tries to steal one of our frequencies, the existing licensees operating on that frequency are the only ones that can come in by law and show they are adversely affected. We would have been better off if Berkley had filed the intervenor instead of New York.

Now Aviation, Broadcast, Marine and all the other radio facilities in the country, or rather groups using radio facilities, have their own organizations. They are enabled, because they pay tremendous dues or contributions to an association, to have an executive secretary. They may hire legal counsel, giving a very nice retainer to the legal representative; they can see that their interests are safeguarded; they can have lobbyists to see that no one encroaches upon their interests; but the police departments of the country are not in a position to do that. When you consider that it takes a tremendous fight in some places to have a

municipality even give their communications officer his expenses to a convention such as this for the purpose of getting information which they can take back and which is of vital interest to that municipality - when we consider that some municipalities haggle over that, then we almost have to throw the hat down when we figure how they can make contributions whereby legal representation might be engaged and a proper fight waged in case anybody does encroach on our frequencies. The need of a single voice is apparent. Both I.A.C.P. and APCO should organize communications from a police standpoint so that if there is an attack by any other person that would directly affect the service of police departments, whether yours alone or the service as a whole, we should be in a position so that a single voice would be representative of the police services of the United States. How we are going to do it I don't know. We are in a vicious circle - we go round and round. I hear discussions not only in group meetings but in talking to individual police officers. We know what we would like and what we need, but how we are going to accomplish it, I am not prepared to say. Sooner or later we have to place ourselves in a position that we intervene as an organization and have a voice in Washington just the same as broadcast and aviation.

I can say off the record that I believe the No-Bel application will be denied. Now I say that not in any prophetical attitude, but merely to let you know that the work of Searle and the others in this group who responded to his request and our request for help was not in vain. If it hadn't been for Searle and the New York State Police filing an intervenor, there might have been a dangerous precedent, permitting them to come in on our frequencies. I don't believe we are going to have to face that. I believe the F.C.C. has that story complete in the record and will turn down that application. I just wanted to give you that little thought of optimism and the warning that we must do something in the future to speak with a unified voice. I don't want to talk too long on this subject but it is appropos following Searle's remarks. In order to get a resolution that was adopted by the I.A.C.P. in convention assembled in Milwaukee last September pertaining to the No-Bel case in the record, we couldn't merely say here is a resolution we would like to offer in evidence, - here is what APCO wants. In order to get that in the record I had to testify myself that I wrote the resolution, that I was at the meeting of the Resolutions Committee, at the meeting of the I.A.C.P. when the resolution was reported to the convention favorably, that I was in attendance at the convention at the time the resolution was reported out and the roll call taken and knew the resolution was passed. I finally got it accepted in the record in that way. Now a lot of other letters went directly to the F.C.C. filing informal objection by correspondence, and I know the Commission has a record of the receipt of these letters and gives them proper consideration when considering the case. That was the picture right there and I think a good job was done, although Searle was a little perturbed because he couldn't get up and tell the examiner what was what, which would probably have accomplished more, nevertheless Searle took the stand and we brought out what we wanted to and I think the victory will be ours.

PRESIDENT WAREING: I think Colonel White has something to say.

COLONEL WHITE: I would like to talk this afternoon on my regular period, but while the same people are here I want to make something clear regarding this No-Bel application. He was told he would probably be denied; he was told that he would have to have a hearing and that it was a police frequency and everything we could think of, but he insisted on his legal right to a hearing. I want to make that clear. I don't want

to give the impression that we simply throw the applications in a basket for a hearing. That is not true.

CAPTAIN LEONARD: When we talked to Nobel he told us he didn't care whether he had a police frequency. Now we know you have to put in your request when you apply for a frequency, but he told us he didn't care whether he got a police frequency - he would go on an experimental frequency or any other as long as he could operate this system to his own cars and own men and we left with the idea in mind that he was going to modify that application and go on another frequency. I am glad he is the liar and not the F. C. C.

MR. GRONIER: This isn't as much a question as another warning along the same line. We in Wisconsin are having it now. A lot of our county highway commissioners are being approached to equip their snow plows with radio equipment. No doubt that will expand beyond Wisconsin. They even go so far as to put in their own transmitters, that is main station transmitters, and operate on our frequency. Now we are confronted with that in Columbia County and it is extending to other counties in the state. I think we should set up some system of combating that because our channels are already filled up. They want to go on the police channels. The one we are interested in is 31.5 which is already filled up in Wisconsin and now the snow plows want to come on it.

PRESIDENT WAREING: The need is demonstrated that we must set up some system to function for police departments that can't afford to fight for themselves. Both APCO and I.A.C.P. should set up a method of fighting for our rights.

MR. CURRY: One other field that should bear watching at this time is the field of industry engaged in defense activities that have specified the desire in a way of having transmitting equipment to protect property and so forth like that. Whether they will request police frequencies I do not know, but it should be considered.

PRESIDENT WAREING: I think we can let that drop now and adjourn for lunch. Both Captain Leonard and Colonel White are scheduled to talk again.

Announcements by Mr. Virden

Adjournment at 12:30 p.m.

TUESDAY AFTERNOON SESSION

The fourth session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wareing at 2:20 p.m.

PRESIDENT WAREING: I have one change to make in the committee chairmen appointments. Ted Lowe has arrived so Gene Brown will not have to serve as temporary chairman of the State Systems Standards Committee. I believe that Mr. McMurphy wanted the floor when we recessed for lunch.

MR. McMURPHY: I just wanted to ask what happened in regard to the No-Bel case. Mr. Maeshner and I were there three days working as witnesses against No-Bel. If the Conference is interested I would be glad to explain just what took place. Before I get into the discussion I want to extend my department's appreciation to the State of New York for their fine

work in being the intervenor and protector of the 1658 frequency which we use in Alameda County and also in Berkley. The whole thing started out very peculiarly. I was never notified that the No-Bel Company was going to use 1658 kilocycles. Ed Maeshner heard about it and asked if I had seen anything about it. We wrote to the Commission and explained we were against the idea of any commercial organization using police frequencies and we carried on communications in that regard until the time of our hearing out there in protest. It began on November 3, Monday, and the witnesses were all sworn in and the first one to go on the stand was Mr. Nobel. By cross examination by the Commission and the A.D.T. man, he was brought out to try to explain what he was endeavoring to do. To summarize, he had an idea that if he could get this transmitter on a police frequency and go out and sell somebody the idea - now you have a piece of apparatus in your home and we are going to police this area, but if we are not available the police will be available and will answer the call also. As his business increased and built up - he would start with a section of San Francisco and as his business increased and built up and he sold more machines he would go into another section, and then he was going to move in on some of you other fellows. Now we shot some technical questions at Mr. Nobel to see if he knew his stuff. We had him explain his transmitter, crystal controlled by a third wave crystal and ended up with an 807 in the final. This was supposed to produce a 50-watt transmitter - he was a little dubious about whether it was input or output. We asked what type of antenna he was going to use and he said he was going to use a 10-ft. dipole. He was going to put it some place in the building where nobody could touch it. Then we started digging in on interference. We asked if he had a 50-watt transmitter on a police frequency whether he thought it would interfere. They brought in three witnesses to prove that was not possible. The first was from some college there in San Francisco and he gave quite a discourse on his ability as a radio operator. We asked him if he thought A1 would interfere with A3. What would happen if the A3 came on with the A1 - well, they didn't know. Then we asked them what if the No-Bel alarm came on and the police station was on. If the signal was in proportion nothing would happen because this system would not create interference. Then we asked if he knew anything about a transmitter being on but not on the exact frequency. It went on and on with questions like that which showed that this man had no technical background. We were almost abusing the poor fellow. It showed that this man has an idea. He has thought about it for some time. He wants to establish it and the only way he can do that is not by finance. He said he could go out and get a hundred thousand dollars the first year, but he wants to get one of those machines in and use us as a means of starting that system.

A continuation of witnesses was brought in to find out what the company wants. It is a brother-in-law company, and it is the most jumbled up concern you ever saw. Nobel's brother-in-law is a lawyer, and I think they figure if they keep pestering the Commission long enough they will get something done. I was not there when the depositions were taken in regard to the finances. I don't know what the financial status of the company is.

We also asked them if they had any patents on this arrangement. No, they didn't, because they couldn't have any patents unless the system could be established. We asked what they thought they could patent on this machine and they said they have a little motor here with a fly wheel that would move around and kick off and record what house or place was being attacked. We asked what would happen if two of these went off at the same time - but that was impossible. We asked question after question

like that and if our depositions are used by the Commission, I don't see any ground they have to ever get on our frequency. It was one of the most pathetic attempts to try to establish a business. I think what we did to him was the reason for his right-about-face in Washington. They looked so bad they were going to use other tactics. All the time we were witnesses there the counsel for the No-Bel Company never asked us a question, but he would always finish up with "Now if all these things can be eliminated or adjusted, would you have any objection?" and we would always say "Yes."

PRESIDENT WAREING: Thank you, Mr. McMurphy.

MR. MORRIS: From what has transpired here today I would like to have the reaction of the group here assembled as to whether or not we should send a resolution that this body in convention has given considerable thought to this application. I think we should give some consideration to a resolution to the effect that we call upon the F.C.C. to disregard or set aside the application of this company for this police frequency.

PRESIDENT WAREING: Would you want to amplify that to include all future cases?

MR. MORRIS: That is right. We should go on record while we are assembled here.

PRESIDENT WAREING: I see that the acting Chairman of the Resolutions Committee has been making notes and he will have a resolution at a later time in the meeting. We have certain things to clear off the program. I wish to introduce Captain Don S. Leonard, First Vice President of I.A.C.P. and also chairman of the Communications Committee of I.A.C.P.

CAPTAIN LEONARD: Mr. President, gentlemen: First of all, I want to assure you that I have enjoyed the hospitality of our host here, as I know everyone else has, and also the opportunity of renewing many acquaintances and friendships made before at other conferences of this nature and at committee meetings in Washington. I also want to bring the greetings and best wishes for a successful convention and progress throughout the entire year from the International Association of Chiefs of Police. After receiving a very well worded and diplomatic communication from Frank Morrow several weeks ago, the Executive Committee in Washington had no other alternative than to send me down to this meeting. It is rather interesting in passing to say that at the Executive Committee meeting of I.A.C.P. in Washington someone questioned what this meeting was all about and as to the necessity of sending radio officers to the convention. I was rather glad he did because it enabled me to put in a couple of words for the association.

At the convention in September, I urged every police chief in cities upwards of a thousand to give serious consideration to sending a communication officer to this conference, even if they only had one that answered telephones, and to take out membership in the organization. I think this group should be congratulated on the tremendous strides taken since its organization only five or six years ago, not only from the standpoint of membership, but from the standpoint of the work that you have accomplished and the program that you have outlined for yourselves; and again for the recognition that you have obtained for the organization on a national basis. You are known in every state in the Union; you have chapters throughout the country and all the police chiefs know who and what APCO is.

I recall that not more than ten or eleven years ago,

in the 1929 hearing before the Federal Radio Commission, the State of Michigan put in an application for a 5000-watt station at East Lansing. At that time it was necessary for each applicant to show that the granting of the license was necessary for public convenience and necessity. Following that hearing the blanket rule was laid down that such a showing would not thereafter be necessary, but it is rather amusing to recall that at that time we actually had a big Lincoln cruiser with a radio in it brought in there for demonstration purposes. The members of the Federal Radio Commission had never seen a radio in an automobile. The tremendous growth of police radio from that time to now is revolutionary. The number of licenses granted shows the great strides that have taken place.

Then again at the 1936 informal engineering conference in Washington - as we have discussed before, at that meeting all services were present and in that big Government auditorium five or six hundred persons listened to testimony given by aviation, broadcast, police, geophysical and everything else and you should also bear in mind that purely as a result of voluntary effort by members of this group your members took the stand and gave testimony along engineering and scientific lines that formed the basis for the granting of everything that we asked. We requested, I believe, something like 22 frequencies in the ultra-high and we got everything we asked for. It was the only service represented that got exactly what it wanted. We didn't get any more, but we got no less, and every other service got less than it asked for. There was no paid lobbying, no paid legal representative, no paid person in any capacity whatsoever to sing our little song for us, and I think it is all the more complimentary to the organization that you were able to go there and get what you wanted.

Then again in 1937 at the Havana, Cuba, Inter-American Radio Conference: Briefly, you will recall that some of the South American Nations proposed to broadcast on the frequencies assigned municipal police. It was a threat - not that some of the southern South American countries would present any particular danger, but if the idea spread northward into Central America our entire police setup might be seriously disrupted. It was necessary for I.A.C.P. and APCO to attend the conference, so Maurice O'Neill, Denstaedt and myself went down and spent several days on that. We brought into play the recommendations whereby the switch with the amateurs was affected.

Then the most recent matter that has come before us, of course, is the No-Bel case. I think we have talked enough on that [illegible] but there is one angle I would like to bring out at this time. Personally, I think there have been enough resolutions passed. The hearing has been held; it is over with and whatever you do would be repetitious. The truth during all these conferences from the first one in 1929 to the No-Bel case hinges around one simple story: We want more frequencies - and we are going to get them. We have a peculiar situation in this country. The vast area of the United States is not conducive to police work. Neither is the form of our government whereby laws are administered by the federal, state and municipal agencies. In Europe, police work is centralized but that is not the case in the United States. For example, along the Michigan boundary line, in the federal service we have the United States Immigration officers, Federal Customs officers, Border Patrol unit, the U.S. Marshal, the Federal Post Office Inspector, Secret Service of the Treasury Department, Narcotic Officers, the Agent of the Federal Bureau of Investigation, and add to this list the local constable, city policemen, deputy sheriff and several state police officers and we may appreciate why the thug today

The answer is based on one word - Cooperation. When we realize that if the police of New York were seeking a fugitive from New York and had a tip that he might be in San Francisco, there is no law compelling the San Francisco police to go out and work on the case. The chief can assign his men to other matters of more importance to the people of California. What would happen if New York didn't like it? They would take it up with the mayor and he would take it up with the governor who would take it up with the governor of California and finally it would get to the mayor of San Francisco and then to the police department. Happily, such a thing isn't necessary in this country because most police officers are imbued with the spirit of cooperation. In that respect I think we should always bear in mind that John Citizen doesn't care who makes the "pinch," a city policeman, a deputy sheriff, a town constable; all he is interested in is that the "pinch" is made and that the culprit is put behind the bars.

Now we, the I.A.C.P. and the APCO, play a very important part in bringing about this cooperation. That is why I haven't very much tolerance for a municipality that refuses to recognize the advantages accruing to the municipality in sending a representative to attend a police conference. When Ted Lowe of Illinois learns who George Searle of New York is they get acquainted with one another and they can accomplish more by correspondence because of that friendship and acquaintance made at a conference. It is absolutely essential.

We have a little different problem before us right now because of one mind that has lost its power of reason, its sense of balance, its regard for human welfare and human suffering, not only for enemy nations that happen to be in the war but for citizens within its own nation. We find Europe transformed almost over night into a conflagration that is literally hell. We see nations crumbling that were considered in the past almost impregnable - unable to withstand the onslaught from without and from within. Uncle Sam, our own country, suddenly aroused itself to see a danger confronting this nation, and what a sad spectacle. We see pictures with signs on them, "This is a tank." We find snapshots of men on bicycles, "This is a machine gun nest, portable." We see the situation at Camp McCoy where the 32nd and 33rd Divisions were each given priority on a road, were given exclusive use of a highway at the same time on the same day, because we haven't planned things any better than that. We find mass movements of troops from one section to another. They must appeal to the police to escort or convoy their troops. Let me tell you that millions and millions are being spent for the defense of our country, to withstand the enemy. The real grave danger is not from attack from without but from the attack within! By that very token the police forces of the United States will bear the major brunt and burden in meeting that attack from within and because of that the vital connection we have with national defense. We cross the road at that point to determine the facilities we have to meet that problem. In Washington just a few weeks ago we had a national police conference. They also had a conference to study matters pertaining to state and municipal problems. They are really eye-opening. Somebody proposed legislation to register and license every firearm in the United States - revolvers, pistols, machine guns. I asked what the objective of the law was - to curb criminality or a national defense note. The chairman asked what difference it made and finally a representative of the Army got up and said the Army was interested in who had the firearms and where they were, for possible Fifth Column activity. Congress would enact a law requiring registration of all firearms and encourage sportsmen to submit to that registration. If they didn't consider it from that standpoint they

we have all been sleeping and then all of a sudden everyone is springing up and some with these crack-pot ideas. Somebody raised the point as to what would happen if the police were drafted. One said, "If our employees are drafted you bet we are going to encourage enlistment." Then another at the opposite extreme said, "I think we ought to pass a resolution asking that a deferred status be given to every police employee in the United States."

Then there was all the argument in between the two extremes. In the first place, if a police group asked the draft director to set up machinery to exempt every police officer, you would be called a lot of names all over the country. It would not be good psychology. Then if you went to the other extreme and let various police departments be sacrificed in that a lot of the employees go into the national picture, that wouldn't be good either. We reached what we thought was a rather sensible conclusion. Not only are police employees to be considered, but civilian employees of a police department assume the same status. A radio engineer may be a civilian but he may have a much more vital job to the efficiency of the police department than some officer on the beat who is a regular policeman. We suggested that the draft setup consider that police employees were vital in this entire national defense scheme, vital to the protection of the community, but it would still remain an individual problem. In the last war the War Department tried to exempt certain groups and they put their necks out. They didn't want to make the same mistake. But when the matter of drafting a police employee comes up with the local board, I think that some machinery whereby the police chief would determine whether or not that particular employee can be replaced easily, or whether he is vital only if retained in his job under the present setup and not sent out to some camp to peel potatoes. Men will have to take a different attitude if war is declared, but we are now at peace.

One very interesting angle came up when someone said, "I think we should let them all go." For years and years we have been talking about professionalizing police services and radio is included in that. What is a more sad spectacle than the situation in which Ted Lowe finds himself in Illinois. They have a new governor coming in and he will be out of a job. What bearing has the election of a governor on the police radio section in the State of Illinois or any municipality? - none whatsoever. This official got up and said he thought we ought to let them go. Our answer should be no! We spend years and years training a man to be a policeman so that he will be able to meet a crisis or a grave emergency. We train them to meet an emergency efficiently and capably and how to handle a job without fear. Then all of a sudden we find ourselves confronted with a great emergency and where is the logic in saying "take them away, we can supplant them with older men who can do their jobs for them"? If we admit that is true, then we might as well junk our idea of professionalizing police work.

In whatever the future brings us, communications will play a tremendous role in national defense, not only in cases of disaster and sabotage, demonstrated effectively in flooded cities where two-way police cars were the only means of communication after wire facilities were swept away, but in intercity communications as well. There should be effected a fine CW net from one city to another in every state in the country that will be there in case there is sabotage of land lines.

Cooperation with the Army and Navy, offering the facilities of the police setup to the Army and Navy should be given consid-

eration because we don't want to spend a long time building up a network and then say, 'Here - take it!' The idea is that we will have operating personnel and equipment if any group finds it necessary to use what we have set up in peace time, and we are ready to contribute our share. And we still need more frequencies!

Now if the federal government, and I say this advisedly, if the federal government expects us to play any appreciable part in this national defense setup they had better give us some tools to work with, and we still need more frequencies! What good would it do us if we attend a Havana Conference and come out with the shift with the Amateurs for the purpose of getting more police frequencies only to find the Army coming in and gobbling up something we have fought hard for and all our effort set to naught. I say that frankly and seriously. What we fight for we ought to get. We haven't the proper facilities right now to meet any type of emergency. We are doing a fairly good job with what we have, but we are going to need more to take care of expanding state police and expanding CW over the nation, and expanding municipal facilities, frequency modulation and everything else. We still are going to need more frequencies! We don't like to say that "We wuz robbed," but we hate to think that the frequencies we thought were ours were taken away from us. It was too bad they could not authorize the President of the United States to take a few for the Army and some others for the police. If proper consideration is given to police setups throughout the country, some such picture might come into being.

Federal funds should be available for police and radio equipment. One person said you can't put out incendiary bombs unless you have sand blasting equipment. He suggested that every municipality in the country should give that consideration, at $50,000 per. I think that is outrageous. Maybe I haven't the right picture. $15,000 put into the police communications facilities would probably bring better results. Federal funds are available for everything else, why shouldn't they be made available for giving additional equipment to the police who are expected to play a big part in national defense in the control of the saboteur? Emergency power supplies that you can't get through the local council, two-way communication systems where there are now only one-way systems, better intercity connections. The national government should string teletype lines from one end of the country to the other, let us tie in and have a clearing house for certain types of communication instead of stringing it from one end of the country to the other. Of course, another thing that the Federal Communications Commission and the federal government should do, and I think the former body does attempt to do this, they tried to shift No-Bel off the police frequencies, they must realize that the police services are entitled to exclusive use of certain frequencies, shared by no one, and stick to that. There must be no encroachment on our frequencies. If that is attempted, I think I speak for I.A.C.P. and you fellows too, there is going to be a battle.

Another thing the Federal Communications Commission should give more thought to is having their representatives be a little more helpful. I am not "roasting" the Commission. We have had wonderful cooperation; we have given the Commission wonderful cooperation. Every time that anybody says the F.C.C. is cooperating with the police services of the country - sure, why not, we cooperate with the F.C.C. One goes with the other. It is good to have an arrangement on that basis. The Federal Communications Commission realizes the importance of the police

services. There is no question about that. But when you realize you can write into Washington and for fifteen cents get a pamphlet with a lot of technical data on anything under the sun, I think the F.C.C. and the federal government ought to do more in the way of assembling technical data that could be distributed to every licensee in the country. More information on scientific apparatus, so that a department that has never had radio can write into Washington and get something that can be considered the last word. By that we don't mean that they tell you to get RCA because they had five representatives at the Conference, but give different features of the various types of equipment, the departments that have this type of apparatus. If a chief wants to put in a radio system he has to write all over the country for information. There is a lot of spade work that can be done on this. Perhaps the Commission says that isn't a function of the federal government, but if they teach you how to cook eggs, surely they might do more along this line.

Everything isn't quite as we would like to have it but it reminds me somewhat of the traveler who was going through Kentucky and saw a native beside the road and said, "Can you tell me the way into Lexington?" The farmer replied, "You go up here about two miles and then you go over about four miles to the west - no, I'll tell you better than that you go back here about a mile and swing over east and you'll get an anglin' road and veer north on that - no, you'd better go back to the next town and take that turnpike and - no, I'll tell you, if I was you I just wouldn't start from here!" It isn't where we would like to start from, but we're here, and it is another story how we got here; if we want to make the best of things as we have them, we are going to play an important part in the defense scheme. I hope that this newly created board will work out fine; a place where the voice of the police services will be heard better, more effectively than in the past. We must reach our goal from where we are, and in doing that we don't want to quibble. We are not going to quibble with the Federal Government, although we do need more frequencies, or quibble among ourselves because if we do that we are lost. Everything we have gained in radio and police work has come as a result of a fine cooperative attitude and spirit and let's keep that. Upon it rests the success in the future of this group and I know the means and methods of acquiring everything needed in the future will be found, because you have the men to do it. I hope you select the proper person to work on the defense board and take care of all problems arising in the future.

Before concluding, I'd like to bring another thought, and that is not particularly on radio, with reference to the amendment by Senator Wagner to the Social Security Act. The amendment was introduced whereby all public employees would be brought under Social Security. It is well to analyze and consider policies and every side of a question before making a conclusion. Some wanted to protest immediately because police officers protected under pension systems would have these systems knocked out over night. On the other hand there are a great many police officers in small municipalities that are entirely unprotected by pensions or disability and Social Security would mean a great deal to them. It was a question of maybe the police of New York, Chicago, Philadelphia, and so on, against the police of the small municipalities. We shouldn't go out on a limb and hurt anybody. Why not find out first of all whether the Wagner Act is going to upset the existing pension plans and if so try to get an amendment whereby the existing plans will not be interferred with and Social Security mean additional security? Senator Wagner was contacted and he stated that it was never the intention of the federal govern-

ment to supplant or remove existing setups, merely supplement them. There is nothing to fear from it as far as the amendment is concerned and it should receive the support of police departments throughout the country.

I assure you it has been a pleasure to be here; I wish I could stay longer, but I must leave tonight. I have enjoyed meeting the fellows here and I want to assure you of my cooperation and support every time anything worth while comes up. In the past, one or two things have come up that made us think maybe the boys were running off the reservation a little and possibly so, but when we got together everything was worked out on a fine cooperative basis and we want to continue that. Next year, if in the normal succession of things I become president of the International Association of Chiefs of Police, you can rest assured that you have our wholehearted support. We'll be there pitching for you and we know that you feel that way toward our group. We have a big job and let's get together and do it the way we should.

Thank you, very much.

PRESIDENT WAREING: Thank you very much, Captain Leonard. You have brought us a lot of information we have been waiting for. You have given us a lot of important points to keep in mind and think over during the remainder of the Conference. At this time I would like to thank Captain Leonard before this body for the very fine cooperation I have received from him throughout the past year and a quarter in my connection as president of this group. I have never called on Captain Leonard when I did not receive all the cooperation I asked for and more. It is too bad Captain Leonard has to leave this afternoon, but that being the case if anyone has any questions we will have them now.

MR. HARPER: I am wondering if we are going to have a publication of the minutes. I feel that Captain Leonard's talk here has been well worth everybody's attention and I am sure we have all gained quite a bit from it. I t ink we should have his talk published in its entirety, along with the rest of the minutes, so that we can retain it.

PRESIDENT WAREING: I don't think we should inject that into the discussion, but I feel quite sure that the talk will be printed verbatim in the next issue of the Bulletin, which has, after all, a much wider circulation than the copies of the minutes.

MR. SEARIE: I don't have a question, but I would like to mention that in the last few years the C.A.A. or Department of Commerce has taken a lot of interest in putting out pamphlets. A lot of boys were going around getting themselves killed and a lot of other things as a result of lack of knowledge and experience. I don't know where the money comes from or how it is done but I do know that today the C.A.A. is publishing certain documents or pamphlets or whatever you call them which can be purchased for very small sums; they have an excellent treatise on meterology, flight instruction, rules and regulations, put up in condensed digest form. I don't know how many they have, I should say twenty would be conservative, of the very finest information you can get. Because they have some money invested in publications of that kind the C.A.A. has been able to put them out in good language that every ordinary man can understand with very little effort. From time to time they put out notices concerning such things as strength and stresses and why some of those

things are falling apart, what to do and what not to do. If that thing can be done in aviation I don't see any good reason why it can't be done in police radio. I think we might urge that Mr. White go back to Washington and suggest that somebody do something along those lines just like the C.A.A. It would be very helpful to radio communications.

PRESIDENT WAREING: I see our time is up, but we have some other items so I think we had better switch over and ask Colonel White if he has any more remarks concerning the National Defense Program.

COLONEL WHITE: Now as far as the F.C.C. is concerned, we want more frequencies! (Applause) Seriously speaking, this question of frequencies is one of the worst headaches we have. There aren't enough frequencies and something has to drop; of course it is very, very difficult to curtail any radio service. You almost have to have a revolution to get it curtailed. It is one of the dangers of this burglar alarm proposition. We feel as you do, my group does and I think the Commission does, it is a very dangerous precedent and would be the opening wedge for other things. We have talked about the No-Bel case - this is the third case that has gone to a hearing. We had one very interesting case, a gentleman of color, about 280 pounds, running a junk business near Harrisburg. He had a wonderful thing. I think he is in jail now for arson, lost the hearing and burned the plant down. Then we had the case in Seattle, and strange as it may seem, one of the things that made the difficulty was that the Chief of Police was behind it. That makes it hard for the Commission to say "you're crazy, mister," so in your discussions, don't just pass a resolution at the Commission, point it at everybody, your chiefs and people around home. If anybody comes along and there are legions that come with one kind of device or another - this doctors' telephone business, our friend Nobel is mixed up in that. It developed that in order to make his doctors' telephone service work he wanted more frequencies, too. He was talking about one frequency and then he had to have six or seven to take care of the New York area alone. He was not serving all doctors in the New York area, either. Then to establish a doctors' telephone service you would have to set aside a number of frequencies comparable to the number the police have. This Nobel came in with doctors' telephone service and it bounced the first time. We told him his case had been up before and besides he asked for the wrong frequencies, and everything else we would think of, and it has bounced back and finally it may end up that he insists on a hearing as he did in the last case. I have a suspicion that the medical association of the District of Columbia will come in. That is going to be a tough one. It is very easy for them to sell somebody who doesn't know the whole picture. It isn't that these ideas are all wrong - you don't want them on police frequencies. Putting myself in your place - you not only don't want them on police frequencies but if there are any frequencies that can be given them, you need them more. Incidentally, on this No-Bel case, after our friend George and the rest let them hold the hearing in San Francisco instead of Washington, we sent a lawyer out there and I think the officers were called as our witnesses. They weren't called by Nobel but by us and we sent our lawyer to be sure that this material got on record. I understand from the depositions and the hearing in Washington that a good case has been made for us. All of you know and I think that Bell knows that the engineering department is against them, although we are not supposed to take sides.

About this information pamphlet that has been talked about, we would like to do that. At one time we issued call letter lists

things go or fail we foot the bill for the plating and the rest of it, then the government printing office takes the plates we have bought and paid for. There is no way we can take a pamphlet and say will you print this up - you can sell enough to get your money back. We used to have this call letter list and at one time or another some years ago the question came up in the operations committee of why it cost so much to run our printing - just a little outfit but a fairly high percentage of printing and binding. There was no sense in all that. We lost our appropriation for printing and binding and we had to drop those items; we have never got any money back into the printing and binding. The only documents we put out are our annual report and the digest of reports. We have no personnel to handle such a thing. We have a man that is a sort of publicity director, a very good fellow, a newspaper man, but on the thing you want you need engineering personnel, technically minded. They haven't enough men to do the job now. Our field division had over five thousand jobs over time last year. Before we can put out any of these pamphlets, we have to have money. We go to the budget bureau and ask for more than we think we can get and we usually get 25 percent under the amount we think we have to have. During the last summer we have been making a survey in the Great Lakes area. We borrowed and chiseled off other departments until we finally did a pretty good job. The results will probably be published in the I.R.E.

Don has given you a dandy talk on National Defense. I think this board is going to help a lot. It is rather hard to forecast what the defense work is going to be until the committee gets going and they decide what problems should be taken up first. The problems are legion. One thing that Don mentioned is the intercity CW network, the police telegraph system, and the teletype system. If that telegraph net is to grow and cover the whole country it must have a lot more frequencies and I have no idea where they can be obtained. Now that is a job that may be worked out with the committee. Just as a possibility, I am not trying to tell you, the solution might be for the federal government to subsidize a wire network covering the country, with present frequencies and stations, operated like an emergency system similar to the setup in Pennsylvania where they have teletype and nine or ten CW stations that they use in case something happens to wire facilities. That is a possible solution. On the frequency business, it all comes back to the fact that we need more frequencies! The Air Corps with 50,000 planes - you can't fly planes without the best of communications. The Army didn't have communications facilities to make it possible to fly the air mail a few years ago. If they took all commercial, your frequencies, and the amateur frequencies I don't think they could handle 50,000 planes if we continued as we do now. It is a mess. This board is going to have to do a lot of spade work to find ways of doing it.

Don touched on another thing, this business of setting up any kind of an organization or any kind of a system on the proposition we will set it up and get it all ready and in case of war the Army or Navy can use it. If we have a war, the police are going to have a bigger job than you have to do now. If you set up a system you can't contemplate losing it in case of war. I hope we don't have one, but so did a lot of other people. France didn't want it very bad, but it came. Neither did Norway - the thing that got Norway, as you perhaps all know, is that the Fifth Column came in and took over Norway's communication system from within and messages passed out through the Norwegian system telling certain ships not to fire on German ships coming in. Fifth Column stuff - we are going to have to watch that. There are a lot of funny things happening, explosions at strange places, strikes at opportune moments and all sorts

of things. There may not be anything funny about it but the Army right now is busy getting trained to fight a war and it is up to the police departments, and communications are essential.

Ben Demby has a scheme by which he passes word out on the Keys about impending tornadoes. Suppose some bombers would come in on the east coast here. They would be here in less than ten minutes after being spotted on the east coast. If you are going to give a warning to people around to take to cover you have to have communications and they have to click. We used to have one state that had no police radio at all. Now there is some in every state. There are only three in North Dakota; there are two or three in Colorado, two or three in Nevada. There are great big holes in the open spaces there. They really have to be bridged in communications, because a circuit that extends over so many miles as the intercity network is not technically reliable. You may have some magnetic storms or something and you are lost. Wire costs money and that is almost as scarce in police departments as frequencies in the F.C.C. I hope that in selecting your representative to go on this board you will pick a good man. I know you will because you can hardly miss. At any rate he is going to have to do a lot of things. He may not be able to tell you all about a lot of things, reasons why certain things are done, because at a meeting of this kind there may be some very "hush" stuff. There was a suggestion made that the power companies be put on because of their relation to police and emergency power supplies, etc. and after some discussion they were decided against, because the state and municipal committee will be given access to secret stuff and we don't know about these commercial people. It was decided to restrict it to government people. The man you select should be given full powers to speak for you and you should trust him to use his good judgment and do what is best for the United States - not what is best for the Army, or Troy, or Chicago, but what is best for the United States. He will have every opportunity to see the Army picture, the Navy picture, and they will see the police picture. They will see a picture they have never seen before, that is the mayors and chiefs of police, and if the committee members are chosen by all with the care I think you are going to give, this committee is going to go places. The people in control will be represented and will be there.

If there are any questions, I will try to answer them.

MR. FLETCHER: There are a good many freak transmissions on UHF. During certain times and certain periods of the day you can contact some quite distant places. Would it not be a good idea to prepare a list of those contacts that could be used in case of a national emergency or in case of disruption of communications? The list could be in the hands of the Commission and could be used in such times. The list should show the seasons they are reasonably reliable and the times during the day they can be worked.

COLONEL WHITE: It probably would be valuable information. Don't let your chief know about it because if you do sometime when the time is wrong and the season is wrong he will want to know why you can't get to Los Angeles, or something. Of course, you want communication all the time. It isn't good for you unless it is. In the aviation picture they will tell you repeatedly that a 90 percent effective communication system is more dangerous than a 10 percent effective system, because if it works 90 percent of the time the pilots will depend on the communications system and 10 percent of the time they will come down in a heap. But they won't take chances if it is effective only 10 percent of the time. Your communication system is like the radio system is to the airplane. The information

would be well to have on hand.

We have tried to do something about this long distance interference and have received excellent cooperation. Australia shut down a transmitter and fixed it and cabled over and we cabled back and they asked us to keep them advised if it appeared again.

MR. McMURPHY: We have been doing some broadcasting to government agencies. They want two-way equipment and have asked me if they can get it. We don't know whether we can broadcast for a government agency and they can use our frequency or whether they would have to be on a different frequency. That would mean we would have to change the equipment for them, receivers and everything like that. I thought there might be a ruling whereby the Intelligence Division could use our present frequencies.

COLONEL WHITE: The Department of Justice has authority to use all frequencies. That is granted to the F.B.I. for the purpose of using your network. It is a question of the policy between them and your chief. I don't know of any single administrator that would hesitate to give service to any federal agency.

MR. McMURPHY: The whole difficulty has been with the Army and Navy, the influx of the National Guard and Reserve Officers. They don't see the whole picture.

COLONEL WHITE: The Army must get its authority to run a transmitter through the Signal Corps in Washington. Now if a national board officer says I want to put a government transmitter out at the armory, neither you nor I can give him authority to put it there. He has to go through channels to Washington. In some cases the Army does and in some cases doesn't want him to have it out there.

There is one more thing. From the Army's standpoint it is a mistake to build equipment they won't have available when they have to fight. They have some police transmitters and amateur transmitters and took them out and did a swell job, but there are two things bad about it. If they hadn't had them they might have become aware they needed other types of communication, and they are training men in the use of equipment they wouldn't have when they went to war. Incidentally, don't call this police work "broadcasting." Your messages are all addressed "messages." We should never speak of broadcasting on police radio systems.

MR. SCHULER: We have a condition in California where some of the law enforcement officers are short of money and some of the oil companies have offered to buy transmitters for California Highway Patrol cars but the Highway Patrol is not sufficiently informed on the best way to handle the licensing situation.

COLONEL WHITE: The Highway Patrol has to be the licensee. The control must be in the hands of the licensee. You can't loan the Army equipment to put in their cars. In this case where the oil company wants to buy equipment and lease it to the Highway Patrol that is all right, but you have to show on the application that somebody else owns the equipment and attach to it a copy of your lease.

MR. SCHULER: The California Highway Patrol in this particular

instance uses a local sheriff's office and the men are afraid that the car will be transferred out of that area in a few days.

COLONEL WHITE: Along that line, we have a very definite reason why we won't deal with any two departments and don't want to get in any fights between any two organizations. We are only talking with one fellow in the state. The same applies to fire departments and municipalities. (I don't know where the 52 frequencies the fire chiefs hope they are going to get are coming from.) We are dealing with only one department in a city. If the city wants to give its fire chief radio communications, that is the city's business. If they want to put it on the supervisor's or mayor's car that is their business.

MR. BRITTIN: You spoke of these wide open spaces that we have out west. I happen to come from one of them, I am from Nebraska. The reason we don't have state-wide networks out there is that we lack funds. Under the National Defense Act I wonder if there is any possibility that the government would supply funds for a communications system.

COLONEL WHITE: I think that is one subject that will be studied by the sub-committee. Your guess is as good as mine. I know the situation. For instance, it is hard to realize, but the whole state of Nevada has less than 10,000 population.

MR. BRITTIN: You may say we don't have the crime, but the fact still remains that we had the world's greatest bank robbery. I know that the amount of crime per person increases as the persons are jammed together.

MR. McMURPHY: The California Highway Patrol is a patrol unit, not a state police unit and they operate as a county system. The County of Alameda operates through my station. We dispatch all the calls for them but there seems to be some argument coming up. We want them to have two-way but they say we will loan the transmitters but you will have control. What difference does it make?

COLONEL WHITE: Section 310 of the Communications Act says the licensee must have control. They can take service from you.

MR. McMURPHY: The state will in no way jeopardize their own equipment by doing that?

COLONEL WHITE: I don't see why they should.

MR. FETCHER: We were serving our own Highway Patrol cars and also cars of other municipalities within our county limits and after some correspondence with Colonel White we found out that we would not be permitted to put our transmitters in their cars. We could not put our transmitters in the town of Glenview's cars; even in an emergency we have to get permission from the Commission.

COLONEL WHITE: Even in an emergency it is illegal. Of course, you know that you couldn't get an indictment for it. I am telling you the law. There are lots of cases where there have been infractions, but there is no sense in doing anything about it, the fellow was right. It may be against the law but the only thing to do is to do it and make it legal next time. You do the same thing in your cities; a man speeds to the hospital and you don't arrest him for speeding. Of course, we try to

go as far as we can with the law. I don't like regulations myself but they are necessary. It would be swell if I could give you the frequencies you want but it can't be done without more frequencies.

MR. LATHROP: We have a case in Wisconsin where we have three stations operating on the same intermediate frequency, their cars also on the same ultra-high. Now at certain times when conditions are abnormal, it seems it is the policy of some of these departments to borrow officers - call the whole business to come over in the other county and work. It may be a hot chase and in one case a murder. They borrow the whole thing, officers, cars, everything. But in the case of these cars instead of working as a unit they were under the station in which they were licensed.

PRESIDENT WAREING: Thank you very much for your talk on the F.C.C., and its relation to the police service. We appreciate having you here with us and hope you will be with us again. Colonel White is not leaving tonight anyway, so you can still get some questions to him tomorrow. We have one more item to clear up this afternoon. That is the report of Chairman Batts on the Joint Meeting of the Frequency Allocations and Engineering Reports and Research Committee.

MR. BATTS: President Wareing, as directed by you during the Monday afternoon session, a joint meeting was held of the Frequency Allocations and Engineering Research and Reports Committee.

More than twenty men were present and participated in the discussion. These men came from all parts of the United States; from coast to coast, and from Canada to Mexico. The attendance list is contained herein.

AGENDA

In accordance with your desires, the agenda of the meeting contained not only the work of those two committees, but the additional important assignment of studying the proposal that the Associated Police Communication Officers appoint or elect an individual representative to serve on Committee No. 8 of the Defense Communication Board, which Board was created by executive order of the President of the United States on September 24, 1940, under authority of the Communications Act of 1934, and in accordance with the plan of organization of said Board as promulgated by the Defense Communications Board, November 12, 1940; as was presented to us by Colonel White, Monday.

Therefore, the joint committee acted upon the following three items:

No. 1. Preparing a committee report and recommendations covering the methods of selecting, either by appointment or by election an APCO representative on Committee No. VIII of the Defense Communication Board.

No. 2. Frequency Allocations Committee work, working jointly with the Engineering Committee, conducted a great deal of work of our own. This committee desires to make a separate report on recommendations on that item.

No. 3. Engineering Research and Reports Committee work, which committee has already conducted most of its work, so that it was not necessary to spend

much time with it during this joint meeting. As chairman of the joint committee, I wish to recommend that a separate report from this also be made by that committee, Mr. Arnet Curry, Chairman.

ITEM ONE

Regarding APCO and Committee No. VIII.

Your Committee deliberated at length on the method of selection of an APCO representative to serve on the Defense Communications Board. We herewith submit our recommendations regarding such selection of that representative.

First, however, your Committee wishes to state that it is unanimously and wholeheartedly in favor of APCO lending its utmost assistance to the Defense Communications Board, representing as we do the nationwide communications systems of the Police Departments of the United States.

We urge and recommend this Conference to take the necessary action to select the best and most capable representative in the Associated Police Communications Officers Organization, with his consent and knowledge of his duties and requirements; and that we support our representative to the limit; that you, Mr. President, make known our actions and wishes to the International Association of Chiefs of Police, represented here by Captain Donald S. Leonard, of the Michigan State Police, for their approval and sponsorship; and that you likewise make known to the Defense Communications Board and to the Coordinating Committee, both our action here and our desires to do all possible.

In addition, we wish to urge the Defense Communications Board to take full cognizance of and recognize the importance of Police Departments of the nation with particular emphasis on the Police Communications Systems of the nation, in any National Defense Emergency picture.

At the same time, however, we point out that we recognize the fact that, in such a gigantic development it is utterly an impossibility for any single mind, or small groups of persons, to comprehend all of the phases of the emergency.

That there must be - and will be - a program and policy of complete coordination of thought and of action upon the part of every agency of the various subdivisions of government---city, county, state and Federal---to the end that all may, through the democratic processes which are foremost in every patriotic mind today, formulate a proper program, forceful and effective for the National Defense.

Therefore, it has been our patient observation, as representative lines of thought, in connection with this, our chosen endeavor, that the field of Police Communications, as a professional service, has definite responsibilities in the completed picture, and:

That, in this connection, it is quite probable that there may be points of importance, with regard to the present status of our activities, and the future development possibilities, which may better correlate with the plan for National Defense, if there are made available, to the Honorable Defense Communications Board, certain facts and recommendations.

That this picture, and the specific phases included therein, must be given most careful study and deliberation, and that in each instance, we

must closely consider the many possibilities of existing nationwide police communication facilities in the National Defense, in the hope that a definite plan may be worked out and be placed in effect.

By the examples set in foreign lands in which the forces of conquest through sabotage and espionage have succeeded in carrying out their various phases of activity, we of America can, and must gain much of value in the way of defense against such practices, particularly in regard to all the various means of communications, their vulnerability, their reliability, their weak points, and their potential power when in the wrong hands.

Your Committee feels that the importance of the Police and of Police Communications throughout the nation cannot be over emphasized, in any national emergency. We urge this Conference to take action along the recommended lines; that APCO presents a cooperative united front in Defense Communications, and that we give all possible assistance toward a patriotic and common end.

Selection Of A Representative

As a first step in that direction, your Committee feels, we should take immediate action and select our representative to serve on Committee No.VIII during this Conference.

We again point out that our representative should be the best, most available, and most capable man in the organization. Furthermore, we feel that this Conference should actually elect that representative from the floor, rather than he be appointed, so as to give each member a voice, in order that he will be representative. Also, your Committee feels that this Conference should receive immediate assurance of his availability for attending meetings, etcetera, after he is elected.

Your Committee wishes to point out that it does not feel capable of nominating men for election as the representative, nor do we feel that nominations should be thrown wide open on the floor, since those doing the nominating could possibly be newer members who might not be well enough acquainted with the entire membership as to properly weigh the comparative qualifications of the individual, and that therefore the best selection might not be made.

We feel that the Officers and the Executive Committee of APCO are in a far better position, due to their close association with the individuals, to know the qualifications of the many individuals of the organization who would best meet the requirements.

Your Committee, therefore, recommends that the Executive Committee, including the Officers, shall make those nominations, and that from those nominations, a representative shall be elected by this Conference.

In addition, your Committee feels that the Executive Committee should appoint an alternate representative, to serve if the representative is unable to serve at some meeting, which alternate should represent the Police wire-teletype facilities, plus one or not to exceed a few advisors to the Representative, who would not only serve in an advisory capacity along with the alternate, but, who, like the Alternate, could attend the meetings of Committee No.VIII, but in an advisory capacity only.

In regards to the number of advisors, including the alternate, your Committee wishes to stress the necessity for making the number small

perhaps only two (2), but not to exceed five (5). If the group of advisors to our Representative on Committee No.VIII is too large it will be too unwieldy and therefore inefficient. We are advised that a large group is not desired.

It should be understood that these advisors are for the convenience of the Representative and to assist him when he feels it necessary. It is apparent that it will be necessary for the Representative to make any decisions, and to be effective on Committee No.VIII, he must be in a position to speak and speak promptly without being hampered by being required to obtain agreement on every point.

We further recommend that the Executive Committee be empowered to fill any vacancy occurring and also be authorized to remove from office, for cause, the Representative on Committee No.VIII.

It should be the duty of the Representative to keep the Executive Committee advised of matters coming before Committee VIII, and it should be required that the Representative render a report to the Annual Conference. It should also be understood that many confidential matters may come before Committee No.VIII and that, therefore, our Representative may not be able to disclose much information of which he may have knowledge.

In conclusion, your Committee urges thorough discussion of these proposals and that definite action be started at once along these lines by the Executive Committee to make the nominations, hold the election, and then appoint the advisors.

Respectfully submitted,

Robt. L. Batts (Signed)

Robert L. Batts, Chairman
Special Committee on
Defense Communications

Men Who Attended Joint Frequency Allocation Committee--
Engineering Research Committee Meeting
Night of 12-2-40

NAME	STATE	DEPARTMENT
Robt. L. Batts, Chairman	Indiana	Indianapolis Police Dept.
H. F. Wareing	Wisconsin	Milwaukee Police Dept.
C. M. Smith	North Carolina	State Highway Patrol
W. N. Scott	Georgia	Columbus Police Dept.
George M. Searle	New York	New York State Police
J. E. Murnane	New Jersey	State Police
G. S. Morris	New York	New York City Police Dept.
M. W. Joyce	Massachusetts	State Police
S. E. Warner	Connecticut	State Police
A. A. Curry	Indiana	State Police
Captain Donald Leonard	Michigan	State Police (Rep. IACP)
R. E. Franklin	Texas	Houston Police Department
J. H. Teeter	Missouri	St. Louis Police Dept.
R. E. Lathrop	Wisconsin	Waukesha Police Dept.
Ed. Maeshner	California	Berkeley Police Dept.
C. B. McMurphy	California	Alameda County Police Dept.

Plus five or six others who came in but did not participate.

PRESIDENT WAREING: I think we had better have a little discussion.

MR. CURRY: We were a little hasty because of the lateness of the hour. There is one thing I foresee while reading the report and that is the fact that in setting up the Executive Committee to appoint this member they might feel that they should eliminate themselves. I don't think the Executive Committee should consider it in that light. We felt that the Executive Committee knew the capabilities of all members of the organization probably better than anyone else and that they should not eliminate themselves.

PRESIDENT WAREING: Any other discussion? There are some points that we have to straighten out. In the first place there is a total number of possibly six which is too many.

MR. SMITH: I move that the number be restricted to a total of three, including the official delegate, alternate delegate, and advisory member.

Second to motion by Mr. Lathrop. Motion carried.

PRESIDENT WAREING: Another thing I noticed is that the Executive Committee is empowered to replace a man lost to the committee. It might take some time to get the Executive Committee together to appoint another man and you might miss a valuable meeting as a result of that. I think it should provide that the president can appoint a temporary delegate.

MR. SMITH: The alternate would act in that case.

PRESIDENT WAREING: Yes, I realize that they would serve in the order named. Has anyone any more discussion on this?

MR. LATHROP: In such an event as you just mentioned, I make a motion that the president be empowered to appoint a member in case the alternates are chosen by draft or other unforeseen conditions.

Second to motion by Mr. Vickerson. Motion carried.

MR. JOYCE: From what I can get from the Committee's report, they recommend that the delegate be elected by the floor. Do I understand that the Executive Committee will set up more than one man for the body to vote on?

PRESIDENT WAREING: I suppose the Executive Committee will act as a nominating committee.

MR. BATTS: I am sure that we had in mind nominating several available men and voting on them. The committee thought the Executive Committee was in better position to select those names than from the floor. The Executive Committee should make several nominations.

MR. HARPER: Will there be a vote taken for each man in that case or will the vote be made and the person receiving the most be the delegate, and second alternate, etc.?

PRESIDENT WAREING: According to the committee's report, the

membership will only elect the representative of the association and the committee feels that the Executive Committee should appoint the alternate and second alternate. Perhaps some feel that all should be elected by the membership.

MR. JOYCE: I think one man should be elected by the membership and the other two appointed by the Executive Committee. After all, he is the man that is going to do the talking and voting. I think the Executive Committee would be in a better position to appoint these other two, knowing how they would work with the delegate.

PRESIDENT WAREING: I can see one angle to that. One group may be out balanced. We have more radio than teletype and the members might not elect a proper distribution of representatives.

MR. CURRY: That is exactly the point the committee had in mind. One of the advisors at least should represent the teletype group, as brought out in the meeting last night, and if we put it up on a one, two, three, basis we might not get the proper representation.

MR. MORRIS: For the benefit of the members that don't know the man they are going to vote for, would it not be advisable to give some of his history? The delegate will be a man familiar with radio and the alternate a teletype man. I am in accordance with the thought, but so that the new members will know who they are voting for - how long has he been a member of APCO?, has he ever held an office?, is he a commanding officer? I am thinking out loud so don't take offense, but for the benefit of new members let's tell them. If I were electioneering for somebody I would tell something about him.

PRESIDENT WAREING: Perhaps we can have somebody do that.

MR. BATTS: It is my personal opinion that whoever our representative may be over there in Washington at these hearings, he is going to have to be a good talker - able to talk long and loud, with a lot of force to whatever he does. Furthermore, we didn't attempt to place any limitation on the representative that he be a radio man but that he be the best and most capable and available man.

MR. CURRY: If the representative does not happen to be from the teletype group, then definitely the alternate must be from that group.

PRESIDENT WAREING: The committee is as follows: Wareing, McMurphy, Joyce, Morrow, Bailey, Wherritt, Virden, Batts, Brown, Denstaedt, Lowe, Schnell, Teeter. That is the officers of the association and the Executive Committee.

MR. FETCHER: I feel very strongly regardless of what the man's background has been he must have a clear unobstructed view of police communications as they exist today, and I feel personally that no one knows better than the Executive Committee who that man should be. It isn't technical knowledge that is required, it is the relationship of police communications and other forms of communication in the country; knowledge of how police facilities fit into the picture of national defense; a background that will enable him to make decisions effecting the police which will bring them in the proper relationship in the defense program. I don't think anybody is better empowered to do that than the Executive Committee.

I feel they are the ones to nominate and then have the vote from the membership.

MR. BATTS: I think I should be excused from participation on this committee.

PRESIDENT WAREING: There is no reason for that.

MR. SMITH: There is one point worthwhile to make. A lot has been said about our needing first a man who can talk and talk loud and long, in other words, a man who can present a good case. However, don't you think that possibly it is more important in selecting this delegate to proceed on this basis: pick that man who in our opinion most nearly has that long-range view of the whole picture of what we all represent. Captain Leonard is going to represent the I.A.C.P. on this committee and he certainly has that drive, that ability to talk, and those qualifications that are needed. What he will need is some backing up in long-range knowledge.

PRESIDENT WAREING: I would like to point out one thing, that I don't want "politics" to start humming after this is all over. I appointed this Executive Committee with one idea in mind that we could get them all together in some central point, in Chicago, for example. Our Executive Committee does not represent much of the country as a whole. The Executive Committee was appointed with that idea in mind. Perhaps that is not your idea of the group that should nominate this representative. If there is any feeling like that I would like to hear it.

MR. FETCHER: I don't think if is a question of where the Executive Committee members come from - it is a question of their knowing the membership better than any other group we might select.

MR. MORRIS: As long as the Executive Committee keeps "politics" out of it - that is why they are Executive members.

MR. MURNANE: Included in that Committee are no doubt men with military or naval experience that might possibly be an asset, that is in the appointing of the alternate.

MR. LATHROP: Bob Batts begged to be excused from that meeting. I object to that. I was here last night looking in on this committee meeting and I was the one that suggested that the Executive Committee be the nominating committee and that started the ball rolling. I think that Mr. Batts is a valuable member on that committee and should not be excused.

PRESIDENT WAREING: I think we all know that Bob falls over backward being fair. If there is no more discussion let us take a motion to accept the report of the committee as presented by Chairman Batts.

MR. JOYCE: I move the report by the committee be accepted.

Second by Mr. Kinsey.

Motion carried.

Announcements by Mr. Virden.

Upon motion of Mr. Lathrop, second by Mr. Murnane, the meeting adjourned

WEDNESDAY MORNING SESSION

The fifth session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wareing at 10:00 a.m., December 4, 1940.

PRESIDENT WAREING: The Reverend Tucker from the First Baptist Church was here at our scheduled meeting time, but he had another appointment and had to leave. We would like to get through with this morning's business a little early if possible to give all of us an opportunity to visit the exhibits and exhibitors. I don't think we have been paying enough attention to those gentlemen. After all, they make the conference possible from a financial standpoint and we should certainly give them the courtesy of inspecting their equipment.

At this time we will go right into the report of the Engineering Reports and Research Committee, of which Arnet A. Curry is chairman.

MR. CURRY: We are gathered here in conference to discuss the myriad problems that have arisen during the past year. Problems that have confronted individual departments as well as problems that have confronted the entire organization of APCO have been placed at the doorsteps of your elected and appointed officials for their action. The Engineering Committee, having participated in the program as a whole and having taken action on a few problems in particular, takes this opportunity of submitting its report to this conference for consideration.

At the Kansas City Convention of last year, this committee made the recommendation that an effort be made to select the best technical article in the APCO BULLETIN during the year. Mr. Ted Lowe, Chief Radio Engineer for the Illinois State Police, graciously offered to furnish the prize. The committee, therefore, has selected in its estimation the best technical article. The winner will be announced and the award will be presented by Mr. Lowe at the conclusion of this report.

Also at the Kansas City Convention your committee requested and received authority to subscribe to the Engineering Index Service. This service indexes technical articles appearing in trade and technical journals of this and foreign countries. Index cards are then sent to subscribers for their use in setting up files on technical publications. This information has grown during the past year into a very valuable file consisting of some thousand file cards covering published articles in almost every field of radio. It is the recommendation of this committee that the subscription to this service be continued and that a suitable file case, file dividers, and file guides be obtained for the proper filing of this material.

In February, an executive meeting of all officers and committees was held at Chicago. Four members of the Engineering Committee were able to attend. One of the subjects that came up for discussion at this meeting was the advisability of publishing a handbook on police communications. This committee was assigned the duty of securing information

regarding costs of publishing such a handbook. Cost figures have been obtained from the Amateur Relay League pertaining to their costs for publishing the QST handbook.

We feel, however, that it would be inadvisable to undertake the publication of such a handbook until we have built up a greater wealth of articles of both a technical and a special nature. In order to stimulate the flow of such articles into publication, it is hereby recommended that a two-fold program be adopted: first, that state chapters encourage and sponsor the presentation of technical and operational papers at their meetings. Copies of presented papers should be sent to the BULLETIN editor for possible use in the BULLETIN; second, it is recommended that a place on future conference programs be set aside for the presentation of outstanding papers received during the year.

Such a program, we believe, would insure sufficient material of prime importance to the art of police communication to soon justify the publication of our BULLETIN on the same scale as represented by the present conference issue and would also be a program that would soon accumulate the necessary material from which to edit a suitable handbook.

Our secretary, Sergeant Morrow, reported at the last convention that Questionnaires had been mailed to all municipal and county departments in the country. The returns on these questionnaires have been disappointing, in fact, only eleven percent (11%) of those mailed out have been returned to date. However, the information gleaned from those returned has given us our first tangible information of where we, as a National Police Communication System, stand with regard to the all important problem of national defense. The picture portrayed by this information shows only too well that we are NOT now prepared for a National Emergency.

One outstanding fact appeared and re-appeared from the conflicting accounts of the activities abroad. Power plants, communication facilities, industrial plants, and public utilities have been the chief targets of both the saboteurs and the enemy air pilots. In case of a National Emergency within our own country, can we expect less than that which has befallen countries now engaged in combat? If we cannot, we are duty bound to ask ourselves this question: "Are we individually and collectively prepared to meet the emergencies that would arise if our own power plants were to be blown up, if our telephone cables were to be cut, and if our industrial and residential sections were to be glutted with raging fires?" If we are not prepared to operate under one or all of these emergency conditions, we owe it to ourselves, to our superior officers, and to the public to point out our weaknesses and suggest plans for rectifying or fortifying our positions while time still permits. The questionnaires show that out of approximately seven hundred (700) police departments operating a radio station, only about one hundred (100) are equipped with an emergency power supply. This means that six hundred (600) departments, or eighty-eight point five percent (88.5%) are not prepared for a power failure. Further study revealed the fact that both large and small cities fall in the unprepared group. Only twenty-five percent (25%) of the cities with a population of 100,000 or over have emergency power units. Cities of 50,000 to 100,000 population are 11.7% equipped. Cities of 25,000 to 50,000 are 7% equipped. Cities of 25,000 or under are 4% equipped, while county radio departments are 20% equipped.

It is extremely hard to visualize the operations of

a modern police department without telephone and other forms of wire facilities. Complete paralysis of emergency action would have resulted a few years ago if all telephone communications had suddenly been disrupted. Today, however, with the present development of "two-way" or "talk-back" equipment, any police department can insure itself against this serious hazard by furnishing their cars 100% with this equipment. Yet we find that there are still 21% of the departments having radio that do not have any mobile talk-back units. The records also show that the number of units per department is wholly inadequate in a great number of instances. Tabulations show that cities with populations of 100,000 or over have an average of only 15.6 units per department, while cities of 50,000 to 100,000 have only 10.2 units per department. Every department should, therefore, take stock of its mobile transmitter equipment.

Police departments and especially police radio stations may themselves be the target of attack. Equipment failure, either from enemy action or from natural causes, must be guarded against. The best protection possible is to have duplication of essential equipment. It is recommended that an auxiliary station complete from microphone to antenna system be established at a location other than the primary station. The equipment need not be elaborate or showy. It should, however, be well engineered so as to be serviceable on short notice.

In conclusion, our defense program must essentially be one of improving our equipment facilities to the point where they will function properly under any emergency condition that might develop in either peace or war.

November 27, 1940

Distribution of Mobile Units in Police Departments
Prepared by Arnet A. Curry, Chairman
Engineering Reports & Research Committee

GROUP	Number Dept's. Reporting	Number with Mobile Units	Aver. No. per Dept.	Percent equipped with mobile units
Cities of 100,000 or over	13	9	15.6	69
Cities of 50,000 to 100,000	16	13	10.2	81
Cities of 25,000 to 50,000	15	14	6.0	93
Cities of 25,000 or under	25	19	3.6	76
County Departments	10	8	9.7	80
TOTAL	79	63	9.02	79

* * *

Report of Questionnaires Received

GROUP	Number of Dept.'s reporting	Percentage of total reporting
Cities of 100,000 or over	12	15.3
Cities of 50,000 to 100,000	17	21.8

Report of Questionnaires Received (Cont'd.)

GROUP	Number of Dept.'s reporting	Percentage of total reporting
Cities of 25,000 to 50,000	14	18.0
Cities of 25,000 or under	25	32.1
Counties	10	12.8

Number of Questionnaires sent out - 700. Number returned - 77. Percentage returned - 11%

* * *

DISTRIBUTION OF EMERGENCY POWER SUPPLIES IN POLICE DEPARTMENTS

GROUP	Number of Dept.'s reporting	Number having Emer.Power Sup.	Percent equipped with Emer.Pr.Sup.
Cities of 100,000 or over	12	3	25.0
Cities of 50,000 or 100,000	17	2	11.7
Cities of 25,000 to 50,000	14	1	7.0
Cities of 25,000 or under	25	1	4.0
Counties	10	2	20.0
TOTAL	78	9	11.5

* * *

NUMBER AND SIZE OF EMERGENCY POWER SUPPLIES IN POLICE DEPARTMENTS

Size of Power Supply	300-500 VA	500-1,000 VA	1 - 3 KVA	3 - 5 KVA	5 - 10 KVA	Over 10 KVA
Number Reported In Service	3	2	2	2	1	None
Percentage Of Total	30	20	20	20	10	0

* * * *

MR. CURRY: I would like for the President to call upon Mr. Ted Lowe to make the award for the best technical article just as soon as he comes in. I would like to call on Mr. Warner to give us a few facts on contacting the QST offices regarding the Handbook.

MR. WARNER: I believe you are all familiar with the QST magazine; in general it seems to be a very popular publication. It sells around fifty or sixty thousand copies a year. The cost on that magazine runs around ten to twelve dollars a day, which is beyond the scope of this organization. For a 128-page publication, the cost is around $1400. If you sold two thousand copies they would run seventy cents a piece and 250 copies would run about

would seem the cost must be kept down. Further investigation discloses the fact that you can use multilithograph, that is the typewritten page is photographed, and eliminate the cost of composing. That pulls the cost down to a point probably where this organization could go into it. I would say that we would have to forget about a publication such as QST and go into something cheaper.

MR. CURRY: Is there any discussion?

MR. LATHROP: I have purchased and read the QST Amateurs' Handbook, which has grown to be quite a large affair, but I don't quite understand exactly what you have in mind on this police handbook. Would it be technical or something that we could pass out to the men in the department on operating procedure for radiotelephone or teletype procedure. Just what is the nature of this handbook?

MR. CURRY: Primarily, it was such a handbook as we desired the F.C.C. to publish and possibly to include additional work of an operational nature. It would be a handbook to cover the field of police communications, including technical, operations and departmental activity.

MR. LATHROP: I have a suggestion. If we could devote a sheet in our Bulletin to such technical articles and if that sheet could be printed in the regular Bulletin and then a loose-leaf copy, as our Wisconsin contact maps, mailed to each supervisor, they could be inserted in a binder and in time a nice collection of technical information could be obtained. In that way a fellow wouldn't have to thumb through every Bulletin to get what he wanted. If you have noticed, Electronics has a page that can be inserted in a loose-leaf book if you wish to take it out. They arrange the advertising and sequence so that may be done. I find that it does not disrupt the magazine at all. You don't cut any other articles out with it. This would not necessarily have to appear every month but in time if we had all of those articles grouped that way we could accumulate a very good handbook which would be perpetually brought up to date. We could refer to it without cross indexing our APCO Bulletins and having a cumbersome file of information.

MR. CURRY: That is the general idea that the committee had, but at the present time we do not have the material from which to edit such a handbook. A handbook normally is the important information accumulated over a period of time. We do not have that information at the present time and one of the things the committee wanted brought out was the fact that in order to push this material and get it into publication they would recommend that this idea of presenting papers, technical and operational, first to the local chapters, and, secondly, the best papers of interest to the whole assembly be taken up at the national conference. One that should be included from this conference would be the one by Professor Noble, because it is definitely material that would be of interest to publish in the handbook, at least parts of it. Unless somebody else has something to bring up regarding this handbook, we might pass on and bring up at this time anything of a technical nature that anybody has on his mind and have a short discussion. Somebody brought up the question of diathermy machines. We might have some discussion on that.

MR. McMURPHY: We used direction finders to locate the machines and then asked permission to see inside them. We found spread coils which caused them to go down on somebody else's frequency.

MR. BATTS: We have been bothered but we haven't been able to find the machine yet. We have been bothered with one that sweeps over the band from something like 17 megacycles, to 43 megacycles. Just about the time we got our direction finder equipment fixed up and on the noise, it was gone. Then we might find him 15 or 20 megacycles from where he was. That is not a disruptive thing except for perhaps two or three minutes at a time at unexpected intervals.

MR. CURRY: Does anybody recall that this question came up in one of the other conventions and if I recall rightly someone stated that the national government had assigned one or two frequencies for all new equipment coming out to be crystal controlled on these frequencies, but old equipment - it is impossible to do very much about it.

QUESTION: Out West don't they have a local ordinance that they made stick regarding diathermy?

MR. CURRY: Does anybody know about that?

MR. WARNER: I haven't heard any diathermy on our system. If it is there it isn't of any extent to bother us.

MR. HICKS: What about the spark type diathermy?

MR. CURRY: I know that there is something that has been set up but I don't know just what it is. I know that it is going to take a certain amount of cooperation and education from the police departments. First they have to be located and then the individual department will have to do a job of selling to get them to throw out the machine and if not, work on it to eliminate interference. They can reduce the interference or eliminate it. We find that no one thing will do it, but a combination of two or more things may work.

MR. HICKS: Some of these spark types cover the entire spectrum.

MR. CURRY: We had an experience like that. The machine was located two miles from our station and they were using about twice as much power as we were.

MR. McMURPHY: This isn't diathermy, but about three years ago we ran into some terrific interference on high frequencies. About a mile from our station there runs a hundred kva line and down below us a 120 kva line, etc. This interference sounded exactly like spark diathermy. We got the local power company out and we worked on that thing for six months. It was so much that we couldn't get a direction finder on it. We had them turn off the 110 and ground it and then another section and ground it, and still we couldn't find the trouble. We are just police radio men and are not supposed to know anything about it. We just furnished the equipment. After their engineers gave up we went down and found out what it was all about. This bond that runs between each pin on the cross arm on 11,000-volt is not grounded. It should be run to the ground. It is all right while the cross arm is wet and new but when they dry out and the cross arm shrinks, then the bond loosens up. Since the cross arm is just so many feet long it operates as a quarter-wave radiator. If the end pin is arcing, it is end fed, and set the middle insulator off center and it is a center fed antenna. We took about three miles of line and took the bond off and just wiped that section so clean that you couldn't hear anything. Now with the new type of

copper insulator, longer pins with lock washers, and a good type of bond across there you will never have a bit of radio interference. If you are looking for high frequency interference, look there. We take a directional shot at the area. We come down and hit these individual poles as we go under them and then we take a sledge hammer and shake the pole which causes an interruption of spark - it disrupts the gap. We take the number down and report this section is noisy. It took us two years to get this done. Every time a fog came in we had to quit working. I spent about an average of 18 hours a day to lick that and it took over three years.

In the old diathermy machines the biggest headache is the self-rectifying device. Each half cycle the oscillator quits when the plate is negative and it has to strike, giving the same effect as a key click, because you are striking your oscillator 120 times a second and one of those things will interrupt the whole band. A pair of 866s will do a wonderful thing with that. This is just a cheap way of getting around an awful lot of trouble, a filament transformer, a pair of 866s and a half mfd. to maintain continuous operation.

MR. BATTS: I would like to ask whether he hears the FM cars on 38 megacycles or is it the main station.

MR. McMURPHY: We just heard the high-powered main stations.

MR. CURRY: If that concludes the discussion, I will turn the chair back to the President.

PRESIDENT WAREING: We had quite a few items listed on the agenda for the Engineering Committee and if any of you gentlemen have any question on antennas or anything else listed, I wish you would bring them up.

MR. GRONIER: Are we going to do anything about that horizontal increase in power that has been requested?

PRESIDENT WAREING: The Wisconsin group at its last meeting drew up a resolution for presentation to this body requesting the F.C.C. to grant a horizontal power increase on municipal medium high frequencies, pointing out that there was no such limit as 50 watts for 100,000 population on the ultra-high frequencies, etc. Every station in Wisconsin started out with a population-limit-rule power and they have increased their power two and a half to ten times since they started. The same condition exists in other parts of the country and it has the disadvantage of more or less forcing municipalities to put in improper equipment, because you can't sell your department or city fathers on spending money for a higher powered transmitter than is permitted under regulations for you to use. You have to put in what the regulations specify and you can't serve the territory. Then you have to buy another transmitter or rebuild the one you have in order to get increased power.

MR. CURRY: I might point out that the reason the F.C.C. objects to increasing the power is because there are some stations in existence who went in service with a certain interference condition at night and if they granted stations higher power in some areas, they will cause more interference. I really believe that this particular problem is more of a problem for the group to decide upon. Of course, the thing to find out is whether the Commission will grant the increase. I believe every one realizes the advantages and disadvantages that a general increase in power would have and

unless the group as a whole decides what the policy should be, I don't see exactly what there is we can do about it. Possibly we could make a recommendation one way or the other. It is mainly a policy for the group as a whole to decide upon.

PRESIDENT WAREING: I wonder if your committee has any specific recommendation to make on that particular matter.

MR. GRONIER: We discussed the matter. I think we are willing or would encourage the F.C.C. to put stronger regulations on the antenna situation. I think there is a weakness on the intermediate police frequencies. A certain ground system and certain efficiency could be required. Those who want to increase power should naturally be willing to comply with more stringent antenna regulations. I believe that was discussed, so if the F.C.C. would want to make us put up a little better antenna we would be willing to do that.

MR. CURRY: Might I ask if you have reference to the phone or CW channels?

MR. GRONIER: It is the phone channels we had reference to.

MR. CURRY: One of the things that we have to decide is what we desire. Of course, we all want to cut down on interference at a distance. However, from all the results and materials available, changing the height of a vertical antenna mainly causes the interference area to move a little and it drops in somebody else's lap.

MR. GRONIER: Isn't it true that some are still using horizontal doublets? In my particular case I am not proud of my antenna system. However, probably the easiest way for me to get an improvement would be for the F.C.C. to pass a regulation whereby I would have to improve it.

PRESIDENT WAREING: I think a lot of interference does come from horizontal doublets.

MR. BATTS: It seems to me on this power increase there are two problems: one problem is local coverage and the other intercity communication. Some of you communicate with each other. There is no question that an increase in power would give better local coverage, but if you are going to have a general uniform increase in power, it will have to be all over the country as far as intercity communication is concerned in order to keep interference conditions exactly as they are now. It seems to me if a uniform increase in power were approved that the Commission would have to require everybody to do it whether interested or not.

MR. SMITH: It seems to me that the best thing we would be able to do about it would be to study the resolution passed in Wisconsin and act on it in a manner something like this: describe the nature of the problem there and in the rest of the country and recommend to the Commission a flat horizontal increase which would require that everyone raise their power or get licked, and ask the Commission to take the matter under advisement and study it with a view to taking some action as found necessary to improve the situation which now exists.

MR. SCOTT: The matter of frequency tolerance goes hand in hand with this question. If the F.C.C. could raise the tolerance I am in favor

of the F.C.C. bringing pressure to bear. If you go to your chief and say the F.C.C. requires such a thing, we do it, but if we say APCO recommends it, he says we haven't got the money, but we'd like to cooperate. We do cooperate with the F.C.C. If they should tighten the tolerance to 005 on 2414 our tolerance would be such that the beat note between it and other stations on our same frequency would not give us nearly so much interference.

PRESIDENT WAREING: We have had one tightening up on this frequency.

MR. SCOTT: Columbus has a transmitter that is about three years old. We have low temperature crystals in an oven but we still have 04 on our license. We stay within less than 150 cycles of our assigned frequency but there are still many old heaps on the air that have an 04 tolerance and they are using it.

MR. JONES: When I came down here one of the first things I heard was that Alabama was causing QRM in Wisconsin, and I might say that Wisconsin is causing it in Alabama. I am from Birmingham and at night it was almost impossible to hear any of our stations because of Wisconsin, but we didn't write to them and ask them to reduce power or some other foolish thing. In our particular case, we approached the problem from a different angle. We didn't want to hear Wisconsin, so we decided not to listen to them. We put up a directional antenna, that is for the receivers, that has a front-back ratio of 30 to 1. We still hear Wisconsin but they don't cause us an iota of interference. I think it would be well to use what we have rather than ask for power increases. One of the gentlemen spoke of antennas, a horizontal doublet is about the poorest antenna you can use on low frequencies. If you utilize your power in a little better fashion I think that is the best approach to the problem.

MR. LATHROP: What is that antenna that Mr. Jones is using?

MR. JONES: The antenna was unorthodox - it wasn't supposed to work, but it did. It was simply a horizontal doublet with a director finder.

MR. LATHROP: How far is the director from the doublet?

MR. JONES: The doublet is a half wave and it points 0125. There is possibly one or two decibels gain in the forward direction and a reduction of 20 in the opposite. We place the antenna broadside to the direction we wish to receiver.

MR. LATHROP: In other words, your antenna is running east and west with the director north of it to get maximum antenuation on the Wisconsin stations and you still hear them but it cuts down to the point that your station to station work in Alabama can be carried out.

MR. JONES: Before when we tried to work Mobile and Wisconsin was on we couldn't hear them, but now we still hear Wisconsin but when the other station comes on you can't tell it.

MR. SCOTT: If the tolerance on Alabama and Wisconsin were reduced to where the maximum would be one hundred cycles or less, would that help any?

MR. JONES: I don't remember any occasion where a beat note has caused us any trouble. We either get it or we don't.

PRESIDENT WAREING: I notice that you have gone up to a kilowatt and that was a result of action in APCO. I know you just put the new station on last week. What kind of an antenna did you have and what did you put in?

MR. JONES: Before we had a quarter wave antenna located on the top of a down town building and it was far from being ideal. In the new station we put in a 190 degree vertical radiator which corresponds to .53 wave length and it is in an extremely good location. I don't know that you could form a basis of comparison. The new one does a fine job, but the old one was in such a poor location that you could make no comparison between the two. It is general knowledge that certain types of antennas over certain soil and certain ground system have certain radiation characteristics. The radiations of a quarter wave antenna are inclined to go skyward more than a half wave antenna and it all boils down to using the power that you have. I would have no objection to a horizontal power increase, in fact it would delight me, but I feel that some departments that have 50 watts would have to keep 50 watts. It is like one gentlemen said, if you have a horizontal doublet and 50 watts, if you put up a good vertical radiator, as far as local coverage is concerned. I have had a little experience on horizontal on the low medium frequencies and I have seen the result of changing to a vertical antenna. A horizontal doublet is fine for distant coverage, that is off the broadside of it, of course it works off the end to some extent. If you want to work from 700 to 5000 miles you couldn't have anything better than a horizontal doublet antenna, but if you want to work in a radius of 100 miles, you couldn't have anything worse. I think if a little more consideration were given to using what we have a little better first and then applying for a power increase we might be going at it in a better fashion.

MR. CURRY: I believe that it boils down to this: most of the ones using horizontal doublets are stations with low power. If we go on record as asking the Commission to make it mandatory that all stations use vertical radiators, we have to take into consideration the small stations being able to secure vertical radiators. Now the question comes up whether we wish to force all stations to put in vertical radiators.

PRESIDENT WAREING: I don't believe there was any idea of forcing everybody to double their power.

MR. GRONIER: The idea would be to ask for an increase in power but tell the Commission not to grant the increase unless the station put in a vertical antenna system of certain efficiency. We don't want them going to a hundred watts and still using their doublet. If we put in better antennas and increased power our sky wave wouldn't be much worse and we would have better coverage. I can't cover the county to the west and the only way it can be done is with a better antenna and an increase in power.

SECRETARY MORROW: Gentlemen, it seems to me that in these two questions we approach the crux of one of the biggest troubles, or perhaps I should say the greatest evil in connection with police communications. So often we hear the statement by departments "We are going to put in radio" and the truth of the matter is in many departments that is literally what they have done - they have "put in radio." Several years ago, in connection with work in the broadcast field, when stations applied for power increases, I distinctly recall that in those hearings a great deal of the attention on the part of both the Commission and the respondent in any action of that type, and there always were respondents, was devoted to the engineering of the

antenna system of that broadcast station. It seems to me that any action that this body takes in this connection should take into consideration the fact that not only should it apply to present stations but it should take into consideration and be comprehensive enough to control future installations of police communications equipment in the U.S., based on the same sound engineering standards that have been used in the granting of increased power to broadcast stations, or any other operation they go through. If, for instance, the action were taken in that direction and were carefully prepared so that it would be sound basically from an engineering standpoint, I think we are going to do away with a lot of our trouble. To make it short, if we approach the installation, or preparation, or operation of our communications system from a sound engineering standpoint instead of from the standpoint of "putting in radio," I think we are going to be a lot better off. The problem has been a result largely of the desire of some of us to get on the air, the desire of the police department to obtain service, and each of these questions as it comes up in the conference or group meetings throughout the country is merely a reflection of that fact.

It is encouraging to notice that at last we are coming to the point where we begin to question our own methods of operation and we are worried whether the type of antenna we are using is the most effective after all to do the job.

When we look to the F.C.C. or any other agency to handle a matter which encompasses the whole field, lets do it from a sound engineering standpoint. If we ask for a horizontal increase in power for all police radio stations, I think we would be adding oil to the fire at the present time. Perhaps the study of this problem by a committee, well qualified to handle the particular job, would reveal a dozen other points that haven't been considered here this morning. Most certainly we don't want to ask for such an increase for all stations, especially in view of the fact that we know, and it has been brought out here, that there are many stations in the service who are not using good engineering practice in their present systems. I think that we will get farther and we will amount to a great deal more from the standpoint of service. When you make application for a construction permit for a police radio station in, I venture to say, 98 cases out of 100 there has been no question from an engineering standpoint regarding the type of antenna you propose for that station. There has been a reason for that and I think the reason is appearing here this morning in no uncertain terms. The Commission, I think has felt that each of us was going to do the best he possibly could from an engineering standpoint. We are recognizing in such a discussion the fact that we have not done so and I think that our first job in this case is to study thoroughly every point in connection with our present systems, determine whether or not we can justify using our present equipment, asking for more power for our particular stations. I know of a number of instances where we couldn't do that and I think we all do. I believe rather than attempt to make any decision here in this body on that question; which is an important one, that it should undoubtedly go to the committee and be thoroughly studied. It may be presented later on in the session but it should receive some study and the basis be made on the principle of sound engineering practice rather than just "putting in radio."

MR. FRANKLIN: I would like to say a word on the line of power increase and antennas. If you will recall, I made a motion at our convention last year that we go on record as opposing any Hertz antennas for municipal stations. It appears to me that we should first determine what we want to

do. Listening to some of these boys it seems that they want to use radiotelephone for intercity communication, and personally I am opposed to that. We use telegraph for that and I think that would be a partial solution to the problem. On the other hand, I believe we recommended last year that they use Marconi type antennas. Now that doesn't necessarily mean verticals. I believe it would work a hardship on some cities if they were forced to install vertical antennas. We agree they are the best type. Now, the antennas and power have a direct relationship and I think we all recognize the fact that the proper antenna increases our power, but then we get back to the small town again and to me it seems that some of them must have had about the same idea when they installed street signal lights in a wide place in the road. Now I have in mind one small station there in Texas. I think possibly if you would really check on him he wouldn't have over three legitimate calls a day. He puts up a nice Hertz antenna and then he calls up a station across the state, six, seven, eight or nine hundred miles away: "I have been making a few tests. How am I coming in compared with twenty minutes ago?" Then he calls up another station in the opposite direction and says the same thing. Then he calls up car 601 and says, "How'm I doin'?" That goes on night after night. We are operating on 1712 and he is operating on 1712. We will fix his limit of a fading wall around 40 miles, in some cases closer to the station than that. We are attempting to cover the county and by the map the farthest point in the county is something over 40 miles. We are using 500 watts power at the present time; we are using a semi-vertical antenna worked against a fairly good ground. It so happens that he comes in there around 30 miles and completely drowns us out. I think that is due largely to the fact that he is using a Hertzan type antenna. Now I think the condition of the city might not permit him to put in a vertical antenna, but at least he could put in a good ground instead of putting out a strong skywave with a Hertzan antenna. It seems we ought to clean out our own backyard in respect to getting on the air and making unnecessary calls. It seems that some of us, or some more of us, should put in radiotelegraph stations to carry on intercity communications.

Now we have a condition in Texas a direct result of action of this body last year. I had at least five cities in Texas tell me personally that they would put in radiotelegraph and cease to use phone for intercity communication provided that the State of Texas would put in radiotelegraph in Austin. Because of our action here which was to sanction phone relays to some extent, any action along that line was immediately stopped by the State of Texas because we have a man up there, no reflection personally, who says he is a radiophone man. I may be making a pretty large claim, but I claim to be a radio man and that covers more than phone. The state is pretty big and a lot of people but they didn't have money to buy a transmitter so the National Guard gave them a transmitter that they revamped and they put in radiotelephone at Austin. That killed everything as far as radiotelegraph is concerned in that state. Now we don't have teletype in Texas and I don't think we will ever have it because the state is too large and they don't have lines in there. It seems to me that we ought to consider what would be best for our own needs. We have a radiotelephone interference problem down there that has just about gotten me down. We have to listen to state broadcasts and other stations in order to know what is going on. We just have to have relief and I don't know of any better body to bring it up before than this body. I think we should go on record as being opposed to radiotelephone relays. I know there are some cases where possibly phone relays would be a good thing and those cases should be taken care of.

But to get back to the antenna proposition, the fact

remains that some of these small stations are putting in Hertzan antennas simply with the thought of using their station as an intercity station. So rather than to say that they should all put in verticals, we bought a vertical, rather than say all should put in verticals, we could say this, that all stations, vertical or otherwise, should work antennas against ground.

MR. McMURPHY: I think one of the questions is to stick to good engineering procedure. If you want more power, go out and clean up your own equipment and then if you need more power go out and get it.

MR GRONIER: I have a vertical antenna, a quarter wave, 10-ft. pole on top of a ten-story building with a few copper wires up there for a ground system. That is what the city bought and that is what we got. The point I am trying to make is this: I want to go to a thousand watts day and night and I don't want to drop back to 500 at night when I need it most. I could get by with 500 watts in the daytime, but not at night. In order to do that I am willing - if we are going to that expense we might as well go to more and put in a half wave antenna out in the country or some place with a good ground system. But that is getting away from the point. I was glad to hear Morrow talk about good engineering practice and an increase in frequency tolerance. I think those are the things that we want to do and to get back to the original idea, to ask for this increase in power providing we do have this efficient antenna system and not grant the increase unless we have a good antenna.

PRESIDENT WAREING: We ill refer that matter to the Engineering Committee and ask Mr. Curry to get a report ready.

We will now hear from Gene Brown, of Iowa, who was appointed to report on the meeting of the officers and the Executive Committee last night regarding the selection of a representative for the Defense Communications Board.

MR. BROWN: Mr. Chairman, Gentlemen of the convention, the Executive Committee of APCO, Inc., meeting in formal session convened at 9:15 p.m., on December 3. The following members of the committee were present and acting: Messrs. Wareing, McMurphy, Joyce, Lowe, Batts, Brown, Teeter, Bailey, Wherritt and Morrow. This session was called for the purpose of following out directions given by the conference body in a resolution under date of December 3 which suspended the rules of the conference and directed said committee to place nominations for consideration for the vital responsibility of representing the police communications facilities as representative of APCO, Inc. upon the membership of Sub-Committee VIII of the National Defense Communications Board. In its deliberations upon the selection of the names of men in whom the committee feels that this organization might well place its unlimited and complete confidence, in this selection of a man the committee gave grave consideration to all phases of the picture and in each specific instance there were advanced strong bases for the nomination in question. Primarily, it must be remembered that your committee has borne in mind the fact that in your ultimate selection of the one man you shall place the matter of the success or failure of the intensely important program of this organization in the balance. Consequently, it was not without attention to all the details consistent with such a selection that the names submitted here were selected. Foremost among the points under consideration was the matter of the amount of devotion to the work and progress of APCO, Inc., during past years and it is believed that in each of the cases cited

there may be no question as to the record of these men. Next, the matter of knowledge with regard to the present and future police communications picture was considered, and again the selections as made show most interesting parallels. Naturally, there was the question as to the availability of the men from the standpoint of their ability to accept responsibility and the ability of their departments to provide the items of expense necessary in the carrying out of the work of the committee, and of their being able to obtain authority from their departments to accept such a position. After pursuing this course of thought for some three hours, the committee completed its selection, which under suspension of the rules, the committee now reports to you for consideration and vote. The nominations arranged in alphabetical order are as follows:

Deputy Inspector Robert L. Batts, Indianapolis Police Dept
Sgt. Frank W. Morrow, Indiana State Police
Maurice B. O'Neil, New Orleans Police Department
C. M. Smith, Jr., North Carolina State Highway Patrol
Capt. J. M. Wherritt, Missouri State Highway Patrol

Having thus reported the names in nomination, the Executive Committee requests that the chair proceed with the matter in hand.

MR. JOYCE: I would like to say a word. At this meeting last night these names were suggested without any idea as to first, second, and third choice. We picked the names of men we believed were qualified for the job.

PRESIDENT WAREING: It was suggested last night that we make this a written ballot.

MR. FRANKLIN: It appears to me that we should have more than one man, even though we have only one vote.

PRESIDENT WAREING: That was the idea; if possible, all three would attend the hearing, at least in an advisory capacity to the representative.

On a written ballot Mr. O'Neil was elected as APCO representative on Sub-Committee VIII of the Defense Communications Board.

MR. O'NEIL: Mr. President, fellow members, I am really dumbfounded. This is all a surprise to me and I don't know just what to say right now, except this - any duties that are charged to me to perform for this organization to further police communications and communications systems in general, I assure you I will faithfully carry out to the very best of my ability and will also remember this as one of the outstanding days of my life. I certainly do appreciate all of the assistance my fellow officers have given me in the past and I will always live up to all of the things that they wish of me as long as I live.

PRESIDENT WAREING: I want to assure Mr. O'Neil that the entire membership has already shown its confidence in him and it will be one hundred percent behind him, because we realize that he has the biggest job of any one. I thought the editor had it but now somebody else has it working for APCO next year and I want him to feel that we are solidly behind what he does. He is an old timer; in case you don't know, he is also supervisor of Identification and a former president of the I.A.I. He represented APCO

at the Havana Conference in 1937 and also at several conferences in Washington, so I am sure we can depend on Maurice to do the best job that can be done.

At this time, I want to name the Nominating Committee which must consist of past presidents that are here: I will name Gerald Morris as chairman of the committee, Mr. Batts, Mr. O'Neil, Mr. Virden, Mr. Schuler, Mr. Hicks, Mr. Scott, Mr. Lathrop, and Mr. Murnane. Mr. Morris, will you please call your meeting so that you can report a slate of nominees tomorrow morning. I want it understood, of course, that the fact these gentlemen are on the committee does not mean that they cannot nominate from among themselves.

MR. JOYCE: I would like to suggest that the Executive Committee meet as soon as possible to appoint two alternates to assist the delegate to the Defense Board. I think we should do that sometime today.

PRESIDENT WAREING: I will call for another meeting of the Executive Committee in Room 312 after the banquet tonight.

MR. MORRIS: The Nominating Committee will meet immediately after the last session this afternoon.

MR. CURRY: The Engineering Committee will meet in Room 305 after the last afternoon session.

MR. HENNING: There will be a joint meeting of the Operating Procedure and Resolutions Committees in this room tonight after the banquet. We would like to have anyone present who cares to attend.

PRESIDENT WAREING: Senator Andrews will be our speaker at 2:00 o'clock this afternoon. We would like to have everybody here at that time promptly, to listen to Senator Andrews. We are running a little late, but we will have enough time.

Sgt. Morrow will now speak on the National Motor Vehicle Trace Program.

SECRETARY MORROW: Mr. Chairman, gentlemen, we have said a great deal during the last few weeks or months about the need for police communications and particularly for police departments to accumulate something in the way of what all armies need when they go into operation - namely, striking power. In former years it has been the history in the fire fighting services that a very forceful body in this country is solidly behind any constructive move in that service. I speak of the Fire Underwriters Board and all the powerful insurance company interests which stand behind every act or move of that fire fighting field.

During the past few years it has been my privilege to meet with city councils, county commissions and various other government bodies who have before them problems of deliberation upon the question of purchase of equipment for fire and police services. Not once but many times during that period of experience I have heard police chiefs plead with city councils for money for ammunition, for money for armaments, more cars or gasoline with which to operate cars. In those same meetings I have heard those requests turned down, not bluntly but flatly. I have heard the same chiefs ask for items of communications equipment necessary to the pro-

tection of life and property in their city or county or state and I have seen the same action take place. In those same meetings, by some strange coincidence, I have seen fire chiefs ask for pumps that cost in the neighborhood of $8500, extension ladders and other things of that sort. In some cases I have seen those requests refused. I have seen the police chiefs leave those meetings with an air of utter dejection - of having given up the sponge. Strangely, though, the fire chief when he leaves the meeting isn't dejected. He leaves with a "Thank you, Chief, that is all I wanted to know." Now what transpires after that meeting - to use a hypothetical case - the chief goes down to his office and he calls a certain man. "We have talked for a long time of the necessity of having certain equipment in our department. Surveys have been made and it has been determined that we need that equipment and the council refuses to purchase it." That is all he needs to say. Before very long someone in that city or that state hears about that in no uncertain terms from an organization known as the Fire Underwriters Board. That is striking power in the hands of the fire fighting services. It is a power that is there to back up their pleas and requests for the equipment they need to carry on the work of protecting property in those localities.

Now in the case of the police department, the chief went into that same meeting, he presented his request for equipment or something else equally vital to the protection of property and life itself. He was turned down. Where could he turn for support? Back to his own office behind that old roll-top desk and go into counsel with his shadow and trust to luck that the next time he might get somewhere. I know this has been discussed before many times by police authorities. I have discussed it with them. Gentlemen, at last we have found what I believe is a partial answer to our problem. Any man here who operates a police communications system knows that a great percentage of the work of that system is carried on in behalf of motor vehicle insurance companies. We have here to present to you at this time a plan authorized by and endorsed by those companies. Now I don't present this plan from the standpoint of offering a bribe to this organization or guaranteeing anything in the way of support from these organizations, but I would like to point out to you this one fact, that this is an opportunity for us to show these organizations that we appreciate their problems and their troubles and that we are ready to do anything and everything possible to bring about a successful conclusion of our operations in their behalf. We have called it, for want of a better name, the "National Motor Vehicle Trace Program." There are a number of these national insurance organizations, the National Auto Theft Bureau, for instance, in the San Francisco and Dallas areas; we have the Automotive Protective and Information Bureau in Chicago; down in Atlanta and in New York City we have the Automotive Underwriters Detective Bureau. Those organizations have to do directly with each and every one of your departments. Their problems are our problems and by the same token our problems should be their problems. This entire program is based on the hypothesis that we can by this particular method achieve a certain measure of standardization throughout the country in the matter of obtaining information regarding motor vehicles.

I would like to run through briefly the program exactly as presented to the executives of these various units. The plan involves cooperative action regarding automobile checks through the Automotive Underwriters Detective Bureau, the National Auto Theft Bureau, and the Automotive Protective and Information Bureau. The plan involves the following points: (a) Establishing of definite stations of responsibility for the proper origination of trace cards, for all or any motor vehicle investiga-

tions occurring within any state. (b) Removing the possibility of repetitions of requests for trace of automobile information through such establishment of responsibility. (c) Providing Standard Card Forms for originating such trace requests, and additional standard card forms for proper cancellation of such request when data desired has been received. (d) Rendering more uniform throughout the nation the methods of practice with regard to tracing out the information desired regarding any item of motor vehicle equipment, irrespective of the state in which such equipment may be seized or held. (e) Providing certain procedures which shall be complied with in all normal cases in which a motor vehicle may come into the hands of the law enforcement officials of any state with respect to holding same until the proper status of said vehicle shall have been properly established. (f) Further development of the active participation in the work of locating and establishing the true status of such motor vehicles as may now be at large in the country in the hands of illegal owners or operators. (g) Thus insuring the utmost in efficiency of all forces concerned in the work which annually involves the theft, recovery, or tracing of automotive property running into untold millions of dollars.

The proposal: (1) That in every state of the United States, there shall be designated at least one responsible department, as the State Control Unit in this plan. There may be, in certain instances, more than one such responsible department, as conditions and circumstances demand. (2) That each such responsible department shall be supplied with sufficient supplies of both the request for trace and the cancellation of trace standard card forms, which shall be of the postage prepaid type, for use in the work of establishing the service. (3) That the states of the nation shall be divided into five districts, or regions, to correspond with the same number of divisions under the present establishment of the organizations involved, i.e.: The National Auto Theft Bureau; the Automotive Protective & Information Bureau; the Automotive Underwriters Detective Bureau; and that all cards originating in each state of a division shall bear the address of the branch headquarters of that particular unit in which the state is situated. (4) The headquarters offices of the five districts, or divisions, are as follows:

National Auto Theft Bureau, San Francisco, for states of Washington, Oregon, Idaho, Montana, California, Nevada, Utah and Arizona.

For state of Texas, Dallas.

Automotive Protective and Information Bureau, Chicago. For states of Wyoming, North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Colorado, Kansas, Missouri, Oklahoma, New Mexico, Illinois, Indiana, Ohio, Michigan, Kentucky and Tennessee.

Automotive Underwriters Detective Bureau, New York City. For states of West Virginia, Pennsylvania, New York, Maine, Vermont, New Hampshire, Massachusetts, Connecticut, New Jersey, Maryland, Delaware and District of Columbia.

Atlanta - for states of Arkansas, Louisiana, Mississippi, Alabama, Georgia, North Carolina, South Carolina and Florida.

Thus, if for instance, a car is picked up by the City Police of Flint, Michigan, and it is desired that a trace for registration be made through the AP & IB at Chicago, the Flint Department will forward the information that such check is desired to the Michigan State Police at

East Lansing, where proper record of the check shall be made, and where the request for trace card will be originated. When the request car is received at the Chicago office of the AP & IB, the necessary search will be carried out and the reply will go to the Flint Department direct, with a copy of the information going to the Michigan State Police at East Lansing to clear their files of the request case.

By definitely establishing the Michigan State Police at East Lansing as the point of responsibility in the state of Michigan, we have accomplished the first point of our program. Through the prescribing and furnishing of standard card forms from the various division offices, and having provided the procedure to be used by all responsible departments, the two next succeeding items of the program will have been completed. Through a thorough understanding, upon the part of all police and other law enforcement departments of the reasons for such a plan and through the enlistment of their active cooperation and participation in the program, we shall have paved the way for a much more efficient handling of the subject of tracing cars and other motor vehicle equipment throughout the nation. All of which tends to bring the point of complete national standardization in these matters to a basis of sound operation for the best interests of all concerned.

I might say that this plan was investigated by the chief investigator for one of these organizations because of the fact that a car was held by a small department in a state adjacent to Indiana. The request for trace came by radiotelegraph. We checked and it was sent on according to the responsibility program with the result that the AP & IB office in Chicago received 23 cards requesting a trace on the motor car held by a department in an entirely different state. The attitude of these organizations is that if this is handled on a standard basis they will be able to give better service and it will relieve them from the standpoint of the personnel in the office for the better consideration of our problems. In bringing this plan we are following out the program that has been carried on during the past year by representatives of the bureau and myself with a view to asking this body to approve the idea in its presented form, such approval to go with the material on the plan, copies of the card forms in turn to be forwarded to the Executive Committee of the I.A.C.P. for their approval. These companies are ready at any time to put the plan into effect. Bear this in mind, this would not change the location of the offices to which your department now normally directs its requests for information on any motor vehicle. What it does is to draw all of these scattered points from which these requests go to these bureaus through a certain channel and we know that when we pick up a lot of pieces of string and tie them together at one end then we have a stronger unit than if we had a number of pieces of string but no juncture. We may feel this doesn't concern communications - but it does. As I said before, 65 percent or better of our traffic has to do with this particular problem, and if 65 percent of the traffic of my system in the state of Indiana and of the municipal systems affiliated with it concerns this subject, then certainly it is matter for the attention of communications officers.

I mentioned a while ago that we need striking power for the police services. I might mention here other organizations of equal importance in this nation from the standpoint of their interest in our occupations. I might mention the Surety Underwriters, the companies who write burglary insurance, holdup insurance, bank insurance, blanket bonds for banking and other organizations. It is the greatest unit of striking

power in the country available to the police services, from the standpoint of an attempt at cooperation. And speaking of cooperation, that reminds me of a story before we ask for an approval of this program.

It occurred some years ago down here in the Southland. There was a plantation owner who had a wide reputation for entertaining guests at his plantation. He had a certain gentleman of color on that plantation who was very proficient with a bull whip. One day he called Mose in and told him he wanted him to show his guests what he could do with that whip. Now on this particular day that he called him in, far up on one of the big white columns there was a fly, a common housefly. He said, "Mose, I want you to get that fly." Mose drew back the whip, - Bang! and there went the fly. One of the guests pointed to a magnolia and said, "Get that third flower," and he did. Then another pointed up into a tree and said, "Mose, you see that thing hanging up there - get that." Mose said, "Suh, a fly's a fly, a flower's a flower, but that hornets' nest am an organization!"

There is a moral in that. We are an organization. The field that we are engaged in is a field that can well boast of organizations. We have one step higher to go - from an organization to a profession, and the one way that we can achieve professional status is through effective application of certain standards. Not standards in operation alone, or standards in procedure, but in standards of application of every portion of our activity. This is one of those standards. This is one instance in which we have an opportunity to show that we desire to approach a professional service status, to be recognized by other professions in the nation. I have given you the plan, I have told you as clearly as I could part of the details. I have told you the channels it will follow and I believe that if it is the desire of the chairman at this time it is in order to entertain a motion for the approval of the program. If approved, it will be forwarded to the Executive Committee of I.A.C.P. for their approval. If there are questions, I would like to answer them if I can.

PRESIDENT WAREING: Thank you, Sgt. Morrow. Is there any discussion on this motor vehicle trace plan? What is the pleasure of the meeting in regard to this matter?

MR. MORRIS: As far as New York City is concerned, we won't be concerned so much with this because we have a special squad to handle work of that kind and they do very little over our system of communication.

MR. SCOTT: In Columbus, Georgia, we get as high as five different reports on the same stolen car. We get it from the Highway Patol summary, we get a card from the sheriff, one from the person from whom it was stolen, we get a mimeographed sheet from the Underwriters and we get a daily card from the Underwriters. One especially embarrassing situation is when I copy off the telegraph net and give it to the desk sergeant and he says, "Ha, ha, I already have it!"

MR. SEARLE: I find that the situation in general is about the same in New York. I haven't had a chance to talk to Joyce on it. We work very closely with the Automotive Underwriters Detective Bureau; they have an office up there and it works out very fine. I don't know how we could improve it. We have a similar connection with the Fire Underwriters. We have a man there who formerly was a New York City policeman and he works very closely with our people. I am inclined to believe we have about the

same thing that the plan suggests.

MR. FETCHER: In our area, of course, the AP & IB functions to do just as Frank Morrow explained. We have considerable need for a program of that sort. Many departments have very small filing systems and methods of tracing cars. I don't think in the whole area, which I believe I know about as well as anybody, that there are more than three departments that have a really adequate filing system on motor vehicles. We could use a program of that sort to very good effect in that area.

MR. HICKS: It is the same way with us. We could use something like that to great advantage.

MR. ARMSTRONG: In North Carolina we have a very complete filing system and we have had no experience of difficulty on that line. Sometimes we have three or four tracers from the same place. If there could be some system to originate and run those traces without so many duplications it would be advantageous. As far as our own motor vehicle bureau is concerned, they have a very elaborate setup which is available 24 hours a day over our radio system.

PRESIDENT WAREING: That is the point, Major Armstrong.

MR. SMITH: If we desired it and they wanted it, the Theft Bureau might be the control point. I remember one case where one of our patrolmen took it upon himself to wire direct to the A.U.D.B. office, and at the same time he had informed our radio stations and they had in turn handled the same information through the Theft Bureau and as a result Atlanta got the request from two points. Personally, I am in favor of the plan.

SECRETARY MORROW: I think there may be a misconception on this one thing. This is to do exactly what the Major suggests - straighten out the matter of tracing - not change the departmental operations. It would not change the present point of obtaining tracer information, merely reduce the cases of getting a dozen or fifteen requests on one car, and definitely insure that information going through the proper departmental channels to a point where it can be obtained as quickly as possible and returned as quickly as possible. The whole thing involves merely a straightening out of that entanglement of requests for information. It would have nothing whatever to do with your departmental operations or your present status, and I speak particularly regarding New York City and the State of New York or any of the states in the Teletype Net. We realize that they have elaborate systems and the plan in no way has any idea of disturbing that setup. In fact, where it is not necessary to apply it would not be applied. From Ohio west we have had no end of difficulty with the present system. The plan was suggested by the AP & IB itself and we told them we would try to work it out with them. It has nothing to do with your method of operation within the department. I think that once it were in operation you would find that it would help to increase the efficiency of our service and that is all.

MR. WHERRITT: I think Frank has just about covered the situation. I think it is highly desirable. I know the situation from Ohio west is bad. There are numerous traces originated in Missouri from various sources because of the lack of education in the smaller departments on the matter of how to trace. I think this will iron out a lot of that.

MR. SEARLE: I'm afraid I got up on the wrong foot. Somebody

thinks I am opposing this thing. I was trying to show that we have worked with not only the Automotive Underwriters Detective Bureau for a number of years, but also the Fire Underwriters. Of course, over a period of years the manner in which we work has been improved and developed and both of those organizations are very worthy organizations and our contacts are so good - if I may be permitted to mention the Washington hearing again - when I was there I named those two organizations, saying that if Noble could produce an organization as worthy as those it would be a pleasure to work with them. Far from opposing this plan, I think it would be a swell idea. It is simply nothing new in the East; we have been doing practically the same thing for a number of years. I don't oppose it. I just wanted to tell you what we have.

PRESIDENT WAREING: We have all used the information for years but the idea is to get a program so that we don't have a lot of requests for the same information.

MR. MORRIS: To draw this to a conclusion, is it the purpose of this presentation and for the association to indicate to the I.A.C.P. in convention in the near future that this is a problem that not we should pass on but that they should lend their support to because of the fact that so and so is the case as brought out here by several of our members? There is a lack of efficiency and a lot of lost motion and to eliminate this and increase the efficiency of the different police departments they, as chiefs of those departments, should lend their full support to this. That brings it right home to each and every department and as it is presented here and from the little reaction we get I think it is beyond us. If Frank Morrow will just tell us in so many words what he thinks we should do. I don't see how we can pass a motion to approve this plan, but we can do something about getting it before the I.A.C.P.

SECRETARY MORROW: This is the gist of your remarks and will clarify the thing; in any department the one place to recognize inefficiency from the standpoint of handling of information is in the communications division. We recognize there is a difficulty as we operate now in this connection and recognizing that inefficiency this thing has been worked out. This proposal has been worked out from the standpoint of what the bureaus can do and will do or would do under the circumstances; it has been worked out from the standpoint of what is feasible from a communications standpoint and from our own opinion it is an answer to that particular problem and we herewith present it to the I.A.C.P. for their official action.

MR. SMITH: If it is in order, I move that action be now taken.

Second to motion by Mr. Kadow.

MR. ALLEN: I haven't said anything up to now mainly because we adjoin the City of New York and we work very closely with them. We have a large county, almost half a million people and we have worked with the Underwriters for about 15 years. The system of handling this information has been carried on from year to year and we probably don't realize some of the problems that you have elsewhere. We find the relations very cordial and I think anything along this line that can be done should be done.

PRESIDENT WAREING: I call for a vote on the submission of this recommendation made by Sgt. Morrow to the I.A.C.P. for their consideration and action.

Motion carried.

Upon motion by Mr. Searle, second by Mr. Schroeder, the meeting adjourned.

WEDNESDAY AFTERNOON SESSION

The sixth session of the Seventh Annual Conference of Associated Police Communication Officers, Inc. was called to order by President Wareing at 2:35 p.m.

PRESIDENT WAREING: We are indeed honored this afternoon by the presence of the Honorable Charles Andrews, United States Senator from Florida. Senator Andrews is from Orlando, he is the senior senator from this state and is a member of the Naval Affairs Committee. He will address us at this time on "International Police Communication and Hemisphere Defense", a subject in which all police communication officers throughout the country are very much interested. We are indeed fortunate to have him with us at this session, and I take pleasure in introducing Senator Charles Andrews.

SENATOR ANDREWS: Thank you, Mr. Chairman. First, I want to say that while I am not the official "greeter" of the City of Orlando, the City Beautiful, this is my home, I love it, and in that capacity I want to greet you and I trust that you will have a most profitable and enjoyable convention and stay here in the heart of Florida. My people came to Florida over a hundred years ago. We have become used to it. They came here with Andrew Jackson; six generations of us have lived and are living and have died here among the palm trees and the orange groves. None of them have left and nearly a thousand of us are now in the State of Florida. You can see why I was elected last May.

I am in very deep sympathy with what your organization is trying to do. It is one of the most useful organizations that has been devised. I have not known intimately about your duties but have known of them in a general way. For several years I was a judge of the circuit court of this district. I was with the Supreme Court and I was once, in my younger days, judge of the criminal court of record, where I dealt only with criminals and the juries, of course. Some of them are not criminals, but not often. I have sentenced many, many men to the penitentiary and to the county jail and unfortunately to the electric chair. Therefore, I understand something about the work that you have to do because I have heard thousands of deputy sheriffs and marshals and deputy marshals testify before a jury of twelve to determine the destiny of some man or woman who had been charged with a criminal offense. Your association, if I understand it, is interested in and your main work is the communications divisions of the method devised for the detecting and reporting on the criminal situation. Perhaps I could put that in better language if I had time. If I don't state it exactly you will pardon me, I am sure. Your objective is that we shall have a better country in which to live and raise our children. That is a high ideal. You know, we have been charged with the most criminally infested nation on earth. We have more murders, holdups, more child-snatching, more kidnapping, than any other nation. We are one of the highest civilized nations on earth. It looks sometimes as though we wouldn't have very much difficulty with the intelligence we have in America, the promise we make to our immigrants and to our children that they shall be schooled in the ways of democracy, and yet I know and you know that the ways of crime among juveniles from sixteen to twenty-one is a disgrace to our whole nation. I am wondering whose fault it

is. I wish you would study on that subject. I have been studying it, I have been talking it with the F.B.I., Mr. Nichols and Mr. Hoover. I have figures showing that fifty percent of the holdups, larcenys, particularly of automobiles, the serious crimes that involve moral turpitude, fifty percent are committeed by minors, boys under twenty-one years of age. Such a thing, my friends, did not exist thirty years ago. If a boy seventeen, eighteen, or nineteen years of age was in a holdup, robbed a bank or store or filling station in those days, it was news that flashed all over the United States. It was something very unusual. Those crimes were committed only by the back room, gambling, barroom "toughs." It isn't true any more. They are not the only ones. We have got to save that situation because if we are not existing now, those of us who are older, who are efficient and who have children of our own, if we are not existing for the purpose of preparing this country for the next generation, for a better country of greater opportunities, then we haven't much excuse for living at all. Did you ever think about that? It is the objective - to make people happier, have a better government, a better community, a better state, a better county, a better nation, in which to live and bring up future generations of this country. I do not expect to stop with theorizing and just getting figures on the subject. I expect to devote the next six years of my stay in the United States Senate to trying to help remedy that terrible situation.

We should not rise up and try to smite every person whom we might assume belongs to the Fifth Column. We don't want vigilance committees in our various communities. We believe that you men out here before me and men trying to do the same thing can handle that situation. You can handle it if every true bred and born, red-blooded American will always act as a sentinel at the post and won't be afraid to advise you. They can help you perfect and carry out your job one hundred percent. It is up to the average American citizen just as much as to you and your service, just as it is to the chief of police of Orlando and other cities, the high sheriff and the deputies, and the U. S. Marshal and his deputies. It is up to all citizens to see that the laws of this country are obeyed. We want the school boys and girls coming up to be not only willing but loving to salute our flag at all times.

I belong to the Immigration Committee as well as the Naval Affairs Committee. We have had many bills come before the Naval Affairs Committee and many before the Immigration Committee. I wish we had time to tell you how we laid a plan for the progressive system of arming this nation in the air, on the sea and under the sea. We proposed in our system that we have inaugurated the finest navy on the sea, under the sea and in the air that was ever devised by the ingenuity of man. We can do it. We have the people to do it. They have their hearts in it. We have to build up the manhood to handle those machines of war. Our international situation is growing so much more fatal here in the Western Hemisphere. There never was a time in our history when the other twenty Latin American Republics here in the Western Hemisphere were more in sympathy with the freedom of man than they are today. Say what you please, but those republics here south of us - and I am well acquainted with them. In Florida we are well acquainted with the Spanish Latin American people; Florida belonged to them up to 1819 and this state of Florida was settled nearly two hundred years before that - two centuries. Florida used to be called the Alsace-Lorraine of the Western Hemisphere. It has been under five flags. The fine Latin Americans, the Spanish people that were here when Florida was bought from Spain are still here - in Tampa, Pensacola, and other cities. They are among our finest Americans, they are good citizens. Many of the names of these Spanish people

are written in the histories of noted men of this nation. If I had time I would like to call their names. But the time has come now when Europe and even Asia is in the most terrible turmoil that has been seen since the advent of history. We do not know what will be the outcome of the present conflict in Europe. We do know that the things advocated by the dictators of Germany and Russia, and we might say Italy, those things which they advocate run directly opposed to the things you and I hold most dear. They do not believe in the Bill of Rights. They don't know anything about freedom of press over there; they aren't allowed to. Here in America the high school boys and everybody else know everything of importance that occurs - and not simply what somebody wants them to know. What an opportunity! We don't go into anything blindly in America. The Bill of Rights has been a part of our Constitution since the first Congress met in the United States. Those provisions of the Bill of Rights are so dear to us and we have lived under them so long that we as Americans can't surrender them. If we do we will actually lose our own souls and it can't be done. We are going to be prepared for any eventuality.

I am deeply thankful for the work that you men are doing throughout the United States. I understand that several states are represented. I met several since I came a few minutes ago. I am sorry that I didn't have an address prepared for you, but my duties are very heavy and I am happy to speak to you extemporaneously and straight from the shoulder. This thought I want to leave with you. Let's do all we can to eliminate crime and greed from the homes of the American people. Let's watch out for the Fifth Column. Let's not have our brave men who are working in these dangerous munitions factories blown into eternity without a minute's warning. Let's do our best along that line. As I said, I belong to the Immigrations Committee. We are perfecting a measure that is going to eliminate those people who desire to come to this blessed free country of ours to work out their destinies - this country has held out open arms to those who come here and become Americans, and not "German-Americans" or some other kind of Americans. Let them understand we haven't any room for people who come over here to try to disrupt by force or subterfuge at the dictation of anybody from anywhere. We will take dictation, but it won't be from those people who are trying to do it now. There is only one dictator we know of in this Christian land of ours and that is God. We have tried to follow the teachings of the Ten Commandments and the Sermon on the Mount. You will find it written in the Constitution. You will find it written in the Declaration of Independence. You will find it written in every law of this land.

I was on the Committee recently that undertook to report a bill out, but I happened to be one of the minority, nine to five, which would deport a man that has caused more trouble than any other man since Arnold. I refer to Harry Bridges. I wanted to put him out and let him go where he belongs. Along that line, if there is anybody else, if there are other people who have come from those countries that are not satisfied with our system, our Bill of Rights, and our belief in the teachings of the Holy Scriptures, and they are not satisfied, invite them to go to their own crowd outside the United States and leave us alone and we will leave them alone. If we will do that there won't be a yellow streak in the United States. We have enough Americans - and by the way, we were all immigrants at one time. My forebears came here long before the Revolutionary War. I perhaps feel this a little deeper maybe than some others who have come here later, but the parents of some of the best citizens I know of came here from other countries. I have seen that demonstrated. They love this country. They have been educated here. Some have come that were educated in other countries - they would

give their lives for this country. For example, Count Tolstoy's grandson - I know you are familiar with the background of that man, the many books Count Tolstoy wrote. His grandson said, "I am not well versed in the background, the sentiment, the traditions, of the American people, but I have lived here among you, have been educated here and I am ready to be laid on the altar at any time." He volunteered his services. We have a lot of people of that kind. Let's not condemn people because of the name they may bear. Let's not do that, because if you will go back in history you can find that the forebears of some of those people were on the front line at Valley Forge and Yorktown and Bunker Hill, so let's not be too hasty. We ought to be careful. I have almost come to the conclusion that on the viewpoint of the individual depends the perpetuation of the American system.

I have had the pleasure of talking to the people of the United States recently on a national hook-up on the Latin American situation - how we can defend ourselves. The Latin American Republics, my friends, did the same thing that we did. They fought for their liberty - they won it. They fought for their liberty on the same principles that we have. They came here with the cross in one hand and the Ten Commandments in the other because they are Christian people. All these Latin American Republics were founded by Christian people, mostly Catholics. They fought for their freedom the same as we did and they are not going to give it up. They are just as determined as we are. They met with us at Panama and at Havana last spring. Their declaration is well know. Let's create a better relation between the Latin American countries and the people of the United States. We have been too willing in the United States to sell them something but not willing enough to buy something from them. In order to have a good trade relation, you must be willing to buy what the other man has to sell as well as sell him what you have. We should get our tin and manganese from them. Manufacturing can't go on; for these delicate instruments, these warfare machines that we have devised, manufacturers must have tin and manganese and various other minerals and products to go into them. Right here in South America there is plenty of tin and manganese and let's let these people know that we want it and are going to help develop their mines so that we won't have to go over to the East Indies, which may be cut off. Let's develop our own country, the Western Hemisphere.

Perhaps you heard this over the radio the other night; one man said the Western Hemisphere is bounded on the east by the Atlantic, on the north by the Arctic, on the west by the Pacific, and on the south by Cape Horn. Another said, "That may be the boundaries, but here is the sentiment: our Hemisphere is bounded on the east by the splendor of the rising sun, on the north by the Aurora Borealis, on the south by the Southern Cross, and on the west by the glory of the sunset rays!

Let's keep it that way. We are not going to surrender the Western Hemisphere to anybody anywhere!

PRESIDENT MAREING: I speak for every delegate to this conference when I say thank you very much for being with us and for addressing us this afternoon. I am sure that we have all been inspired by your ideals and our outlook has been widened by having the benefit of your viewpoint. Thank you again, Senator Andrews.

At this time I would like to call on Ted Lowe of the Illinois State Police for a few remarks on what transpired in Washington recently. Immediately after that we will go into the General Electric dem-

onstration of FM and AM. I think you know that Ted just came back from Washington a week or two ago where he attended the National Defense Conference. I am sure we will all be glad to hear what is going on down there.

MR. LOWE: Thank you, Mr. President. I am somewhat at a disadvantage, following such a distinguished speaker, but I believe I have a few words of caution and advice which I can pass on to you who weren't so fortunate. I was invited, as a guest of the I.A.C.P., to attend this meeting in Washington on defense. There were several plans outlined by states who were represented there. One of the most important, I believe, was that of New York state, and after hearing their excellent setup for defense, which took into consideration everything from the sky down, at the conclusion we were horrified to find they had made no provision for emergency power plants. It had escaped their entire attention, I am sure. At this time I want to say that every police department, every communication facility, is no better than its power supply. It is urgent that each of you consider that it is highly essential and vital that you have emergency power supplies. The lesson learned from across the water indicates without doubt that we may expect an interruption in such services as power and light in case of trouble. Let us not be blindly let into the picture by overlooking this all important point.

Captain Leonard, who addressed you here yesterday, is well acquainted with our problem and he has represented you and me to the I.A.C.P., and has placed his best foot forward in our behalf. We are indeed fortunate in having a good friend like Captain Leonard. Three years ago I didn't feel quite so sure of Captain Leonard. Knowing him as I do now, I feel confident he will never let us down.

In the matter of national defense, the past six years have been vitally important and the results thereof to the national defense machinery are in themselves a great tribute to the extreme far-sightedness of our President and his administration. It is true we are getting a slow start and it takes time to get started up hill, but I feel certain that we will make the grade. During this same six years of progress, the art of crime detection has also marched forward at increased tempo and resulting satisfaction to the public at large. There have sprung into existence thousands of millions of private telephone and teletype lines, countless numbers of radio stations and the existence of a quasi semi-mutual telegraph network, all of these to assist your chief of police in his expanding duties. These have been a result of necessity, for there is no other force which welds widely scattered individuals like the ability to communicate quickly and efficiently with one another, as well as the ability to travel rapidly. These communication facilities as we know them have been developed to a high degree, and in doing so have developed to a high degree a common interest and understanding for the police from one coast to the other. Without doubt our communications form the greatest single unifying agent of modern life and the chief of all accomplishments for the advancement of civilization, as well as protection of civilization. The entire fabric is erected on the doings of efficient communication.

However important those communications may be to the nation in time of peace, I am sure we all agree they are quite vital in time of war and our very existence in this nation may well hang in the balance on the ability to mobilize efficiently and with intelligence our industrial as well as combatant units. An essential condition for maintaining law and order in a community is that there should exist facilities for rapid trans-

mission of news and interchange of information. It is indeed questionable whether this state of affairs can be said to actually exist at the present time, for the all too few channels of communication in active operation are unequal to our ever increasing demands. We need more frequencies! It must be realized that a system of police communication and radio stations entirely free from military control and connecting outlying parts of our country is highly important; perhaps even more valuable immediately preceding hostilities than later, for it is of very great importance in this stage for the police to be able to function as a united group. Communication companies could not have been expected in the past or present to attempt the establishment of such a network of points so widely scattered, and where the volume of business does not justify the expense. It has been necessary for us of the police to undertake this duty. We have done it in a way, with such funds as were at hand, and with equipment which has been available. The adoption of radiophone and telegraph by the police of this nation has contributed to an economy of time. Every such economy indicates a greater strategic efficiency. In order to strengthen the police position, many of the states have erected additional stations, provided emergency power plants and made other improvements in their radio networks. It is vital now that this continue in a larger measure, not only for Illinois but for all of our states.

The domestic policy of the United States includes the support of the lawful authority, directions, and decisions of the duly elected chief executive. Acting as President of the United States and Commander-in-Chief of the armed forces, he is responsible for upholding the Constitution of the United States, protection of the states and established institutions of government, the suppression of insurrection and rebellion; to guard the continental possessions of the United States and to render full and loyal support to law and order and the integrity of democracy and the responsibility of the citizenship, as directed by the provisions of the Constitution. If the emergency warrants, the Chief Executive, our President, is empowered to employ federal forces for the administration of our democracy. We are a definite part of that democracy. There is a definite part of that program for us to shoulder. Now it is true that any sovereign state has a right to subscribe to any policy to which it sees fit; with us it is a right that can be easily abused. That is true in any of our police communication problems and we should approach them with great care and caution. There is no lack of policy, for we have one for almost every conceivable subject, but to create a policy is one thing - to support it and sustain it is something else. We have decided definite policies in APCO from time to time and many have dropped by the wayside. The time is here, and it is here now for us to definitely decide a policy and see it completely through. The time has arrived when we can't quibble and switch around from one thing to another and expect ourselves to stand as a united force.

The present lack of complete coordination and cooperation among many of our police departments may be definitely laid at the feet of the government, in their refusal to adopt a sound policy, and to us to carry out that policy and extend it into full ripeness. There is a dual responsibility and we are part of that responsibility. National defense policies together with the material and permanent requirements incident thereto should never be permitted to degenerate to the level of the ordinary political football which is normally kicked around at will by the politicians. The internal national defense requirements can no longer be ignored on the basis of alleged political expediency. The time to act is now. The support of the internal defense policy must be both consistent and continu-

ous. Spasmodic support, either external or internal, that runs from one extreme to another is dangerous, costly and stupid: dangerous in that it affords opportunity for subversive activity; costly in that last minute hysterical demand for the sudden creation of adequate defense communications, which normally take years to build and learn to use, can only lead to inefficiency in construction and operation and more certainly the acceptance of inferior and unapproved designs hastily conceived to meet the demands of the moment; stupid in that it departs from even the most elementary requirements of an efficient administration. The police communication policy has been a dangerously neglected national defense situation with particular emphasis on the failure of the government to provide adequate radio channels and uniform control over the police communications field under a separate body other than the present authority. Don't misunderstand me. The Federal Communications Commission has been our friend, but they can only go so far. Their hands have been tied very securely. It is high time that this organization and every one of us realize that we must go forward in a united front in our requests and our demands for our rights in adequate facilities. We have talked about it, but we have never done anything about it. We can't postpone it any longer. I feel, personally, that a serious error may be corrected by the issuing of station licenses only to one body rather than to individual municipal, county, or state departments. The right to such facilities should be through a responsible group and group control rather than to scattered individuals. We have faced this problem for many years. We are up against it fairly and squarely and we must have united action. Think it over - see what conclusions you arrive at.

Now in closing, I just want to call to your attention a little item which I saw in the paper that fits our problem very completely. I am going to quote it with slight variations:

> "Concerning the question of your duty as police communication officers, there is only one answer, even though it may be explained in various ways; to first seek from the living God His guidance and the determination to reveal truths as against untruths, to unmask dishonesty and implant honesty, to restrain anger and emotion, substituting therefor the thoughtful process of reason, a readiness to understand, and a tolerant attitude of others, and to be helpful one to another."

It is not a question of unselfish giving which needs new stress with us. There are quite a few who should get busy and support your Bulletin by items of interest as well as other helpful work. It is not the gifts of money that generate the human spirit but the gifts of time, energy and self. These gifts mean sharing with one's fellow man the gold of an honest heart, knowing it is encased in a soul which seeks to find fulfillment now - not when it is too late. You have had the support of manufacturers from coast to coast. They have contributed a great deal to our present success, both financially and in other ways. Don't let them down. They expect great things from us and I feel that they have a right to expect those things. They have gone along hand and glove with us; they have shared our heartaches and our headaches. Let's don't make any move here in this convention which will leave them with the feeling that we have failed to do our part.

Last year I came to Kansas City with 19 representatives from the Illinois State Police. Unfortunately, such a large delegation from one state was misunderstood. It appeared to some that the "steam-roller" from Illinois was on route. It was deeply disappointing to find that I was misunderstood. I want no part of APCO for my personal or private use. Those gentlemen were brought down to instill a little fun into our program and to support it and our policies. They were not so accepted; I am sorry. Those 18 other gentlemen are no longer members of this organization. I don't know why but we will not go into that at this time. If it is our desire for the complete support of this organization then it must include everyone, and those people who are part of it must forget selfish interests and serve for the good of one and all - and all for the organization.

PRESIDENT WAREING: Thank you, Mr. Lowe. I don't believe we had better open the meeting for discussion but go right into the General Electric demonstration. I will call on Mr. DuVal of the General Electric Company to present his picture of frequency modulation versus amplitude modulation.

MR. DuVAL: First, I would like to tell you of some of the field tests made with FM in Schenectady and Albany, a portion of which were witnessed by engineers from the Federal Communications Commission. Two of them spent two days in Schenectady doing everything they could to test the difference between AM and FM. On those tests and other information from other research departments would depend whether the Commission would license FM for general experimental use. It was up to the field tests and experimentors to prove its worth. I would like to take a moment to tell you what the tests were. The first test was to determine whether an existing AM ultra-high frequency station would be interferred with more by another AM station or by an FM station. So for the purpose of that test a transmitter was installed in the state office building in Albany and one on the top of the International building inSchenectady. Both stations were capable of being operated at the same carrier level with either FM or AM. This means that for our tests we were giving a slight edge to AM because FM has a continuous carrier level whereas in amplitude modulation you vary power output of the transmitter until the peak power output is four times normal carrier level, so that means that we were leaning over a little toward AM in our tests. Testing two AM stations, only 14 miles apart air line, we found that half way between Albany and Schenectady ended the useful service area of the 150-watt station at Albany. The service area of the Schenectady 50-watt station was about half a mile. There was heterodyne between the two stations right up to the base of the antenna. You can actually understand through the heterodyne about a half mile, beyond that no service area. The station in Albany was changed to FM. Heterodyne disappeared. The service range of the 50-watt station covered the city of Schenectady out to the city limits. With two FM stations on the same frequency, Albany and Schenectady, the service range was exactly the ratio of the power and antenna heights and the interference zones between stations was extremely short distance, during which it was almost impossible to hear both stations. By moving the automobile a few inches you could go from one to the other. In fact, we parked the automobile and were able to pick up either Schenectady or Albany by moving the top of the antenna a few inches.

The next problem was to determine the amount of interference an FM station would give to an existing AM station on an adjacent channel. With the AM station as the desired signal, FM did not create any

more adjacent channel interference than AM by actual measurement. It did create a little more interference but the representatives of the Commission said that since they could not detect any difference by ear, for practical purposes they would assume it did not create any more interference. Measurements were taken two channels away, with the AM as the desired signal and FM as the interference and in that instance there was no difference between the two.

Of course I can't run you back and forth in an automobile and show the comparison between AM and FM but I have here four record players, two of which are built on AM and two on FM. There are several claims made for FM and I would just like to show what those comparisons are.

(Demonstration and comparison of FM and AM)

Now as to the matter of interference between stations, this may not apply to departments operating in the middle west where police departments are few and far between or where the area of coverage is extremely large, but in the coast region where there is a police department every few miles the interference between the stations is an important problem.

There was one other test we ran that happened to be witnessed by Mr. Schnell of the Chicago Police Department. We were running a little mobile transmitter fixed to communicate both on AM and FM so that we would have the same power output on both. When the AM signal was away down in the noise level due to the ignition noise received from trucks going up the western Gateway Bridge, it was impossible to understand anything that was being said by the car. On FM when it reached its limit of communication the voltage peak of the audio could be half the voltage peak of the interferring ignition noise and you could still understand what the fellow was saying. Now that is because of the type of interference and the operation of the receiver. If that noise were a continuous level and not ignition variety that peaks very rapidly, that particular comparison would not be possible. It is a fact that the receiver is controlled by the transmitter until a stronger signal comes along and takes control of the receiver, but that control from the ignition noise is so short that it is still possible to understand through the noise.

Now some of the deadspots that occur in existing UHF systems are due to the setting of the squelch. Normally the squelch is set so that it doesn't open up in the worse conditions in your communication area. There are some places in every UHF area where the peak noise level will exceed the signal level. Now with FM adding a limiter so that it doesn't respond to AM signals, the noise reduction in the receiver will allow you to use a much lower signal strength in the receiver, hence some so-called dead spots can be eliminated. Of course, there is no remedy for a real dead spot except more power or change in location,but where the dead spot occurs because of peak noise, then of course, FM can possibly cure that.

Now the General Electric Company has no ax to grind as far as AM and FM are concerned. Our original proposition was to investigate FM and prove it was no good. The first analysis seems to show there were possibilities, so $5,000 was appropriated to see what could be done, mainly for the government service, but from that $5,000 appropriation has come quite a few applications for FM. We don't think it is a cure-all but we do believe that under certain conditions it will give you increased range, will give you a greater intelligible area because of the absence of noise. Not

the strict absence of noise under all conditions, but the reduction of noise. It will reduce the possibility of dead spots in service areas and, of course, tube costs are cheaper because you can get the same carrier level with less expensive tubes. Of course, the reduction in noise is probably the most advantageous feature of FM, even if it did not give you one foot of increased range.

MR. GRONIER: Have you come to any conclusions regarding sky wave interference?

MR. DuVAL: I don't believe anyone can tell you absolutely about sky wave interference. There hasn't been enough operation. I believe personally if you have a communications system and you get a sky wave interference twice the strength of your own signal you will have complete wiping out of your signal, but it takes a much weaker signal to wipe out your AM communication than a two to one signal; you get a heterodyne on AM that might prevent your understanding the communication.

MR. LATHROP: Do you have a type of interference such as heterodyne under any conditions of FM?

MR. DuVAL: No, you do not get heterodyne interference.

MR. FETCHER: We have terrific interference from Los Angeles County; it wipes out our signal entirely at times. I know, however, on occasions the cars have heard the whistle and they knew our station had gone on and they asked us to repeat. That might be an advantage of FM.

MR. DuVAL: Of course, if you were monitoring your own frequency - I would hardly sacrifice the advantages of FM for the price of a receiver to monitor your own station.

MR. FETCHER: We all operate on the same frequency.

QUESTION: What effect does selective fading have on FM?

MR. DuVAL: You do not get selective fading to a noticeable extent on ground wave. If you are operating rather long distances in state work, you have a chance of it. Your signal strength is sometimes down to a few microvolts and goes up to as high as 100 to 120 microvolts but I have never noticed any selective fading at all in ground wave. That is one thing I have heard against FM for long distances where you use sky wave but it will not disrupt completely. We have always known that frequency modulation had possibilities but we didn't know how to receive it.

MR. MORRIS: Is the opening of the ultra-high frequencies responsible for that?

MR. DuVAL: Well, the main reason is that on the UHF you have space. You can have FM on the lower frequencies if someone could give you room to do it - band widths plus or minus 15 kilocycles. That maintains the five to one deviation ratio which is not the optimum ratio but is a good practical one.

QUESTION: Is it adequate?

MR. DuVAL: Yes for speech and also for broadcasting. The deviation ratio curve is a very steep line.

PRESIDENT WAREING: Mr. DuVal, we are very glad to have you with us and we very much appreciate the equipment you brought down with you. As you know, we are all interested in FM but we can't spend all our time on it. I would like to call on Mr. Henry F. Tyson, of the United States Secret Service at Miami, Florida.

MR. TYSON: Mr. Chairman, members and guests of the Associated Police Communication Officers, it is indeed a happy privilege to be here as a representative of one of the oldest investigative agencies in the government, the United States Secret Service. I left Miami on extremely short notice and I am not prepared to deliver an address. If everything had worked out as planned, Mr. George Boos, Supervising Agent of the United States Secret Service at Detroit, would have been here to speak to you this afternoon on the work of the United States Secret Service. However, Captain Don Leonard, of the Michigan State Police, told me upon his arrival that Mr. Boos had to cancel this speaking engagement on account of some emergency, and unfortunately for you I was substituted. In this I am reminded of an election in New York City a few years ago when Mayor LaGuardia was running for election. I can't recall his opponent at this time, but in one of his campaign speeches the Mayor left the prepared text and looking up at the vast audience he said with a hurt expression on his countenance, "I think I am entitled to better opposition," so I feel that this distinguished group is entitled to a better speaker than I.

I have been very happy to meet some of my very old friends at this convention. Some of them I haven't seen for a number of years. George Searle, Deputy Chief Inspector of the New York State Police, and I started our police careers nearly 20 years ago in that now famous organization. Captain Dave Simmons, Commanding Officer of the Georgia State Highway Patrol, while a sergeant in the Valdosta Department rendered very valuable assistance to me in important investigations in south Georgia while I was attached to the Atlanta office of the Secret Service. It is very gratifying to see the success that has come to these two men.

Contrary to the belief of some, there is only one United States Secret Service. This service is a branch of the Treasury Department which was created by act of Congress more than 75 years ago. Its duties include the protection of the President of the United States, members of his family, suppression of counterfeiting of coins and currency and other obligations of the Government; it also investigates the forgeries of indorsements on Government checks. For administrative purposes, the United States is divided into fifteen Secret Service Districts, each headed by a supervising agent. This happens to be the sixth Secret Service district with John C. March supervising agent, headquarters in Atlanta, Georgia. We have as our chief, dynamic efficient Frank J. Wilson, nemesis of many a criminal, who has the high regard of every member of the Secret Service personnel and his many friends.

Within the past few years, under the intelligent direction of Chief Wilson and with the cooperation of the police and law enforcement agencies throughout the country, the Secret Service has been successful in reducing the amount of counterfeit money in circulation from $130,000 each month to less than $7,000 each month. A few years ago there circulated in New York City counterfeit money with a representated value of $60,000 each month. That figure has now been reduced to less than $2,000. Largely responsible for this showing is Chief Wilson's plan started a few years ago of educating the people of the country by circulars, booklets, and

motion pictures on the subject "Know Your Money." Over a period of less than three years, the country has become currency conscious. A year ago we started to show a 16 millimeter sound film narrated by Lowell Thomas, and to date more than four and a half million people have viewed this picture. I expect to have the opportunity of showing that picture this evening to this group with their wives and friends, and I am quite sure you will be interested in it.

I regret not having a topic more in line with the fine program that I have enjoyed here. I have heard so much about FM and AM and CW that I spent most of the night dreaming about it. Recently I was successful in convincing the F.C.C. that I am a citizen of the United States and they instructed my friend Arthur Fish, Chief of the F.C.C. in Florida, to renew my radiotelephone license. My official car is equipped with a Philco variable police receiver, installed by my good friend Lt. Ben Demby, the "daddy" of the Miami police radio station. Ben, characteristic of the Miami police and the other law enforcement agencies in Florida, bends over backward trying to be helpful, and we certainly appreciate this spirit of good will.

In closing, I will say that I am sure I speak the sentiment of Chief Frank J. Wilson of the Secret Service when I urge each and every one of you to call on or write to the nearest Secret Service office in your locality if at any time you feel we can be of service to you. It has been a pleasure to meet the members of this organization and to renew acquaintances with my old friends. Thank you.

PRESIDENT WAREING: Thank you, Mr. Tyson. We will hear more from you later this evening.

MR. MONKS: I don't know whether you know this but I like to brag about it - on December 2, 1927, we had a little tin can hooked up at police headquarters and a little bow and arrow on the back of a car and another tin can inside the car. I believe Mr. Finch was there and we had a warrant to apprehend two chaps who had killed a policeman in Chicago. A man by the name of Cunningham received that call and in fourteen minutes we went to the rooming house and apprehended those two men. I believe that is the first unofficial police arrest made on a radio broadcast. I have been interested in seeing that your instruments have been improved and perfected. In my 32 years of police experience I know of nothing that has facilitated and expedited matters any more than two-way radio. I have a young chap back home and I hope that he and I will be with you next year. In the meantime, I will see that he has a year's experience so that he can get by my good ear and interpret this AM and FM, etc. There was a gentleman visiting me and after I had showed him our radio he told me he didn't believe we could hear it from the third cellar. In the meantime we happened to see a chap across the street that we had invited to leave town. I picked up the microphone and called headquarters and told them that the individual was there and to grab him. Shortly three radio cars pulled in and grabbed him. He could not comprehend why this piece of electricity, boxed up in a little form, as he put it, could get 30 feet under the ground and still talk to police headquarters. Of course I could hardly believe it myself. I am sorry for the fellows out in the west that have difficulties. If I can ever be in a position to be of service to you, please do not hesitate to call on me.

PRESIDENT WAREING: Thank you, Chief. We have a representative Superintendent of a State Highway Patrol with us. I would like for Major Armstrong from North Carolina to say hello.

MAJOR ARMSTRONG: Thank you, Mr. Chairman. This is the first occasion that I have had a chance to meet with you. In fact, I missed the first day of this meeting, and I am like the Chief from Passaic, I don't get much out of it. I have to depend on Mr. Smith. Very fortunately, we are blessed with a good chief engineer and he finds out these things and I ask him what we need and can we get it and whatever he recommends we try to get for him. It has been a pleasure to be here and I hope that in the future we can both attend all the meetings that are held.

PRESIDENT WAREING: Thank you, Major Armstrong. We will now hear from the Chairman of the Constitution Revision Committee, Mr. Lathrop.

MR. LATHROP: Gentlemen, our committee has been working on this constitution revision proposition. We find that the constitution has been amended at various times in the past but those amendments have not been made available to the membership and actually we fear that some of them have been lost. We have had to take some of these amendments that we knew existed and write them up to get the content and try to get our constitution in order. There are some features of our constitution that should be changed. One is the part to make provision for state chapters and the issuance of chapter charters; another is the membership qualifications. Now the state chapter charters were taken care of at Houston, but we had not included it in the constitution. We are bringing it up to date and editing it so that it can be published. The constitution printed in the Bulletin is the old original constitution that was drawn up in St. Louis when the organization was started, and it contains none of the amendments which have been made to that constitution.

Our membership qualifications, as you remember, were associate and regular memberships and that included everybody that was interested in communications, including the janitor in a police organization. All he had to do was be interested and answer the telephone or something. We feel that we want to continue to keep a broad interest in communications that includes all members of any law enforcement agency, be it a police department, F.B.I., Secret Service, Forestry Department, any department which enforces laws in this country. Forestry Departments, Conservation Agents, Game Wardens, etc. which are using radio are not exactly under the police, nevertheless they have vital communication systems and in times of emergency we may have to rely on some of those services to help out. So we are changing the qualifications of our membership so that the active membership will be supervisory heads or chief operators of communications systems. Then the associate membership will include men who are paid a salary by a governmental division or political subdivision thereof, but who are not chief operators or supervisors. Then we have a third class of membership which is cooperative membership. By these cooperative members we mean those men of departments who may not necessarily be mixed up in communications but who are interested in communications. That would also include city officials, Government officials, or anyone who has a bona fide interest in police communications other than commercial members. We have a separate group for that class, which is the commercial membership. That will be subdivided into two classes, company memberships and individual representatives of companies.

There is some change in dues. The dues for the chapters and the dues for the national organization must be adjusted so that the men in the remote states can belong to their chapters and not pay any greater proportion of dues by virtue of their membership in these chapters than we have paid in the past as members of the national organization. The figures for

that the dues will not be any higher in a state chapter than they are in the national chapter and the men belonging to the state chapters will automatically be members of the national chapter. There are some questions about handling national policies of this organization so that we may take care of a referendum vote by mail in case we have some subject that is important enough that we should act upon it and it happens to come between conventions. We are fortunate that this matter of electing a delegate to the national Defense Communications Committee came along at convention time. We all had a voice here, but suppose it had come up three months later. The Executive Committee would have been faced with a problem of handling this themselves. Of course, three months from now it would not have made any difference because our constitution would have empowered the President to initiate a referendum vote. You could have voted by mail and everything would have been taken care of in that manner. At the present time our constitution does not allow that. Among other things that happened at Houston there was an arrangement made so that such a thing could take place. We are going to have another meeting and try and get this thing whipped into form so that we can present it to you. If there are any comments that any of you may care to make at this time I would be glad to have them so that our committee may have the benefit of those comments in order that we may go ahead with greater speed in our meeting.

PRESIDENT WAREING: I am sure that everybody has some idea about changing the constitution. It has been entirely inadequate to take care of some situations that have arisen and there have been a great many ideas groping around for several years about how it ought to be rebuilt. I would like for somebody to bring up some of those points at the present time.

MR. JOYCE: I was wondering about these recommendations as to who can and shall be members of the organization. I wonder if it is wise to go out of the police organizations and pick up members. We would be going into other types of departments and we started off as a police communication officers association. Naturally, a game warden has some police power but we are speaking of police as police. I would like to get some ideas on this matter of opening our organization to others than our own field.

PRESIDENT WAREING: Some police stations are operated by fire departments although on our frequencies. Some state conservation departments operate on police frequencies. I think it is a good idea to bring that out.

MR. FETCHER: This example occurred in our area and has some bearing. We have in Illinois an association known as the Illinois Police Association. When they first started out they were going to take in only policemen, but they finally worked up to the point where they were taking in everybody in the world, railroad policemen and everybody that had ever even dreamed of being a policeman. It finally got to the point where the whole organization was bogged down. The control of the organization spread out so far that it was absolutely weakened and they had to call a general meeting and start all over again and eliminate everybody but police officers. I think that has occurred a great many times. The membership has been broadened to a point where it weakens the organization. I think if we confine the organization to men who are engaged in police communications and chiefs of police that we will have a much stronger organization and one which will not crack at the edges. I agree with Mr. Joyce.

MR. LATHROP: It is the intent of the members of the Constitution Committee that we restrict the membership to that point. Maybe there is

some misunderstanding. This cooperative membership proposition is merely a means whereby some man who is connected and vitally interested in the organization can receive the APCO Bulletin. He has no voting power, he can't even be appointed to a committee in this organization. The only ones that may be appointed to a committee are the associate members and they cannot serve on the nominating or executive committees. They could serve on some of the other standing committees. Only active members can serve on the nominating and executive committees or hold any office or direct its work. This cooperative form of membership is simply a means whereby we can place these officials on the mailing list, who are interested enough to contribute a little financial aid toward this organization to pay for their Bulletin. As far as their going around as APCO members, they are members only to a degree, simply cooperative members. That class of membership is needed. We have had it brought out that this issuance of membership cards in any police organization is often times misused by certain parties. They use that card to get out of minor traffic trouble, parking tickets, etc. We don't want that and their cooperative membership simply entitles them to have their name on the mailing list and if they want to come to the conventions they will be welcome. Does that clarify the situation?

MR. JOYCE: I understood you to say forestry men engaged in radio work.

MR. LATHROP: Your forestry stations - those men are often police officers and have full police powers.

MR. JOYCE: We will grant they have certain police powers, but what I am getting at is that the basic organization of our active members should be the police department. We know a game warden or a fire warden isn't a member of the police department; he is given certain power to do police work in his own limited field. We are not limited in our police work. We should keep our active organization and also our associate organization as a police organization. Do you think it is advisable to throw this thing open to these associates, men who have some police powers and may work with us as an active or associate member?

MR. LATHROP: I thought I had made that clear. That type of officer would come in as a cooperative member. We have attending our convention today, a member of the Michigan Conservation Department who is connected actively with forestry. Now he is a communication officer, that is, he is interested in communications, emergency services, etc. There are things that are probably going to be printed in our Bulletin, our problems in communications are parallel to his and since we are both in the emergency services we should have a degree of cooperation. However, I do not believe that it is the intent of the committee to offer either active or associate membership but to offer a cooperative membership whereby they would receive our Bulletin and that is all.

MR. JOYCE: That clears that up, I believe.

PRESIDENT WAREING: I would like to point out one thing just to clear up any possible misunderstanding. Charlotte, South Carolina, was mentioned yesterday. We had a representative of the police radio station which is owned and operated by the fire department. Would you consider that man eligible as an active member?

MR. JOYCE: I have seen this happen where a fire department wanted a radio system and the police didn't have it and they had to get permission from the police department to get it. We receive letters from the Chiefs of the Fire Departments asking for frequencies. We check back with the police department and find they have no objection to their having that frequency. The fire department has the radio but they had to get it under the police.

PRESIDENT WAREING: In some cities the police radio is not under the police department but under the gas and electric department.

MR. JOYCE: Under the law I don't see how they can do that. The chief has to sign the application and he must be in complete control. We will undoubtedly have questions when a man applies for membership, if he is a policeman or a fireman, and a decision must be made by the board. What I started off with was to keep this a police organization.

PRESIDENT WAREING: In a large number of other cities the communication personnel is civilian employees of the police department. You would consider them eligible for membership?

MR. JOYCE: If they are connected directly with police communications, they are eligible.

PRESIDENT WAREING: Is the chairman of the Frequency Allocations Committee ready to report?

MR. BATTS: I am not prepared at this time and cannot be before tomorrow morning.

PRESIDENT WAREING: We are going to have a busy session tomorrow morning, all the resolutions will be brought up before the group, and I suggest that we start at the time scheduled instead of an hour later.

MR. LATHROP: There is one more point on which I would like to hear an opinion. We were speaking of these fire departments that are handling police communications, etc. We may have at sometime or other some individual who is outstanding in some service in his help toward our police communication service. Do we want to have something in the constitution whereby the executive committee may appoint or vote that individual in as an active member even though his qualifications do not entitle him to such a classification? As an example suppose we had some state out in the west where the forestry department develops a very efficient communication system and they use that system to help out a small police department which cannot afford communications. Do we want to provide a means whereby those supervisors may become members of our organization? They are not really police communications officers but yet they are contributing a great deal to our system of communications. I realize we are going around in a circle but I would like to know about this because it has come up and it may come up again in the future. Do we want to dogmatically say that this organization, while it is for the good of police communications, excludes everybody except those actually connected with the police department?

MR. JOYCE: I think when there is a question in a case of that kind it should be decided by the executive board. I can understand some fire departments doing police work, and situations such as that should come before

the executive board rather than throw the thing wide open. Let's keep it exclusive and still allow certain leeway.

MR. LATHROP: According to the plan so far we have closed it up pretty tight; they can only be cooperative members, which does not constitute a membership but just places them on the mailing list to receive the Bulletin.

SECRETARY MORROW: In connection with Lieutenant Joyce's remarks this thought occurs to me. In 1937 the Ohio River had too much water and the Lieutenant will also remember that because he came in down there into a situation that had been pitiful due to the fact that we had not foreseen any need, not the terrific need, for equipment that occurred at that time. The thing occurs to me in this light: at that time Ralph Williams of the Michigan State Conservation Department called our headquarters at Indianapolis and told us that he had available nine transmitters and a number of pack transmitter units and two men; that a plane was being warmed up at East Lansing and some of the equipment would have to be picked up at Roscommon but it would all be down there. In that action this Michigan State Conservation Department, which works with the state police department as practically a branch of that service, demonstrated to us and I think this whole police field that their interests were our interests and our problems were their problems. Now I would be exceptionally adverse to opening the membership, that is any branch of the membership of this organization, to that field as a whole or to any other field aside of actually authorized police authorities. But I am in accord with the idea of permitting your executive committee, which by virtue of the fact they are elected by you are certainly in your estimation capable of deciding on the individual cases of admission to membership of any one person representing any of those fields. I say that on the basis of past experience with those men. I believe that would be the best solution of that problem because we will find, particularly in view of the problems of the national defense program, that we are going to have to work a lot closer with a lot of these organizations than ever before. In working closely with them we can't help but have some necessity for having them work closely with us, and that would provide the leeway for those cases where that alliance were necessary. I am opposed to opening the membership of the organization to all members of a field other than duly constituted police authority.

PRESIDENT WAREING: I think our time is up for today. These are only some suggestive revisions so the committee can get some idea of the feeling of the membership.

On motion of Mr. Wilt, second by Mr. Schuler, the meeting adjourned at 4:40 p.m.

THURSDAY MORNING SESSION

The seventh session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wareing at 10:00 a. m., on December 5.

PRESIDENT WAREING: Rabbi Morris Skop from the Jewish Congregation will give the invocation.

RABBI SKOP: Almighty Master of this great universe, humbly we

invoke thy blessings upon another gathering of this great association of men working day and night toward the preservation of peace and order in our nation. We hope and pray for Thy blessings upon the efforts of these men dedicated to the fathoming of the mysteries of this universe, working on the understanding of these mysterious ways in the ether in order to bring about a fuller justice among men in our great nation. Bless them, send peace to their homes and help to their loved ones and themselves, and above all inspire them to dedicate further their lives to preserving democracy in this world. Amen.

PRESIDENT WAREING: As soon as we have enough members present, we will hold the election of officers and the choice of the next convention city for the reason that a number of our members wish to leave this morning and would like to have those matters disposed of before they leave. The first item is the president's annual report and that is easy to get rid of.

I have practically nothing to report because I kept the membership informed through the Bulletin of everything that has transpired during the year. I have spent most of my time and effort in trying to help Captain Wherritt get material for the Bulletin and in trying to make our membership representative of the police communication service of the U. S. Now as you all know we are very strong in membership in Illinois, Wisconsin, Indiana, and Missouri, which lead the membership in the order named, and we are very weak in membership in certain other parts of the country. In some parts we have practically no membership at all. It is my aim during the year to try to make APCO truly representative of police communications systems on a nation wide scale. I am sorry to report that my efforts met with practically no success in getting new members and not much success in helping Captain Wherritt get material for the Bulletin. If any of you feel there was too much Wisconsin in the Bulletin there was only one reason - nobody else contributed anything. If your section was not represented in the Bulletin, then your section did not contribute anything. I didn't spend a penny of APCO money for anything except postage stamps, no telephone calls, telegrams or anything like that, and I didn't spend a cent of the department's money either, so it didn't cost anything not to get much results. We have some big tasks ahead of us, particularly since we have the delegate on the Defense Communications Board, and with the national defense picture the way it is at the present time. If we are to take our proper place in that program, if we are to get the facilities for police communication services that are needed, we must have a strong organization. We must build up APCO until it actually is a national organization with membership in every state and with membership in a large percentage of the police communication systems of the country. It is a big job and I hope the officers for next year will be able to accomplish it.

At this time I would like to call on Mr. Lathrop for a report of the Constitution Revision Committee.

MR. LATHROP:

REVISED CONSTITUTION AND BY-LAWS OF

ASSOCIATED POLICE COMMUNICATION OFFICERS, INC.

ARTICLE I - Name and Purpose

Section 1. This organization shall be known as the Associated Police Communication Officers, Inc.

Section 2. Its purpose shall be (1) to foster the development and progress

of the art of Police Communication and Inter-communication, and to promote, through example and active effort greater cooperation in the correlation of the work and activities of the several town, city, county, state and Federal law enforcement agencies, and of the communication units thereof, as well as to promote harmonious cooperation between those of the United States of America and territories thereof, and other such agencies of law enforcement and police communication upon the North American Continent, to the end that the safety of human lives, the protection of property, and the general welfare of all peoples concerned may be benefited to the highest degree; (2) to aid and assist in the development of channels, methods, systems, and all other media for the rapid and accurate collection, exchange, and dissemination of information relating to crime and criminals, emergencies, and other vitally important information of police or emergency nature; (3) to prepare, and publish, or cause to be prepared and published, to all regularly accepted members of this Corporation, a regular publication, or bulletin, at such intervals as may be deemed reasonable and effective, containing technical and administrative data of such nature that it concerns police and communications personnel, news of general interest to men who are, or who may become interested and engaged in the work of communication or its allied fields from a police and emergency standpoint; (4) to further, by active effort and example, the cooperation among and between this Corporation and the International Association of Chiefs of Police, the Inter-State Commission on Crime, the Federal Bureau of Investigation, and the United States Secret Service, as well as the Federal Communications Commission; (5) to prepare, offer, and to provide assistance to police and other law enforcement organizations and bodies in the matter of their requirements relating to communications equipment and its operation, and in the framing of legislation, regulatory rules and measures, and matters of police and communication policy; (6) to provide means whereby organizations of like character and aims, located within the several states, provinces, or other political subdivisions of the North American Continent may become affiliated with this "Parent" organization, as "Chapters" thereof, operating under individual charters to be granted by the National body of the Associated Police Communication Officers, Incorporated; (7) to provide, and maintain, at the National Offices of the Corporation certain files and information relative to certain phases of technical research and development relating to problems of equipment, procedure, and operating standards, in keeping with the policy of fostering the continued development of the art of Police Communication; (8) to provide for memberships in this Corporation in accordance with the language of the Constitution and By-Laws now and which may later be provided and in effect. Such memberships to be of such classification and having such rights, privileges, and restrictions as may be provided from time to time in keeping with the state of such development of the art of Police Communications.

Section 3. (An Amendment) This organization may issue charters to state or regional groups on formal application, such groups to be known as chapters of the Associated Police Communication Officers, Incorporated. Chapters or regional groups may operate under their own constitutions and membership requirements, but their objectives must be coincident with those of the national organization. State or regional groups wishing to affiliate with the national chapter must make formal application at the annual meeting of the national organization. A copy of their constitution must be submitted to the national Secretary-Treasurer along with their formal application for a charter. All active and associate members of these charter groups will be members of APCO, Inc.

ARTICLE II - Classes of Membership (An Amendment)

Section 1. The membership of the Association shall be divided into four classes, to wit: Active, Associate, Cooperative, and Commercial.

Section 2. Active Members. The following persons shall be eligible as active members: supervisors and chief operators of police communication systems, or fixed stations thereof, regularly engaged in police communication services, whose salaries are paid by the state government or a political subdivision thereof, who may be accepted for such membership in accordance with Article III, Section 1, of this constitution. Provided, however, that present active members may continue as such until they permit such membership to lapse.

Section 3. Associate Members. The following persons shall be eligible as associate members: any person receiving a salary from a law enforcement agency as a communication employee, other than supervisory head or chief operator, who may be recommended for membership by the supervising head of his communication system, and in accordance with Article III, Section 1, of this constitution. Associate members shall have no voting privileges and may not hold any office. Associate members may serve on all committees except the executive and nominating committees.

Section 4. Cooperative members. The following persons shall be eligible as cooperative members: any official or employee of a Federal, State, County or Municipal government who is interested in promoting the efficiency and progress of police communications. Cooperative members shall not have voting power, shall not hold office, and shall not serve on any committees. Such membership must be in accordance with Article III, Section 1, of this constitution.

Section 5. Commercial members - two classes.

a. Companies

b. Representatives

The following companies or persons are eligible as commercial members: any company or individual who by his interest in supplying communication equipment, or interest in the development of new or existing methods of police communications, and who desires to cooperate with the Associated Police Communication Officers, Inc. Commercial members shall not serve on regular committees. Commercial members may serve on special committees by appointment of the president with the sanction of the executive committee.

Section 6. Honorary Members (See By-Laws)

Section 7. Provided that if the membership qualifications or status of any member change as under Section 2 or 3 of this Article, he shall automatically have his membership classification changed to conform to his new classification or status.

Section 8. Provided that any officer of this association loses the required qualifications of an active member, he will immediately vacate such office. This vacancy shall then be filled temporarily by a majority vote of the Executive Committee, pending their investigation.

Section 9. All members of state or regional groups holding charters from the National Chapter, and holding the qualifications of active or associate mem-

bership in the National Chapter, shall automatically become active and associate members of the National organization in accordance with Article VII, Section 2, of this constitution.

ARTICLE III - Election of Members

Section 1. Applications for membership shall be made in writing, and signed by such applicant upon forms as may be directed by the Executive Committee, and shall be transmitted to the Secretary. Upon receipt of any such application, the Secretary shall refer it to the Executive Committee, who shall determine the qualifications of the applicant for membership.

Section 2. Election of members of Chartered Chapters and regional groups are to be waived in accordance with Article II, Section 9, and Article VII, Section 2, of this constitution.

ARTICLE IV - Officers

Section 1. Designation: The following officers shall be elected at each annual meeting for the year ensuing: a President, two Vice-Presidents who shall be designated as first and second Vice-Presidents, a Secretary-Treasurer, a Bulletin Editor, and a Sergeant-at-Arms.

Section 2. How Elected. All of said officers shall be elected by ballot from nominations submitted by the nominating committee in accordance with Article IX, Section 1, or from nominations from the floor, by a majority of the active members present and voting. All of said officers must be active members at the time of election.

ARTICLE V - Powers and Designation of Officers

Section 1. President. It shall be the duty of the President to preside at all meetings of the association, to appoint all standing and special committees, to act as chairman of the Executive Committee, and to appoint a person to act in his behalf as such chairman of the Executive Committee, if he is prevented from so acting, and to carry out the purposes of this Association in accordance with the constitution. (An amendment, 1939) The President shall appoint only one-third of the members of each standing committee each year for a three-year term; with the exception of the nominating committee, provided, however, that the President now in office shall appoint one-third of the present members of each standing committee for a term of two years; and appoint one-third of the present members of each standing committee for an additional term of one year. The following is a list of the standing committees: Frequency Allocations Committee; Engineering Reports and Research Committee; Operating Procedure Committee; State System Standards Committee; Intercity Relations Committee; Development and Activity Committee; and Resolutions Committee.

Section 2. It shall be the duty of the Vice-Presidents to perform all the duties of the President during his absence, and Vice-Presidents shall serve in the absence of the President or Vice-President in the order of their designation.

Section 3. Secretary-Treasurer. It shall be the duty of the Secretary-Treasurer to keep a complete roll of the membership, to receive and answer all communications that may be submitted to him by members of this association, and to perform such other association duties as may be required of him by the

Executive Committee. He shall also act as Secretary of the Executive Committee. It shall be his duty to receive all general funds belonging to the association, and to pay all orders drawn on him by vote of the association or, during the time intervening between annual meetings, orders drawn on him by the Executive Committee when signed by the President. He shall make at the annual meeting a full report of his activities as Secretary, and a full report of all monies received and disbursed by him. He shall promptly deliver all monies, books, papers, to his successor in office or whomsoever the association may designate to receive the same.

Section 4. Bulletin Editor. It shall be the duty of the Bulletin Editor to publish the APCO Bulletin monthly, such Bulletin to be in the mail not later than the 20th day of each month. Active and associate members of the National Chapter are to receive the Bulletin as part of their membership.

Section 5. (An Amendment, 1939) All standing committees shall consist of nine members.

Section 6. (An Amendment, 1939) The President shall appoint such special committees as may be necessary from time to time.

ARTICLE VI - Executive Committee

Section 1. How Constituted. There shall be an Executive Committee which shall consist of the President and Secretary, and seven active members. Upon adoption of this constitution, four members shall be appointed for a two-year term, and three members shall be appointed for a one-year term. Upon the expiration of such terms, appointments thereafter shall be made for two-year periods so that the terms of three members thereof shall expire at alternate periods with the terms of four members thereof. The President shall make such appointments within thirty days following adjournment of the annual meeting.

Section 2. Powers of the Executive Committee. The Executive Committee shall have full power and authority during intervals between annual meetings of the association to perform all the functions and to do all acts which the association might do or perform, except that it shall not have the power to amend the constitution or by-laws.

Section 3. Duties of the Executive Committee. The Executive Committee shall report at the annual meeting of the association all measures considered by it during the previous year for the general welfare of the association, and shall suggest means of advancing and putting into effect the purposes of the association. It shall supervise all accounts and expenses and shall audit the account of the Secretary-Treasurer.

Section 4. Meetings. The Executive Committee shall convene at such time and place as may be determined upon the call of the President. Two weeks written notice shall be given members thereof, except when this association is assembled in convention.

Section 5. Quorum. A majority of the members shall constitute a quorum of the Executive Committee.

ARTICLE VII - Dues

Section 1. National Chapter Dues. Each member shall pay to the Secretary-Treasurer of this association the following dues, for the period of each

calendar year, according to his membership classification: Active membership, $2.50; Associate membership, $1.50; Cooperative membership, $2.50; Commercial Company, $25.00; Commercial Representative, $10.00.

Section 2. Charter Chapter Dues, State and Regional: The Treasurer or Secretary-Treasurer of each chapter, or regional group, shall pay to the Secretary-Treasurer of the National Chapter of this association, dues for each active member and associate member in the chartered organization as follows: Active membership, $1.50 per year, Associate membership, $1.00 per year. The Secretary-Treasurer of the National Association shall issue to each membership so paid a membership card in the National Association bearing the name of the chapter or regional group to which the member belongs. Each such membership shall be recorded on the membership roll of the National Association.

ARTICLE VIII - Annual Meetings

Section 1. The association shall meet annually at such time and place as shall be determined by a majority vote of the members at a previous meeting, provided, however, that the Executive Committee may select such other time and place in the event that the time and place selected by the members shall later prove to be undesirable or not available for such meeting.

ARTICLE IX - Standing Committees

Section 1. The President shall appoint a nominating committee of five among the active members of this association, who shall report their nominees to the association at the time of election. So far as possible this committee shall be composed of five past presidents appointed by the chair or in the event there is not a sufficient number of such past presidents attending the meeting, from among the active membership thereof. Nothing herein contained shall be construed to prevent additional nominations being placed from the floor.

ARTICLE X - The Bulletin

Section 1. No paper, periodical, or magazine shall be published other than the APCO Bulletin, nor shall the Executive Committee enter into any contract with any person, firm, or corporation for the publication of any periodical or magazine bearing the endorsement of this association without approval by a two-thirds vote of the members present at any regularly called business meeting.

ARTICLE XI - Amendment Procedure

Section 1. This constitution may be altered or amended only by two-thirds majority of the members present at any session of an annual meeting.

BY-LAWS

ARTICLE I - Annual Meeting

Section 1. The program of the annual meeting of the association shall be arranged by the President and host members, and notice of such annual meeting shall be given to the members at least thirty days before the meeting.

ARTICLE II - Procedure

Section 1. Resolutions: Every resolution shall be in writing and unless of a formal character or presented by a committee shall be referred by the chair on presentation, without debate, to the committee on resolutions for consideration and report.

Section 2. Upon any question coming before the meeting not specifically provided for by the constitution and by-laws, the presiding officer shall be governed by the rules in "Robert's Rules of Order."

ARTICLE III - Officers

Section 1. Terms of office and vacancies of office of all persons elected at any annual meeting shall commence at the adjournment of such meeting. Officers shall hold office until election of their successors. The president shall fill all vacancies from office for the unexpired term thereof.

ARTICLE IV - Honorary Members

Section 1. Honorary members may be elected by a majority vote of the active members present at any annual meeting, as a token of appreciation for services rendered to the association.

ARTICLE V - Voting Between Annual Meetings

Section 1. Whenever twenty-five or more active members petition the President in writing, he shall poll the membership in reference to any desired action of the association; he shall initiate a referendum ballot by mail, provide for proper tallying of the ballots, and publish the results in the next issue of the APCO Bulletin.

MR. LATHROP: Are there any questions?

MR. McMURPHY: You haven't stated if the revisions are approved how much voting power the chapters will have.

MR. LATHROP: That was discussed pro and con. There was a plan brought up for these regional divisions, dividing the United States into six regions. The thing unfortunately came up a little late and at the present time, until the number of chapters increases, right now we only have two, I feel that we can't really do much about it. We should continue our policy of the membership which is in attendance at the convention, or voting by this referendum ballot, shaping the destiny of this organization.

MR. SMITH: I understand that in that way all those members of a regional chapter who hold qualifications for active membership in the organization, each of those members will be entitled to a vote at this conference.

MR. LATHROP: That is right. There is no difference in the membership status of an active member, even though he belongs to a chapter. It is just the fact that by groups under states we can meet as often as we like, or as often as set up by their own constitution. For example, we in Wisconsin hold at least eight meetings a year. That keeps our active interest in APCO boiling at a much higher fever heat than by having one meeting a year. At the same time, those who can possibly come to these national meetings can bring the thoughts of the others back home, but we feel that the balance of power, that is the committee feels, that the balance of power is fairly well

represented. This group here does represent the nation as a whole. There may be a little preponderance in any convention of men from the local state because they do not have to travel so far, but I don't know of any instance in the past in my history of the organization where anyone has felt that particular majority has upset the apple cart.

MR. SMITH: I want it understood from the start that if I have a correct understanding of each of these revisions of the constitution, to my mind they are exactly down the line of what we have been needing. There is one question on which I am not exactly clear and that is the amount of dues of members of regional chapters to this organization. I understand that for active membership $1.50 and for associates $1.00. We are now paying $2.50 to this group. Do we drop our membership payment to $1.50 or raise it to $4.00?

MR. LATHROP: That $2.50 covers the dues as far as the national chapter is concerned. Where the national chapter loses a dollar on your membership it is going to make up five or six on the associate memberships that will be brought in. In Wisconsin our dues are $5.00 a year. Our active members paid in $5.00, $2.50 of which was forwarded to the national chapter. Our associate members paid $1.50 and the national chapter got nothing. We wheedled Morrow into sending a flock of Bulletins to us, although he got nothing out of that for the Bulletin expenses. He hasn't received a penny for Bulletins mailed to anyone in Wisconsin outside of the members of the National Chapter, the active members of the organization. In the future he will receive money for the associate members.

MR. SMITH: May I say here that you are correct in assuming that the plan will bring more revenue than the other type of payment that you have been making. Other changes proposed by the Committee may possibly cause some little loss or reduction in the income of APCO temporarily, but I believe in the long run they will help the growth of the organization and mean a greater income and more man power.

MR. WOLKING: It seems to me the division between active and associate membership is entirely fair in all respects except one. Wouldn't it be better to arrange it so that an associate member, if he is the only one present from a department, might have the privileges of an active member? In my department at Charlotte, for instance, presumably they pay my expenses here and should be entitled to a full representation.

MR. LATHROP: That all depends on the interpretation of "supervisor". The chief of a police department is in a regular sense a supervisor of communications. Then if you are working as an operator and your supervisor or chief operator is not here, then your status is clearly as an associate member.

MR. WOLKING: Then the city could not be represented here except by the attendance of the supervisor or chief operator? Still, I am not the chief operator.

MR. SMITH: In connection with that I am somewhat familiar with the condition this gentlemen is confronted with. Might it not be that in a situation like his the Executive Committee may find that in effect he is a supervisor?

MR. WOLKING: Don't you think that it might be possible when the

supervisor couldn't come to a convention but sends his operator with his sanction that he could be given full representation? I wouldn't expect every operator that wanted to join to be given full privileges.

MR. LATHROP: I think myself in a case like that there should be a degree of representation. However, the Executive Committee is fully empowered to grant such classification of membership.

QUESTION: I don't mean to be throwing any stones at our good friend from New York City, but suppose we held a convention there. I imagine they have two thousand radio operators including the third class men. Are they to be considered communication men and allowed to direct the destiny of this organization, or are we going to leave that to the supervising heads? Otherwise, we might as well go to one class of membership, charge $2.50, and forget all about it.

MR. LATHROP: Obviously, we don't want any group to control the convention. The point I wanted to bring out is that in case this chief operator finds it impossible to attend he may tell his representative the measures he wants to put through. The thing is to bring the proxy by letter from the chief operator and he will be represented in that way. Your chief operator delegates you to represent him at the meeting and it would be just common courtesy of the organization to recognize that. I don't see that it is necessary to tangle it up in the constitution. That is a point of cooperation.

MR. WOLKING: If it is possible for an organization to be represented that way it satisfies me.

MR. LATHROP: I want to say that a thing like that couldn't be abused. A person could come down here with perhaps proxies from 26 patrolmen and in that way would have 26 votes which would in effect be a major block here this morning in the selection of our national officers. I think that such a thing should be considered by the Executive Committee and if the Committee wishes to recognize proxies it would be all right.

CHIEF MONKS: I notice one place you say that any official or employee of a Federal, State, County or Municipal government may be eligible for membership. Just what do you mean by that?

MR. LATHROP: You may have cases like this: a Highway Department may be interested in police communications to the extent that the police communications system serves them through taking care of reports on emergency road conditions. In northern Wisconsin we have radios on snow plows. Those men are interested in police communication, therefore, they can become cooperating members of this organization. Remember that this cooperative membership is really just a method for anybody who has a bona fide interest in communications to be put on the list to receive the Bulletin and to contribute to the support of our Bulletin.

CHIEF MONKS: I hold a third class license; I have three boys who hold second class licenses. How would I fit into this organization?

MR. LATHROP: If you belong to the Florida Chapter you would come in as an associate member. However, you are the chief and that is a proposition that has come up sometimes.

CHIEF MONKS: The point I am trying to get at is this: Is this an association of police officers for police communications or is it a group of subordinates?

MR. LATHROP: It is our idea that it is our job to make the communications of a police department successful. We feel that although a chief or sheriff has direct control over us they should not have control of this body or vote on important matters pertaining to the technical phases of communications. After all, you men want results and you rely on us to promote those results. That is, we have to produce or you will get somebody else that will, but at the same time we feel that when we come here it is our work we consider. My chief in Wisconsin is an associate member of our group. He has no voting power in our group. He realizes the setup and says that is your headache. Our organization has never taken the form of a union; I have never thought of it that way. I am fighting my own battles.

CHIEF MONKS: I realize that I am an associate member, but I want to go back East and tell the men in the chiefs' association what your setup is. That is the reason I am here. I have been interested in radio for a long time. I have seen it grow. I want to go back East and tell those men what you have to give them. In the I.A.C.P., Mr. Leonard is only a captain and he will be our president next year. We have taken those in the bureau of identification and we have carried them along. Now what I want to know from you this morning is this strictly a police setup?

MR. LATHROP: It is a police setup.

CHIEF MONKS: I have never met a finer bunch of men than I have met here. I have three boys that I want to bring along next time. I have to go back and sell the rest of those chiefs what this association is trying to do. Now I am not going to see them politely kicked out. I want to see them secured by pensions or some other method of taking care of them.

MR. LATHROP: As far as the pension angle is concerned, there is nothing like that in the organization. Our idea is strictly to improve police communications and that is the sole function we have.

MR. SMITH: I think I would express the feeling of the membership of this organization if I try to phase the aims of it beyond and in more detail than the constitution may make clear. It aims to promote first of all law enforcement. Second, a point which we expect to be able to do more directly, is that this organization hopes and endeavors to promote anything on earth that can further the interests of communication facilities made available to police departments. Beyond that, certainly as individual members we would like to see ourselves and other members, all police officers and everyone associated with the law enforcement profession, protected by pensions and paid an adequate salary, etc., but those things we consider questions not to be worked on by this body. It is purely an endeavor to promote police communications and questions of salaries and pensions will not be brought into it for controversy.

CHIEF MONKS: I didn't bring that up as an argument. I brought it up as a police matter.

MR. MURNANE: I suggest that the chairman read the purpose as set out in the constitution.

(Mr. Lathrop read the purpose of the organization as stated in Article I of the constitution.)

QUESTION: I have one question to ask which I think has been answered by the discussion. If we have a communications system that entails several radio stations or complete units and each of those radio stations has a chief operator, is he entitled to active membership? He does not set any policies for the system - his policies are determined by the commanding officer. He is a chief operator but is he entitled to active membership?

MR. LATHROP: Yes, he is. The chief operator of each of those stations, by virtue of the responsibility placed in him, has sufficient knowledge of the art of communications that he will be able to render adequate service in this organization and he is a regular member. His policy, of course, would be influenced by his superiors. That is the case of a large state system where the chief operators are under a supervising operator who is commonly known as the chief radio engineer. After all, a state system should be considered, especially if the state is ambitious enough to send a delegate from each of their stations. They deserve and should have recognition.

MR. FETCHER: I want to understand if it is possible under this revision of the membership to have a chapter wherein the associate members are permitted to vote and hold office. Would a constitution containing that be acceptable to the national organization? The associate members would not be permitted to vote in a national conference but would have a voice in the chapter affairs.

MR. LATHROP. Your associate members can have voting power in your state chapters but they can have no voting power in the national group.

MR. TEETER: Mr. Chairman, why is it that you don't explain to the people that Wisconsin is a shining example of what is trying to be done with state chapters? Let us come here as representatives, but every chief, every sheriff, every constable, every law enforcement group we are trying to serve should have a voice. Now they can't get here; in fact, we don't want them here, because they don't understand our problems. They have sent us to speak for them. Why should I come here and tell you that I am representing the State of Missouri? I am not. You are not representing the State of Wisconsin. We don't want to become a group clique. We have big work to do, and if we stay together as a national organization we will do it. We have representatives from all over the country - let's keep it that way.

I am not saying that you should listen to me or go along the way I have, because I am not an engineer. But I am a radio man. I was one of the first men in radio police work. I am happy to let you all know that, Lt. Cox and I, at Detroit and St. Louis. Here is what we should do; I don't know why it isn't done. This is not Alabama, Georgia, Kentucky, or Iowa; this is a national organization. We are all here from all over. We want memberships. I have 29 boys that are not police officers, but they are interested in communications and would be eligible in this organization. I would be a big shot. I don't want that but I do want to see this organization - I want to see our gentleman from the East able to go back and tell his boss something. If we don't keep on coming here, our interest in National Defense communications and other important matters is going to go just like everything else. We'll go back and say, "We'll take what they give us." We are a national organization. We are representatives of our chiefs. Mine has

been a police officer for 33 years, he is well respected. He sends me down here; he doesn't question my expenses. He says, "Do as you please. Come when you please, go when you please," but he has no voice through me. He is not a communications man. Look at the chiefs and sheriffs who are sitting at home, and mind you they are using radio. We have snowplows, too, in Missouri. I am telling you something now. We can quibble and do this and do that but we shouldn't come here with our headaches. You are going to have them if you are digging in a ditch. We should come here as good fellows, being the fortunate ones, whether police officers or not.

I am not talking as a police officer - for 19 years I have been one, but don't forget I was one of the first in police radio, Bob Batts and Cox, and I, but I don't want to cram that down your throats. In your own states you can see how chapters and particular organizations do. The east coast is an organization, the west coast is an organization, and we don't care whether they are cooperating. We have a lot of people that have come here that have a lot of headaches. I have no headaches and I have been in the thing since it started. We come here and get mixed up in something - whether you voted for the right man. Bringing back that gentleman's argument that he wants security - I don't ask for security. There is nothing I want, because I have been in and out of radio in police work so many times that I can come back in and go out and I retain my original rank because I live in Missouri. I am trying to ask these men who haven't done what I have had to do, and I can fully realize what our president of last year, the president this year, has so marvelously tried to do. We don't want people because they are good fellows. Tell this man what to take home. I don't care where he is going. Let him take something back to them that this organization is going to set up and have at the next convention a place where men from New York can get together. Let them come in with us - four hundred of them if they have that many memberships. These men that you don't want to give a full membership, if they know they have a voice in the state group, which is the proper place to bring up such a thing. But you are denying this man the right to take home something. They want to know what they are going to tell their bosses. What are we offering to our chiefs of police? It is our chiefs who send us. Regardless of whether I am in the radio division or not, St. Louis will send a man to be represented. This isn't Milwaukee or California. We have nine states not represented. You might have at one convention but you won't have at the next. I have been in radio since the start, but don't tell a man he doesn't have anything to take back. You know that security is what we want. Why can't you come to this body a national organization, and if you have done your part why is it that we can't consider you for a position on a listening post, or if you are sick or something else, we can send you to California. You can go west or go east. That is what this organization should stand for. That is your headache. There are no headaches in my organization. I have one of the biggest in the country. I have everything in radio, teletype included, and I have no headache. Everything fits in the groove and if it doesn't I would stand there 24 hours a day to see that it does, and I have been there eleven years. Now why should you tell this gentleman that there is nothing he can take back to his boss? Our headaches should be straightened out in our own state. If Ted Lowe gets into it with the State of Missouri, I want to straighten it out, not as a police officer but as a man who has been in radio since it started.

I will talk radio with anybody. I will talk police work. I have had three and a half years in the U. S. Army. I am a Legionaire and go to the Legion conventions. We send people along to get something done and when we get there and Missouri is not well represented or

that state, somebody takes care of that. Big things should happen here. This man should get some information. We should find out about this or that. I don't want to say that you should all be policemen. But you will find out you have to educate a radio man to police work before they become fully proficient as members of the police department.

MR. MORRIS: Mr. President, what Mr. Teeter has to say I think will be brought out by the chairman of the Development and Activity Committee. We had a meeting just prior to Mr. Teeter's arising here and I think what he has in mind will be brought out by that committee.

MR. LATHROP: I am sure that I didn't want to come up here and talk Wisconsin, because a little later in the day we are going to talk Wisconsin. We have a strong organization and Wisconsin was doing nothing in communications work until our organization was formed. Now Wisconsin is doing things in communications and I believe there is strength in our state organizations. I haven't been making the constitution personally. I have been appointed to try and get these things into the constitution and get the thing in a form where it might be printed. So far as we know, these resolutions have all been passed at previous meetings of this organization. Our committee has added nothing except inasmuch as we worked on this problem of dues. All of these other things are already a part of the constitution, but you members haven't a copy of it in one condensed form unless you thumb through the minutes of the previous meetings. We want to get it printed up in a booklet and when you want to refer to it you have it. We have worked that around in this particular case, and we are reporting it to you as it is. That is all I have to say on the matter.

PRESIDENT WAREING: We have a lot of other items to take care of. I will entertain a motion to accept the report or to lay it aside at this time.

MR. WHERRITT: I move we accept the report of the Constitution Revision Committee.

Second to motion by Mr. Smith.

Motion carried.

PRESIDENT WAREING: I would like to announce the decision of the Executive Committee on the winner of the award for the best non-technical article appearing in the Bulletin since last convention, Herbert C. Valley of Racine, Wisconsin, for his article in the last issue of the Bulletin on "Police Communications and National Defense." Mr. Valley has been a regular contributor to the Bulletin nearly every issue since last year. We felt that particular article outstanding, especially as it comes from the representative of a small department. Mr. Valley is not here to receive the award which was offered by Captain Wherritt of the Missouri State Patrol. I will ask Mr. Lowe to announce the winner of the award for the best technical article.

MR. LOWE: I will take only a second. I offered a prize or some kind of a token for the best technical article to be published in the Bulletin during the past year. The article was selected by the Engineering Committee and that committee consists of Mr. Curry, Chairman, Messrs. Batts, Beerbower, Denstaedt, Lehman, C. M. Smith, Jr., Sidney Warner, Williams, and Wilt. They advised me this morning that the winner is Mr. Kadow for his arti-

cle on "How to Cure the 'Wheezers'" which appeared in the February issue of our Bulletin. It was thought that Mr. Wareing's article on "Broadcast Interference" should receive consideration and mention, however, he was not eligible for the prize due to the fact that he is in an official position in the organization. If Mr. Kadow will step forward I will make the presentation. I hope you will have many more articles up to the same standard.

(Mr. Kadow was presented with a handsome wallet containing a five dollar bill.)

MR. KADOW: This has really taken me back a notch; it was so absolutely unexpected. If the article did you any good I am sure that will give me as much pleasure as receiving the prize for the publication of it. The only other thing I can say is - thanks a lot. I wrote that on the spur of the moment, although a little prodding was necessary. I decided it had better be done and if that doesn't work and you get some 'wheezers' maybe it is heterodyne and we need more frequencies!

PRESIDENT WAREING: The Executive Committee met last night and appointed the two alternate representatives to the Defense Communications Board. Lt. Jack Murnane will be the alternate representative. It was understood that man must be from the teletype network, and Inspector Batts from the Indianapolis Police Department will be the second alternate representative. I think at this time we had better go into the election of officers so that those men who wish to leave the city on this tour will be able to participate in the election. I will call on Inspector Morris, Chairman of the Nominating Committee.

MR. MORRIS: Thank you. The Nominating Committee met last evening and after quite a discourse on who should be nominated for the coming year, took into consideration, because a list of all members present was available, each and every member of this association present for the good of the association and have arrived at the following decisions. Of course, we realize that we are not infallible. We tried to do our job to the best of our ability and if you care to nominate someone whom we have not nominated that is your privilege in accordance with the constitution. Following the procedure we followed yesterday, I am reading the names in alphabetical order:

President - E. F. Brown; James Virden
First Vice President - Arnet Curry; Martin Joyce; C. M. Smith, Jr.
Second Vice President - A. C. Kadow; Robert Lathrop; Geo. M. Searle
Secretary-Treasurer - Frank Morrow
Bulletin Editor - J. M. Wherritt
Sergeant-at-Arms - Edward Maeshner; R. M. Schuler

That is all the Nominating Committee has to report at this time. Are there any questions?

MR. SEARLE: It seems that almost every time I get the opportunity I say what I want to say. I very sincerely appreciate the honor and confidence which has been bestowed upon me by the Nominating Committee in placing my name as a candidate, but as I have said before, I do not feel that in my capacity I should have any kind of an office in this association. I am not in a true sense a communications officer. I am not a technical man, I am more of an administrator. I feel that the offices of this association should go to men who are really and truly communications men. For that rea-

son I respectfully request that my name be withdrawn from the nominees and if there is no way that can be accomplished, may I ask this group to forget that it is on there.

MR. MORRIS: Thank you, Chief Searle. I think that your point is well taken and all I can do as chairman, if anyone does choose to decline they can have their say, and I know that we didn't nominate anyone who wouldn't be a good sport and take the job if elected.

PRESIDENT WAREING: I wonder if it would be better to vote for all on one ballot in order to expedite matters. We will vote on one ballot, one for each office. I will now accept nominations from the floor for president.

Upon motion by Mr. Smith, second by Mr. McDaniel, the nominations were closed.

PRESIDENT WAREING: I will now entertain additional nominations from the floor for first vice president.

Upon motion by Mr. Franklin, second by Mr. Lowe, the nominations were closed.

PRESIDENT WAREING: We will now accept nominations from the floor for second vice president.

Upon motion by Mr. Fetcher, second by Mr. Casteel, the nominations were closed.

PRESIDENT WAREING: I will now accept additional nominations for Secretary-Treasurer.

MR. FRANKLIN: I would like to place in nomination the name of James Virden for Secretary-Treasurer.

Upon motion by Mr. Lathrop, second by Mr. Gronier, nominations closed.

PRESIDENT WAREING: Are there any other nominations for the position of editor?

Upon motion of Mr. Scott, second by Mr. Wilt, the nominations were closed.

PRESIDENT WAREING: Are there any additional nominations for sergeant-at-arms?

Upon motion by Mr. Lathrop, second by Mr. Schroeder, the nominations were closed.

MR. SCOTT: In view of the fact that Mr. Virden has been nominated both as president and secretary, I move that we vote for all offices except that of Secretary on one ballot.

Second to motion by Mr. Morris.

Motion carried.

The counting of the ballots revealed that the following officers had been elected:

President--E. F. Brown, Supt. of Communications
Department of Public Safety, Des Moines, Iowa
First Vice-President--Martin Joyce, Boston, Mass.
Second Vice-President--A. C. Kadow, Elgin, Ill.
Bulletin Editor--J. M. Wherritt, Jefferson City, Mo.
Sergeant-at-Arms--R. M. Schuler, Fresno, Calif.

PRESIDENT WAREING: I would like to call on the new president for a few words.

MR. BROWN: Fellow members of APCO, I am overwhelmed at the honor and responsibility which you have thrust upon me. I realize that during the coming year many grave problems will face this association. The officers whom you have elected will require the assistance and cooperation of every member. I feel sure that with Mr. Maurice O'Neil as our representative to the National Defense Board that matters pertaining to our association will be ably taken care of. Geographically, I am situated very close to Capt. Wherritt, our Bulletin editor. We have many things in common. I feel sure that Captain Wherritt will need all of your support in the editing and publication of the Bulletin and I urge you to give him every possible support. I thank you from the bottom of my heart for the honor that you have given me today.

(Each of the other officers was presented to the group.)

On the vote for Secretary, Mr. James Virden, Supervisor of Radio, Orlando Police Department, was elected.

PRESIDENT WAREING: We will install all these officers at the beginning of the afternoon session.

MR. MORRIS: I believe it is customary to have the new officers take their positions after the adjournment, so I think we should offer a vote of thanks for the wonderful job the outgoing officers have done during the last year. I make a motion that a vote of thanks be extended to them.

Second to motion by Mr. Franklin.

(Rising vote and applause.)

MR. MORRIS: I hope that the committees that worked during the year will take that as a tribute also to them. I think that our contributors should also be thanked for coming here and supporting the association the way they have and that they be invited to go to the next city and participate there. Also to all others who have contributed to make this convention a success, we offer our thanks.

MR. VICKERSON: I would like to make a motion that we extend our thanks to Jim Virden and Mrs. Virden for a very splendid job.

(Rising vote and applause.)

Secretary Morrow stated that invitations for the next convention had been received by letter and telegram from the following cities: St. Louis, Mo.

. . Erie, Pa.; Oakland, Calif.; Buffalo, N. Y.; Milwaukee, Wisc.; Cleveland, Ohio; Sioux City, Iowa; Louisville, Ky.

MR. MORRIS: May I just inject the thought that all of these communications be acknowledged; if we don't accept them this time, send them a letter of thanks for inviting us.

SECRETARY MORROW: Most of these letters were received here at the convention and we have had no opportunity to make such a reply.

Mr. Geno presented the invitation from Buffalo, N. Y.

Mr. Raub presented the invitation from Erie, Pa.

Mr. Barrow presented the invitation from Louisville, Ky.

Mr. Gronier presented the invitation from Milwaukee, Wisconsin.

Mr. McMurphy presented the invitation from Oakland, Calif.

Mr. Teeter presented the invitation from St. Louis, Missouri.

Mr. Cooper presented the invitation from Sioux City, Iowa.

The city of Oakland, California, was selected as the next convention city on a vote by ballot.

MR. MORRIS: I think we should extend a vote of thanks to the F. B. I. and the U. S. Secret Service for considering our convention and to Mr. Tyson, who is still with us. The Federal Communications Commission should also be included in that. I will make that motion at this time.

Second to motion by Mr. Fetcher.

Motion unanimously carried.

SECRETARY MORROW: In connection with this vote of thanks to the F.B.I. and the U. S. Secret Service, I would like to remind you gentlemen that some two years ago it was the pleasure of this body to issue to the F.B.I. an honorary life membership in the organization. At this time I think it is entirely fitting to entertain the pleasure of the conference regarding the same honor in the case of Frank J. Wilson, head of the U. S. Secret Service.

Upon motion by Mr. Murnane, second by Mr. Merritt, such a motion was unanimously approved.

SECRETARY MORROW: While speaking of honorary life memberships, I have here and it is a pleasure indeed to present to James Virden on behalf of this organization a certificate of honorary life membership in the Associated Police Communication Officers, Inc., inscribed with the name of Billy Smith, Chief of the Police Department of Orlando, Florida.

MR. VIRDEN: Gentlemen, I accept this certificate with thanks. My chief has been unfortunate in having quite a bit of sickness and he has been extremely busy. He was around here but was rather timid about coming before a crowd and asked me to excuse him on that basis. He is a wonderful man and

I am mighty proud to be able to take this to him. Thank you again.

MR. MURNANE: Gentlemen, last year we suggested that a transcript of the minutes of the meeting be printed or mimeographed by the association and at that time we collected a dollar a piece in order to finance it. I wonder if Captain Wherritt will explain the financial difficulties that he had in getting rid of the copies that he had printed.

MR. WHERRITT: After the vote was taken last year to print the minutes there were a great many men who wanted copies, but I think only 34 actually bought them. After two or three months of writing articles in the Bulletin that we had plenty of copies and in order that the manufacturers could get the benefit of the advertising that they had bought for it, we told them that a hundred copies would be given out, after a certain length of time they were sent to representative members and some were brought to this convention for new members. Mr. Tyson has a copy. However, the copies that were paid for did not take care of the costs of publication. The cost was about a hundred dollars.

MR. MURNANE: I make a motion that the transcript be printed and that each member who wants a copy pay one dollar for it.

Second to motion by Mr. McMurphy.

MR. WHERRITT: Unless there are at least 50 copies wanted, it is hardly worth the trouble to print it. Of course the cost of printing any number smaller than that would be rather high.

MR. McMURPHY: Were the minutes advertised in the Bulletin?

MR. WHERRITT: Yes. We had a half page once; we also wrote to a number of members who had indicated they would take a copy.

Mr. Maurice B. O'Neil was presented the attendance prize, a vibroplex bug.

PRESIDENT WAREING: We will now hear the report of the Secretary.

SECRETARY MORROW: Due to the fact that the conference is pressed for time, we are going to confine our report this time to a single statement. The organization is completely solvent; we are in exceptionally good shape financially.

Secretary's Report

Receipts:

From 1939	$953.62	
From Kansas City Convention Chairman	350.00	
From 1940 memberships	357.50	
		$1661.12

Expenditures:

Jefferson City Printing Company	$129.62
Jefferson City Printing Company	142.77
Circle Engraving Co. (membership cards)	9.03

Secretary's Report (Continued)

George F. Crane Co. (Maps and charts)	$ 1.77	
C. P. Lesh Paper Co.	41.17	
Mary Tunnell (1939 Transcript)	125.00	
Bowers Envelope Co. (Envelopes & Printing)	69.17	
Bowers Envelope Co. (Letterheads & Printing)	68.51	
Postage	87.00	
Engineering Index Co.	28.00	
Total		$ 702.04
Balance		$ 959.08

PRESIDENT WAREING: Captain Wherritt will present the report of the Bulletin Editor.

MR. WHERRITT: This is the statement from the time of the last convention to November 27, 1940:

Total Receipts	$3149.14	
Total Expenses (Includes publication and mailing of Bulletin, stamps, stenographic help, cuts, etc.)	2584.48	
Balance on Hand		$ 564.66
Accounts Receivable		633.55
Accounts Payable		----
TOTAL		$1198.21

We can increase that figure next year if we receive the support of every member. If we can have more material to give a better balanced Bulletin I think the advertisers will give us greater support and if they do we can continue the magazine style that we used for the last issue. You can all help me on that if you will. Ted Lowe has done some work in his state with advertisers that has helped out considerably. If each of you making contact with the manufacturers will stress the fact that you want to support those men who are supporting our publication and our organization, we can have a good publication. I admit we don't have what we should have, but it is a job to get the material. It is going to take all the help you can give me to put out the type of magazine we want.

MR. LATHROP: I think our mailing list for the Bulletin should be revised within the next three months after the first of the year. I figure that three months leeway should be enough for the membership to get ready from the connection of membership. If we should start functioning on that basis and notice made in the Bulletin on that, then the $2.50 would start popping in because the members would be worried about losing out on some issue of the Bulletin.

Upon motion of Mr. Kadow, second by Mr. Batts, the reports submitted by the Secretary and Bulletin Editor were accepted.

MR. FETCHER: I would like to suggest that this group make up a formal letter to be sent to the chief of every communication man in atten-

dance here, saying that his delegate had been present at the meeting and had rendered assistance in doing the business of the association, so that the chief will know that we are here to do some of their work. It is very hard to go in to the chief and give him a report of the meeting and explain why we want money to go to California. Now is the time to put in those letters saying we have been here and done the work because budgets are going in now and that would help a lot.

Upon motion by Mr. Kadow, second by Mr. Fetcher, the meeting adjourned.

THURSDAY AFTERNOON SESSION

The eighth session of the Seventh Annual Conference of Associated Police Communication Officers, Inc., was called to order by President Wareing at 3:00 p.m., December 5.

MR. WAREING: You can imagine with what a feeling of relief I reach this part of the program and also a feeling of pleasure in being able to turn over the chair to Gene Brown. I am sure he will do a fine job for the next year and that APCO will really start going places now.

PRESIDENT BROWN: Thank you, Mr. Wareing. Unfortunately, our first vice president, Mr. Joyce, left last night; however, I take great pleasure in introducing our second vice president, Mr. Kadow.

(Applause as Mr. Kadow acknowledged the introduction.)

At this time I would like to introduce to you our new Secretary-Treasurer, who has been our very gracious host during these few days we have spent in Orlando. Will you please come to the platform, Mr. Virden? I think possibly Mr. Virden should say a few words to you at this time.

MR. VIRDEN: I didn't get to welcome you the other day as a group, but I have tried to welcome each one of you individually on the grounds, and I hope that you have all had a good time. In fact, I will say that if you have had as good a time as I have, I have no worries. I wish to thank you for the honor of being elected Secretary-Treasurer; I will need your cooperation to do anything like the job that Secretary Morrow has done in the past. Under the administration of the past officers you have seen a good healthy growth of the organization and I hope that we can continue along that same line.

PRESIDENT BROWN: Thank you, Mr. Virden. It gives me pleasure to introduce to you Mr. Bob Schuler of California, your Sergeant-at-Arms. You are going to have a job next year, along with our friend McMurphy.

Last, but not least, I will ask the editor of The APCO Bulletin to arise. I am sure that Captain Wherritt will appreciate all the assistance you can give him in the coming year.

We still have some unfinished business on our program and at this time I would like to have Mr. Lowe, Chairman of the State Systems Standards Committee, present his report.

MR. LOWE: This is going to be one of the shortest reports we have had, I hope. We have held three meetings the past year, which have been well

attended by a majority of the committee appointed. We are sorry that we cannot report to you at this time that we have completed the many projects which we set out to complete this year. We have one item which has been completelydisposed of and that is the matter of standardization of signals. I am proud to report its wide adoption across the continent, which shows that it has been received by the entire membership and approved thereby. Lists of standard words and phraseology are still in the embryo state and there is much work to be done by the committee. It is a slow process to get a cross-section of opinions, suggestions, and boil them down and present at our conference. However, I feel sure that in the coming year the members of this committee will continue to endeavor to carry out the desires and wishes of the organization. Thank you.

PRESIDENT BROWN: Thank you, Mr. Lowe. The Chair would like to hear a motion for the acceptance of Mr. Lowe's report.

MR. MORRIS: I move the report be accepted as presented.

Second to motion by Mr. Morrow.

Motion carried.

PRESIDENT BROWN: In the absence of Mr. Searle, Mr. Morris will present the report of the Development and Activity Committee.

MR. MORRIS: The principal notes left by Chief Searle were that he attended the State and Provincial Section meeting of I.A.C.P. and did leave with them the thought that we were the proper police communications organization to be recognized by the chiefs of police and the resolution was presented and adopted by the State and Provincial Section of the I.A.C.P. I believe everyone here is familiar with the activity on the part of the chairman in the No-Bel case, which comes under development and activity. The plan presented by Frank Morrow regarding the National Motor Vehicle Trace Program was also part of the activity of that committee. The thought was brought out that the membership committee, if there is one, should endeavor to secure the cooperation of the I.A.C.P. through the Executive Secretary of that organization, Mr. Edward J. Kelly, 1313 East 60th Street, Chicago, through the medium of requesting that a letter formulated by this organization and signed by the president be enclosed with the communications that they send to the police chiefs. The changes in the teletype system in the State of New York, Connecticut and New Jersey are as follows: There are now two connections in New York State, one to Massachusetts and one to Connecticut which will facilitate the handling of traffic. Another one has been established directly between the state of New Jersey and Hawthorne, eliminating repetition of messages to the City of New York. Members Frank Morrow and George Searle report that they have contacts with the safety board of the C.A.A. and request that all cooperation be given to the C.A.A. in connection with air activities. During the year, members with ideas should send them to the Secretary. This note indicates that from time to time you get ideas about certain things and you should send them to the Secretary, who can act on them. Through the cooperation of the Bulletin Editor, other members of the association, not aware of what you have in mind, will hear about it. That should facilitate the work of the committees.

Last, but not least there is the thought that we change the number of days of the conference. The conference dates would be, for example, December 2 to 5, inclusive. Actually, everybody should be on the

grounds on December 2, but the first official meeting would be the morning of December 3, to give the committees an opportunity to iron out their problems before the conference actually starts. Those men who work on committees are in meetings here, there and elsewhere and they miss a lot of the conference. We would set the dates as usual and everybody try to get in for the first day. Ideas would be submitted to the committees, they would hold their meetings and prepare their reports, then when the conference started they would not have to miss so much of it, and there would be no question of reports not being ready because the committee had no opportunity to meet. Just set the date for opening one day beyond the advertised date. That is just a thought.

PRESIDENT BROWN: Thank you, Mr. Morris. You have heard the report as given by Mr. Morris in behalf of Mr. Searle. Is there any discussion?

MR. BATTS: I move that the report be accepted.

Second by Mr. Smith.

Motion carried.

PRESIDENT BROWN: I think the suggestion from the committee regarding that first day business is a good one and the Conference Committee will be so instructed. Another thing that has been mentioned on several occasions is that the programs are set up rather early. It seems that at all APCO Conventions that I have attended, and that is all except one, the night life has been rather strenuous and it has been impossible to obtain a large following the next morning. Do any of the members present have any suggestions regarding that? Perhaps we can get some real activity from our Sergeant-at-Arms in California and we can get the members assembled on time.

The next part of the program is the report of the Intercity Relations Committee by Mr. O'Neil.

MR. O'NEIL: The operations of that committee are to interest the heads of police departments adjacent to them in supporting intercity communications. The members of the committee have operated during the year by making personal contacts and all their work has been personal talk with department heads. Each one has done his part, endeavoring to promote intercity operations.

PRESIDENT BROWN: Any discussion regarding the report presented by Mr. O'Neil?

MR. MORROW: I move the report be accepted as presented.

Second to motion by Mr. Allen.

Motion carried.

PRESIDENT BROWN: Mr. Kadow will present the report of the Resolutions Committee.

MR. KADOW: Two resolutions were sent in from the Wisconsin Chapter. The first one deals with this horizontal increase in power, which the

committee feels should be turned over to the Engineering Committee because it needs a great deal of study. That has been done. There is another one which deals with procedure and has been turned over to the Procedure Committee. There was brought up the question of a resolution regarding those that might encroach on our frequencies from time to time, which has been tried before, so we have drawn up the following resolution for your attention:

RESOLUTION

WHEREAS, from time to time in the past attempts have been made by private and commercial interests to endeavor to encroach upon the frequencies now set aside for police use, and

WHEREAS, the already inadequate frequencies assigned to police radio communications are daily becoming an engineering problem, to sustain the essential communications in this sphere, and

WHEREAS, the importance of police communications in the interest of public safety and welfare makes it imperative that any frequencies which may in the future become available should be given first consideration for police use;

THEREFORE BE IT RESOLVED, by the national body of Associated Police Communication Officers, Inc., in conference assembled, on this fifth day of December, 1940, in the city of Orlando, Florida, that the Federal Communications Commission be petitioned to deny any requests for the use of police frequencies by any other than duly constituted governmental law enforcement agencies.

BE IT FURTHER RESOLVED, that the Secretary of Associated Police Communication Officers, Inc., be instructed to communicate this resolution to the Federal Communications Commission through the International Association of Chiefs of Police.

MR. MORRIS: I move the resolution be adopted.

Second to motion by Mr. Wareing.

Motion carried.

PRESIDENT BROWN: Inspector Batts will present the report of the Frequency Allocations Committee.

Sgt. Morrow moved that the rules be suspended and Mr. Batts be allowed to present the highlights of his report, but the minutes of the meeting should show the report in its entirety.

Second to motion by Mr. Wareing.

Motion carried.

(The complete report of the Frequency Allocations Committee follows:)

Report of APCO Frequency Allocations Committee

Part One - Introduction

Your Frequency Allocations Committee, throughout its deliberations, has kept in mind one of the most basic objectives of the Associated Police Communication Officers: The gradual development and expansion, on a nationwide basis and in a general way, of all Police Communications Systems--City, County, and State--toward the end that they shall provide quick, effective, and efficient police communications, not only for local and state patrol vehicles, but also between police departments themselves--between cities and between states.

Considered from a nationwide standpoint, the whole ultimate police communications system must be a well coordinated, well balanced and cooperative group of separate systems; State, Municipal and County. These systems must be made up of all types of systems: Radiotelephone, both U.H.F. and M.H.F., for both patrol vehicles and intercity communication; Radiotelegraph, for intercity and interstate; Teletype, for intercity and interstate; plus commercial wire facilities and eventually newer systems, such as facsimile, television, and radioteletype.

Great strides have already been made toward such a complete nationwide Police Communications System during the past six or seven years. The basic frame-work has already been built up. Already the police of the nation have built up a network of networks which reaches from coast to coast. That system is still expanding, largely due to the efforts of APCO, but there are certain obstacles that must be overcome, because the growth is now being hindered. Your Committee points out some of those obstacles and recommends action to remove them, further along in its report.

This present day frame-work of a Nationwide Police Communications system is largely radio. There are now about 1200 police radio stations in operation. Twenty eight (28) states have their own high powered radiotelephone stations. About twelve of those states have highly developed statewide networks which give complete radio coverage of all cities, towns, and hamlets within their boundaries. Thus it is possible for each agency to communicate with any other agency in the United States which is connected with the radio or teletype networks. There are about 6300 police radio stations in the United States, including the Two-Way police cars. Tying in with these statewide and municipal radiotelephone networks are the nationwide police Radiotelegraph (Code) network, which has now grown to 93 stations in 27 states, and the police teletype networks of California and the New England 9 state teletype systems.

Therefore, even today, several thousand police departments can communicate with each other, by means of our system of networks and through cooperative relay methods, if not directly, as the case may be. Through these networks, a little town in California can get a message into any town in New York, for example. Likewise with Houston, New Orleans, Tampa, Milwaukee, Detroit, and cities and states in between. Messages originate in the teletype networks and reach their destination by radio, and vice versa. They go by radiotelephone (voice), radiotelegraph (code) and by teletype.

This nationwide system has expanded rapidly to its present stage during the past 5 or 6 years. The members of APCO have been largely responsible for its development. But this is only a good beginning of what the

police of the nation need and will ultimately have. Therefore we--APCO--are not through. It is our job to continue the development and expansion of all these phases of police communication until an effective police system covers the United States. We have had the assistance of I.A.C.P., or at least its formal approval of our various actions.

In that connection, we wish to point out that we have never taken advantage of the possible full support of our Chiefs of Police as an organized group of individuals working actively and aggressively with APCO. If we had always had their support, the police communications systems would have fared better. Your committee must not be misunderstood. We have always had the support of the I.A.C.P. Communications Committee Chairman, but not of the whole committee, and certainly not of the individual police chiefs as a whole. They have approved our recommendations at their conventions, but very few chiefs have gone to those conventions fully informed as to the general needs of the police services of the nation, in the way of more radio channels for state police radiotelephone, for Two-Way, and for radiotelegraph intercity communication. They have never been fully informed as to their needs, the obstacles, nor the APCO programs. Therefore, they could not in the past give APCO any effective support. No doubt we are to blame for not having gained that support.

We have now reached a stage in the development of police radio facilities--a shortage of additional frequencies for Municipal and State intercity Radiotelegraph, for State Police radiotelephone, and for Municipal and State Two-Way--a stage where we must have the organized support of the members of I.A.C.P. in order to obtain what the police of the nation need.

In Part 4 of this report your Committee has outlined those tactics, or methods, with which we have proceeded in the past, to show just how little we have actually obtained in the way of more frequencies, in spite of our years of hard work and cooperation with the Federal Communications Commission.

We recommend an active and aggressive program of action which involves enlisting the active aid of the individual police chiefs of I.A.C.P., as well as that of their Communications Committee. These points also are covered in Part 4.

In addition to our deliberations which led to the aforementioned recommendations, your Committee also held a separate meeting on State Police Radiotelephone Allocations, which involves some re-allocation of existing State Police assignments in order to relieve some serious cases of interference between states. This re-allocation is also necessary in order to make use of two (2) new State Police frequencies. Our recommendations are covered in Part 3.

We also take cognizance of the new Defense Communications Board, created by President Roosevelt, for the coordination and control of all communications in the United States during national emergencies. The actions of that Board will be very important to the police of the nation. I.A.C.P. and APCO each have one representative on Committee VIII.

We again remind our membership of the new present-day importance of the police radio facilities in the United States; and we must realize that if we do not present a united front, we may be under-rated in the tre-

mendous scheme of things, which could result in our losing even some of what we have already gained.

We wish it clearly understood that we do not feel that the police services can afford to lose nor relinquish any frequency now allocated or assigned to these services. In this connection, we wish to point out that the U.H.F. frequencies above 40 mcs. allocated for police use are being used to some extent at present, and will be used to a very great extent in the future for repeater stations and similar applications.

It is not possible to over-emphasize the importance of the police of the nation in any national emergency, such as we see foreshadowed upon this country today. Likewise, by the same token, the importance of police communications is greatly increased over peace-time normalities, for we all know and realize that in each instance, State or Municipal, the police communications system of every department is the vital nervous-system of that department. Simultaneously, this relatively new phase, intercity and cross-country police communication by radio, will take on new importance in any serious national emergency, because of its lack of vulnerability, as compared to wire services which utilize thousands of miles of cross-country cables that cannot be effectively patrolled nor protected.

Part Two

Meetings And The Agenda

The Frequency Allocations Committee has held several meetings during the past four days. Those meetings have been both full committee meetings and sub-committee meetings. One such meeting was a joint one, between the Frequency Allocation Committee and The Engineering Research and Reports Committee, upon which your Chairman reported December 3rd, (see p. 61).

During the joint meeting some time was devoted to preparing committee recommendations on the method of selection of the APCO Representative on Committee VIII of the Defense Communications Board in Washington. However, several hours were spent in studying the present needs of the police services in additional frequencies; in reviewing the status of present allocations; and in propounding a new plan of action for this report. This meeting was attended by and participated in by Police Communications men from city, state, and county police departments all over the United States; from border to border, from coast to coast. They represented cities ranging from the smaller ones to the largest in the world.

Our deliberations at several meetings have lasted many hours and have covered in detail all of the various phases of frequency allocations of the police services. Namely:

No. 1 State Police Radiotelephone Frequency Allocations:

(a) Medium Frequency Radiotelephone
(b) State Police Ultra High Frequency Fixed Stations, AM and FM.
(c) State Police U.H.F. mobile frequencies, both AM and FM.

No. 2 Municipal Police Frequency Allocations:

(a) U.H.F., both AM and FM
(b) M. P. Medium High Frequencies, particularly in regard to 1706 and 1712 KC allocations.

No. 3 Radiotelegraph Frequency Allocations, both State and Municipal, for Nationwide Inter-city Police Communication:

(a) Interzone frequencies.
(b) Zone frequencies.

No. 4 U.H.F. Repeater-Station Frequency Allocations, for use by both State and Municipal Departments.

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The joint committee meeting was attended by Captain Donald S. Leonard, Michigan State Police, representing the International Association of Chiefs of Police, and by Col. E. L. White, representing the Federal Communications Commission.

At that meeting your Chairman and committees pointed out the present unsatisfactory status of frequency allocations in the police services, and thoroughly discussed the development of the situation up to the present time. We now feel that we may expect fullest support from the I.A.C.P. in an aggressive manner, which will bring results.

At this joint meeting it was clearly the consensus of opinion that, in certain phases of the Police Services, the present status of frequency allocations is very inadequate and unsatisfactory. (Please see Part 4). We need more frequencies, and we must have them. We believe we can get them.

Part Three

New State Police Re-Allocations

Your Committee was informed by Col. E. L. White, of the Federal Communications Commission, that the two (2) new State Police frequencies made available by the trade between the Police and the Amateurs are now available for allocation and assignment to State Police. These new frequencies are 1722 KC and 1730 KC.

Two sub-committee meetings were necessary in order to arrive at a satisfactory answer to fitting them into the present State Police picture.

Your Committee felt that in order to take full advantage of the two new frequencies, it was necessary to also recommend certain re-allocations of existing State Police assignments to clear up the present serious and disruptive interference between states which are on the same frequency. Those suffering worst interference are Michigan and Arkansas on 1642 KCs. and Missouri and Georgia on 1674 KCs.

Your Committee spent hours in trying to work out a satisfactory

arrangement, working checker-board fashion, and finally reached agreement among all concerned.

All the states involved had representatives present at the last sub-committee meeting.

Your Chairman was impressed by three outstanding facts during these meetings:

One: Each representative showed a fine cooperative spirit.

Two: The value of APCO as an organization stood out, because it was clearly seen that such agreements could not have been reached by correspondence nor among total strangers.

Three: Each man held to the broadminded aspect of the national picture, and therefore was willing to concede as well as to receive.

In addition to the re-allocations agreement, certain police receiver manufacturers agreed at the meeting to furnish State Police crystals for the car receivers in those states re-assigned, at very nominal prices.

Ohio will go on 1730 KCs, instead of the old allocation of 1682 with Iowa, when they are forced to change from their present assignment of 1596 by the Broadcast changes March 1, 1941.

Those present at last sub-committee meeting were:

Col. Edwin L. White, F. C. C.
Mr. C. M. Smith, Jr., No. Carolina, S.H.P.
Lt. G. W. Kinsey, Ohio, O.H.S.P.
Capt. D. F. Simmons, Jr., Georgia, Ga. S.H.P.
Mr. G. C. Alexander, Georgia, Ga. S.H.P.
Mr. R. O. Williams, Michigan, S.P.
Capt. L. E. Barber, Arkansas, S.H.P.
Capt. J. M. Wherritt, Missouri, S.H.P.
Dep. Insp. Robt. L. Batts, Chairman, Indianapolis Police Dept.

New State Police Frequency Allocations Final Agreement:

North Carolina-----1658 KCS, from 1706 KCS
Ohio----------1730 KCS, from 1682 KCS (1596 present assignment)
Georgia----------1666 KCS, from 1674 KCS
Michigan----------1642 KCS, (No Change)
Arkansas----------1722 KCS, from 1642 KCS
Missouri----------1674 KCS, (No Change)
Tennessee----------1642 KCS, from 1666 *
Kentucky----------1682 KCS, from 1658 *
South Carolina-----1714 KCS, from 1712 *

* This new allocation of this frequency to this state is made by the committee as only a temporary expedient and to remain in effect only until such time as this state is ready to install radiotelephone facilities, at which time new frequencies will have to be made available.

The committee was forced to resort to this expedient to make it possible to clear up serious interference between the above mentioned states, as explained previously.

We wish to point out that we realize that the allocations of the above frequencies to the states of Kentucky and Tennessee are only "temporary expedients"; that such is definitely not sound engineering, because both states are too close to other states allocated the same frequencies to be satisfactory; and in addition that when these states start operation additional frequencies must be made available by the F.C.C.. Nevertheless, we are advised that these allocations will probably go into effect by about January 15, 1941.

We were also informed of the intention of the Commission to change all 1712 KC Municipal assignments to 1714 KC in order to give the regular 8 KC channel separation from the 1706 Municipal channel. It will be noted that the state of North Carolina was originally allocated 1706 KC (now to be 1658) and South Carolina was originally allocated 1712. This latter will also become 1714, to eliminate the 2 KC heterodyne with the new 1714 Municipal frequency. South Carolina does not have any state police system in operation.

Concluding Part 3 of its report, your Committee can advise you that all present interference of the same-channel type is cleared up by these allocations.

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Part Four

Final Recommendations to 7th Annual National APCO Conference

A. OUTLINE OF PRESENT DAY NATIONWIDE POLICE COMMUNICATIONS

Hundreds of Police Departments throughout the United States today depend on their police Radio as the vital nervous system for the daily operations. In fact, the development of the radio for police work is one of the outstanding developments of the past decade. For, prior to that time, police departments had no means of keeping in contact with patroling police cars. Ten years ago crime was getting completely out of hand. The radio has proven a major factor in bringing it under control.

Today, the radio is indispensible in police work. We do not know how we operated without it. All police departments share those views and they are common knowledge among the general public. The radio has revolutionized police work. It has come to be generally recognized as a powerful crime deterrent, being feared by criminals of all kinds.

But the average person does not fully realize the full extent of modern police communications. When he thinks of his local or state police radio system, he thinks of the police patrol-car system. Police Radio today has developed far beyond that fundamental basis. He does not realize how the police of the nation have expanded their radio service, in order to increase the overall efficiency of their emergency operations, to include Fire Department vehicles, motorcycles, ambulances, the emergency vehicles of public utilities, coroners' cars, etcetera. They very likely know of the relatively new and marvelous Two-Way police radio, which gives continual

radiotelephone communication with cruising patrol cars, but they are not familiar with all the internal and external ramifications of modern police communications systems.

Particularly, they do not realize that the police departments of the nation, both State and Municipal, have extended their radio to communicate across country, between cities and between states--for Intercity Communications. Yet, this new phase of police communication is continually expanding. New stations are coming into the networks throughout the country. The system is increasing in importance, and as a result of this close contact between departments, the old barriers of state lines and city limits are rapidly disappearing. The police officer of today is becoming more communication minded. Departments quickly exchange or broadcast information over wide areas by radio and teletype. Wanted criminals are pursued across state lines, or state and municipal officers are sent out of their own jurisdiction to assist officers of other jurisdictions, without much thought of the old boundary lines. Then too, criminals, wanted by one department, are picked up perhaps hundreds of miles away, as the result of previous intercity police broadcasts.

The police departments of the nation, State and Municipal, have been making a coordinated effort during the past six or seven years to develop a complete and efficient nationwide network of Radiotelephone Stations (voice radio), Radiotelegraph Stations (code), and leased Teletypewriter systems. We have been very successful up to a certain point, for we have already developed the nationwide frame-work of the ultimate coordinated system of police communications. It is largely radio, and is police owned and police operated --operated by the regular radio personnel of the individual police departments, which personnel is required to operate the local or state radio patrol systems. Likewise teletypewriter systems play an important part in some areas of the United States.

At this point, however, your Committee wishes to point out that the teletype does not fit the police picture quite like the radio, neither TWX nor leased wire service. Teletype is not practical for large area "All Station Messages." The radio is perfect. The teletype is too expensive for most cities and states to permit complete-area coverage. They cannot afford it. Then too, the teletype utilizes miles of cross-country cables. These cables are extremely vulnerable to sabotage and storms. The radio operates independently of cross-country wires and cables.

Two national police organizations have been directly responsible for this nationwide development of radio for both local and state patrol and for intercity and interstate exchange of police information. They are: The International Association of Chiefs of Police and our own, The Associated Police Communication Officers, Inc.

There are now 1288 police radio stations in operation throughout the country. Most of them are radiotelephone (voice) stations, and nearly everyone of them is surrounded by smaller municipalities, which have no radio stations but operate police cars receiving service from the larger cities. This cooperative service is carried on by both State and Municipal departments. Most of the cities operate Two-Way cars. Most states are prevented from doing so by a combination of factors of greater distances and the fact that a sufficient number of frequencies have not been made available by the Federal Communications Commission.

These Municipal and State police departments communicate with each

other by radio networks, day and night. Nearly everyone of those 1288 stations is a part of a little network, and, therefore a part of the nationwide network. Twenty-nine states have their own high powered radiotelephone stations. Twelve of those states operate highly developed statewide State Police networks, usually consisting of 3 to 10 state owned stations, which not only give complete radio patrol coverage of all state highways, but deliver police radio messages to every city, town, and hamlet within their boundaries. (Also refer to Monroe, IACP book, "State and Provincial Police Services"). Tying in with these statewide and municipal radiotelephone (voice) networks are the nationwide Police Radiotelegraph (code) network, operated by both State and Municipal departments now totaling 93 stations in 27 states, and the police teletype networks of California and the 9 State New England teletype systems.

Thus it is possible for each police agency to communicate with any other police agency in the United States that is connected with the radio or teletype networks.

Therefore, even today, several thousand police departments can communicate with each other, either directly or through our system of networks, by cooperative relays. Through these networks, a little town in California can get a message into any town in the State of New York, for example. Likewise with Houston, New Orleans, Tampa, Raleigh, Milwaukee, Detroit, Buffalo, and cities in between. Then there are the messages of the "All Station" broadcast type. Messages originate in the teletype networks and reach their destination by radio, and vice versa. They go by radiotelephone (voice) radiotelegraph (code), and by teletype. Thousands of them every day. The departments using radiotelephone (voice) for intercity communication generally use the same equipment and frequency for local radio car patrol dispatching. The radiotelegraph uses separate equipment on separate frequencies. In addition to all this cross country, inter-police-department communication, these same police departments--Municipal and State--carry on their own local police car radio patrol, which has proven so valuable and indispensible.

B. POLICE SERVICES REQUIRE MANY RADIO FREQUENCIES OR WAVELENGTHS

All this police communication--many thousands of local patrol and intercity messages every day--requires many frequencies, for obviously all of these stations could not operate on the same frequency, because they would cause intolerable interference. Likewise, different frequencies, with different characteristics, must be used for different purposes. The same frequencies cannot be used for all purposes. For example, the same frequencies cannot be used for Two-Way transmitters in cars and for radiotelegraph. The Two-Way frequencies must have short range characteristics, generally speaking. The radiotelegraph frequencies must have various characteristics. There must be some frequencies for short range work and some for long range work. Likewise those used for long range work in the day time cannot be used at night, for the reason that they would interfere with trans-oceanic commercial services at night and signals would skip over much of the United States at night. Also the frequencies used for long range intercity (interzone) at night are too short-ranged for daytime work. Then, since the radiotelegraph network is layed out in zones (usually a State is a zone), experience shows that a greater number of frequencies are necessary for short haul zone work than for interzone work. Likewise different frequencies must be used for headquarters stations in radio car patrol systems, different again, for State and Municipal systems.

C. EXPANSION OF POLICE RADIO SERVICES BEING HINDERED

The use of radio by police departments is still spreading throughout the country. More departments are installing radio for local and state radio-car patrol. In addition, the Intercity and Interstate Networks are still expanding, both radiotelephone and radiotelegraph, as more cities install radio and more states install state-wide radio systems.

In certain respects this expansion of the police radio services is being seriously slowed down and handicapped by a lack of the necessary frequencies. The police need more frequencies for the several different branches of the service. They must have them. They cannot continue to efficiently carry on their important activities of protecting the lives, safety and property of the public, with the continued expansion taking place. The lack of frequencies has reached a point where it is impossible for any more States to install radio systems until more frequencies are available; in certain congested areas of the country no more municipal departments can install radio systems, because there are no more satisfactory frequencies available and in many cases those departments now using radio are already experiencing serious interference (90 in one metropolitan area); the radiotelegraph network is in the worst condition of any branch of the radio services for lack of frequencies; and other bad conditions exist. Your committee is pointing out the details of those conditions further along.

We have been unable to obtain more frequencies from the Federal Communications Commission, in spite of the fact that both IACP and APCO hav been working hard on the problem for several years.

As pointed out in Section B, Part 4, many frequencies are necessarily required for all the police services. It is obvious that too many departments cannot operate on the same frequency. The following table gives a general idea of the present distribution of stations and frequencies:

MUNICIPAL POLICE STATIONS

Medium Frequency Allocations

(Primarily for Headquarters Stations but also used for Intercity Radiotelephone)

No. of Cities Using M.H.F. Radio	Total No. of Frequencies	Total No. of Stations
417	15*	449

*Note: There is a total of 18 frequencies listed for Municipal Police, but the F.C.C. has not assigned 3 of these to any police department. Five frequencies are shared jointly with State Police Stations.

Ultra-High Frequency Allocations

(Headquarters Stations on very short waves--30 to 40 Megacycles)

GROUP "A" - (Headquarters Stations, unlimited power):

No. of Cities Using	Total No. of Freq.	Total No. of Stations
215	9	242

GROUP "B" - (Headquarters Stations, 250 Watt, Max. power):

No. of Cities Using	Total No. of Freq.	Total No. of Stations
278	6	286

GROUP "C" - (This group for Two-Way Cars):

415	10	(Approx. 5000 police cars are using Two-Way)

GROUP "D" - (For State Police Only)

No. of States Using	Total No. of Freq.	Total No. of Stations (P--PM--F)
7	4	27

STATE POLICE STATIONS

Medium Frequency Allocations

GROUP "D" (Cont'd)

(Primarily for main, high-powered State Police Stations)

No. of States Using Radio	Total No. of Frequencies	Total No. of Stations
27	12	155

(Including 2 new frequencies 1722 and 1730 covered in Part 3 of report)

States Using Municipal Frequencies

2	4	156	(Mostly low
(TOT)29	(TOTAL) 16	(TOTAL) 311	power, snow plow, etc.)

Ultra High Freq. Allocations

(State Police Cars and 1 Watt Portable Units)

No. of States Using Radio	Total No. of Frequencies	Total No. of Stations
7	4	27

RADIOTELEGRAPH (Code) STATIONS

There are police radiotelegraph stations in 26 states, although they are not all state police stations. All 93 stations operate on a maximum total of 9 frequencies. The distribution by State and Municipal groups are as follows:

Radiotelegraph Interzone Stations--(9 frequencies, Max.):

Municipal---19
State------- 9
----------28

Radiotelegraph Zone Stations---(3 frequencies):
Municipal---18
State Police---36
Portable and Portable-Mobile---11
----------65

Total Police Radiotelegraph Stations----------93

There are, therefore, 1288 police radiotelephone stations (Headquarter Stations) now in operation, 977 being operated by 910 Municipal departments and 311 being operated by 29 State Police departments. These figures do not include about 5000 police-car Two-Way transmitters. All 1288 stations operate on a total of only 45 frequencies, making an average of about 30 stations on each police frequency. Actually there are 56 stations on each of two medium frequencies and there are 89 Headquarters Stations on one (1) single Ultra-high frequency channel. Likewise, 144 cities operate their police car Two-Way transmitters on a single car frequency from Group "C", 30,580 megacycles.

Thus it is clearly seen that the police frequencies are being used to the point of saturation. Such is not the case in all other services. The following table taken from the F.C.C. Allocations Summary in their Rules and Regulations gives a comparison of the number of police frequencies with the Commercial Fixed (Main) Station frequencies and those allocated to the Government:

Government, Exclusive---1197	Maritime, Exclusive---280
Government, Shared------ 366	Maritime, Shared------125
TOTAL, GOVERNMENT-----1563	TOTAL, MARITIME-----405
Fixed Commercial, Exclusive-1011	Broadcast, Exclusive--248
Fixed Commercial, Shared---- 36	Broadcast, Shared-----100
TOTAL FIXED COMMERCIAL----1047	TOTAL BROADCAST-----348
Aeronautical, Exclusive----- 172	Police, Exclusive----- 44
Aeronautical, Shared-------- 90	Police, Shared-------- 36
TOTAL AERONAUTICAL---- 262	TOTAL POLICE-------- 80

The police of the nation urgently need more frequencies in all the various branches of the police services. The need in certain of the branches is drastic. Yet, we cannot get them. The Federal Communications Commission tells us that there are no more available. The APCO and the IACP have consistently made requests, jointly, to the F.C.C. for the past several years. We have submitted our proposals after each of our annual national conferences and following special interim meetings. But we obtain little or nothing.

We, the police of the nation, who are charged with the continual day and night duties of protecting the lives, safety and property of 130,000,000 people, and who represent a large part of the tax dollar, cannot obtain what we need to perform those tasks. We are placed in the position that we not only have to fight the commercial radio services, who operate for profit only, but we also have to fight the Federal Communications

We must have more frequencies not only to permit more Cities and States to have police radio and to clear up existing interference, but in order that present-day existing services, both radiotelephone and radiotelegraph, can give satisfactory service.

Your Committee submits that this situation is basically and fundamentally wrong. Something must be done about it.

This Frequency Allocations job is a tremendous task. The IACP and APCO are pledged to and were formed for the purpose of furthering and developing the police services of the nation. It is therefore their responsibility to do the work of straightening out this frequency allocations problem.

D. PRESENT UNSATISFACTORY STATUS OF POLICE ALLOCATIONS

The present status of the Federal Communications Commission Allocation of Police Frequencies is quite unsatisfactory and definitely inadequate.

But, before proceeding further, there are certain things that must be said regarding the development of this situation, in all fairness to the F.C.C., in conformity with the past attitude of both APCO and IACP. They are:

One: For some years, during the early development of Police radio, there was no national organization of police communications men to assist the F.C.C. by coordinating development of the radio on a national basis. During that period the F.C.C. acted as the guardian of police radio and made available a number of frequencies for police use, which number seemed to them adequate for future expansion.

Two: The widespread use of radio by police departments expanded more than anyone anticipated. It was then a new thing.

Three: In the early days of police radio, 1928 to 1934, there was little or no development nor demand by the police of the nation to use radio for inter-department nor interstate communication. They used it for local car patrol only. That was true partly because they simply had not been in the habit of communicating with each other in the past. There had been no means of doing so. Also, they had their hands full getting money to install radio and in developing their new radio system for local patrol. As a result of that situation, the Federal Communications Commission laid out a plan of Municipal police radiotelephone (voice) communication frequencies whereby groups of many police departments, separated by certain distances, would use the same frequency. This was done by the F.C.C. engineers on a sound engineering basis of theory that each Municipal police headquarters radiotelephone (voice) station would over-ride the weaker signals arriving locally from other police radio stations, at a distance. This has proven generally correct and quite satisfactory, insofar as the present 417 police departments on the Medium High Frequencies are concerned, insofar as reliable service to their own cars is concerned.

The point is that these M.H.F. frequencies were not allocated to properly serve the Municipal police for intercity and interstate voice communication. It is obvious that such an allocation of frequencies would have required many times as many frequencies for the municipal radiotelephone service alone, in order to give relatively interference-free frequencies for intercity work, particularly because of the fact that they are on the air so much of the time with local radio-car dispatching.

Your Committee concedes that the F. C. C. can do little insofar as the present medium high frequency Municipal Allocations are concerned, generally speaking.

Such is not the case with State Police medium high frequency allocations. State Police must have relatively interference-free channels, in order to be able to get usable signals into state police patrol cars which cruise throughout the state. That requirement, if always met, automatically clears up the state police channels and permits intercity communications, within the state, both between stations of Municipal police departments and other state police stations within the state. We call attention to the very excellent services rendered by the State systems in that manner, particularly in the 12 states with highly developed statewide systems. Likewise, there are several areas in the United States where Municipal police departments, lacking State radio systems, have organized their own efficient networks. All these are a part of the growing nationwide networks. This State police allocations problem is urgent. Not a single additional State can install a radio system until more frequencies are made available.

Four: Our relations with the F.C.C. and all of its representatives, from a purely personal standpoint, have been entirely friendly and satisfactory. We hold the highest regard for the engineering staff of the Commission.

Five: We fully realize that the whole problem of Frequency Allocations with which the F.C.C. is confronted is a tremendous task. However, we insist that adequate frequencies for the police services must be made available.

Six: We feel that the engineers of the Commission are highly qualified to carry out the engineering work of the Commission.

Details of Present Police Allocations

(General Details)

Your Committee submits the following list of definitions of police radio stations, of radio frequencies and their uses, and of the police services, for additional clarity of understanding by some who will study this report:

The Federal Communications Commission lists all police radio stations among the Emergency Services. There are four (4) classes of the Emergency Services for police radio stations:

Radiotelephone (Voice)

First:- Municipal Police Stations. They are municipal police stations who use radiotelephone for dispatching local police cars. These stations operate on two classes of frequencies:

One: Medium High Frequencies (Short Waves).

(a) For Headquarters stations, primarily, and

(b) Using same equipment for intercity and interstate radiotelephone communication.

Two: Ultra-High Frequencies (Very Short Waves).

(a) For Headquarters stations, (Groups "A" and "B") and for intercity communication, and

(b) For the Two-Way cars (Group "C" frequencies) and

(c) For repeater stations with Two-Way cars.

Note: There are two types of U.H.F. radio systems: (1) Amplitude modulation (AM), which is the type nearly all departments use for Two-Way cars, and, (2) The new Frequency Modulation (FM) system, which is "noise free." Very few departments use FM up to now, but extreme interest exists generally. Equipment is now available and the F.C.C. is licensing police stations on a temporary experimental basis to use FM on the existing U.H.F. frequencies. The municipal police share Groups "A" and "B" frequencies with a few State Police.

Second:- State Police Stations. They are State Police stations who use radiotelephone (voice) for communication, using the same equipment, between:

(a) State Police Stations in other states.

(b) Municipal Police Stations in their own networks.

(c) Their own State Stations (networks) within their State.

These stations operate on two classes of frequencies, also:

One: Medium High Frequencies ("Short Waves").

(a) For Headquarters stations for purposes a, b, and c, above. Nearly all State Police stations are on these frequencies.

Two: Ultra-High Frequencies (Very Short Waves).

(a) For Headquarters stations, used for purposes a, b, and c, above. (Only one State, Connecticut, uses U.H.F. frequencies for state-wide coverage. Their radio system uses the new "noise free" system of Frequency Modulation known as FM). State Police are forced to share frequencies, Groups "A" and "B", for these purposes. There are no exclusive State Police U.H.F. frequencies.

(b) For Two-Way car transmitters. Only 4 frequencies are allocated for State Police car transmitters.

(c) For repeater stations with Two-Way cars.

Third:- Interzone Stations. They are the Police Radiotelegraph (code) stations, which make up the nationwide police radiotelegraph network. They carry on the long range relay work between zones. Zones are usually single states. Some are municipal stations and some are state stations. There are now 28 Interzone stations.

Fourth:- Zone Stations. They are radiotelegraph (Code) stations, operated by both State and Municipal departments, to carry on intercity message traffic between departments within the zone. These stations handle the overload traffic which must either be secret or which would overload the voice networks. It is also effective over much greater distances than the radiotelephone stations. That characteristic is very important where state or municipal stations are not within reliable radiotelephone range of each other.

Needed Police Frequencies.

Your Committee now presents the unsatisfactory status of existing Police Frequency Allocations. We decided not to attempt to recommend specific frequencies, in any case, but are breaking down those needs by police services and by frequency groups only. We so decided for the reason that we saw no useful point in attempting to recommend specific new frequencies to the F.C.C. The APCO and IACP have done that several times before, with little or no results. Rather, we have shown the frequency needs in each branch of the service in a general way, on the theory that the proper next move is to take the necessary action to bring about changes that will make it possible for the police to get what they need when they do ask for them. We then recommend a plan of procedure and action. We see no other way out.

No. 1. State Police Radiotelephone Frequency Allocations.

(a) Medium Frequency Radiotelephone Frequencies.

The present number of State police frequencies is hopelessly inadequate. Since 1936 there has been serious interference between several of the states. Some of this interference is the adjacent channel

type. New police car receivers are now available, and are being installed by the State police radio systems, which clear up most of the adjacent channel of interference. But those states which are each required to operate their whole state system of 3 to 10 stations on a single frequency with another State using a similar multiple-station State system, are experiencing serious and disruptive interference. Many cases of nighttime operation are on record where one State made the other's entire system inoperative for a time.

APCO and IACP have been trying hard since 1936 to obtain more State police frequencies. We agreed to a trade with the amateurs to get those frequencies. The agreement involved international treaties and we each sent representatives to the Havana, Cuba, Conference in the case. As yet we have not obtained those frequencies for which we made the trade. We are now advised that we will get them (1722 and 1730 KCS), as pointed out in Part 3 of this report. They are to be made available by the F.C.C. about January 15, 1941. After 4 years we get two (2) additional State Police frequencies. But we lost three (3) zone police radiotelegraph frequencies, which loss is now serious to that service. They were 2036, 2040, and 2044 Kilocycles. The Army took over the other frequencies we were to gain in the trade, before the police had a chance at them.

The two new State Police frequencies we did obtain are just sufficient to clear up the existing same-channel interference between State stations already in operation. See Part 3 of this report. There are no frequencies left for new States to install radio.

Even when the two new State Police frequencies, 1722 and 1730 KCS., become available there will already be a total of 28 states operating on the same 12 State Police frequencies, operating today 167 high powered stations. In addition, two states, Washington and Oregon operate on 4 Municipal frequencies with 156 stations, including those on snow plows.

Several more State Police frequencies must be made available before the remainder of the states can use police radio. No more can go on the air on a medium high frequency until another frequency is available. On the basis of past experience, this may be four years. The State Police medium frequency allocation of frequencies is urgent.

(b) State Police Radiotelephone Ultra High Fixed Station Frequencies (AM and FM)

Several of the states now have need for Ultra High Radiotelephone Frequencies for fixed station use, such as those allocated by the F.C.C. in Groups "A" and "B", above. They are beginning to experiment on State Police Two-Way, both AM and FM. One state, Connecticut, is already in operation with 10-station complete coverage on FM.

At present the States are forced to use frequencies in Groups "A" and "B", which were originally intended for Municipal police headquarters stations. There are already insufficient frequencies for the Municipal police stations. Already they are experiencing serious long range interference, East coast with West coast police, and serious interference from nearby Municipal stations in the coast police, and serious interference from nearby Municipal stations in the same area. As noted previously there are 90 such stations in one metropolitan area, near

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of Annual Conference

3/4 of way down on Page 112

Mr. Lathrop states ~~"We~~

"right now, we only have

two (chapters)"

Philadelphia.

Obviously, there must be more U.H.F. fixed station frequencies made available to State Police. They cannot share frequencies with busy Municipalities who have as strong signals as the State stations.

There must eventually be several State Police Ultra High Fixed Station Frequencies available, for both AM and FM.

(c) State Police U.H.F. Two-Way Car Frequencies (AM and FM)

(Group D)

As pointed out in (b) above, the State Police Radio Divisions are beginning to experiment with Two-Way car communication. They, like the Municipal police, realize the tremendous value of this new radio system. Connecticut is 100% equipped. There are now 3 States using frequencies in Group "A"; 7 in Group "B"; 5 in Group "C" (which was intended to be exclusively Municipal); and 7 in Group "D", the exclusive State Police car frequencies.

Obviously, the State Police, with their greater car-to-station-range requirements, cannot operate on already congested Municipal car frequencies; and quite as obviously the limited number of car frequencies (only 4) is inadequate. Regarding the necessary number, considered from the point of interstate state police interference alone, in such areas as where Tennessee and Missouri come together, at least seven (7) Group "D" State Police car frequencies are required.

The State Police must not be denied the use of the important Two-Way radio system, simply because frequencies are not made available.

Your Committee, with reference to proposals submitted by some members that the one (1) watt power restriction for portable transmitters be removed from Group "D", State Police Two-Way car frequencies (as well as the low power portable--pack-sets, etc.), wishes to recommend that this not be done. Our reason being that the use of high powered portable stations on these 4 State Police car frequencies would undoubtedly produce disruptive interference over greater distances than police cars. In any case, caution must be used. The maximum portable power should be limited to ordinary car transmitter power and probably have antenna height limitations.

(d) State Police Repeater Station Ultra High Frequencies (AM and FM)

Your committee wishes to point out that, in connection with the ultra high frequencies in the 116 megacycle band, the police cannot afford to lose any of the frequencies. Although they are not being used much as yet, they will be used extensively for repeater-station transmitters at Two-Way-Car pickup points, as this phase develops in the near future.

No. 2. Municipal Police Frequency Allocations.

(a) Municipal Police Radiotelephone Medium Frequency Fixed Station Frequencies (Headquarters Stations)

The Municipal police Medium High Frequency Radiotelephone frequencies have been previously discussed in Part 4, Section D, paragraphs Three and Four. As pointed out in those paragraphs, your Committee concedes that the F.C.C. can do little, generally speaking, about the existing Municipal police Medium High Frequency Allocations on a national basis.

However, we wish to again point out that there are three frequencies in that group of 18 frequencies which are allocated to Municipal police, but on which the F.C.C. has assigned no stations. They are: 2326 KC., and 2390 KC. (Editor's Note: The police have now lost another frequency, 2350 KC. See F.C.C. Mimeo #45,806 dated 12-27-40). Your Committee recommends that these three frequencies be utilized by assigning some Municipal police stations these frequencies to relieve certain cases of interference.

Actually there are 417 Municipal stations operating on only 15 frequencies, not 18 as allocated.

Three of these 15 frequencies are also shared by State Police stations: 1706 KC--Oregon; 1714 KC now allocated to South Carolina; 2414 KC--Washington. Likewise, two (2) State Police frequencies are shared by Municipal police: 1658 KC--Alameda County, California, et al; 1674 KC--Palo Alto, California, et al.

(b) Municipal Police Radiotelephone Ultra High Frequency Fixed Station Frequencies (AM and FM) (Headquarters Stations)

(Groups "A" and "B")

The Municipal U.H.F. Fixed Station frequencies are already inadequate, as pointed out previously. There are only 15 frequencies, total, available for this usage. There are 9 in Group "A", unlimited power; and 6 in Group "B", 250 watt maximum power.

There is already serious interference due to the congestion in several metropolitan areas; there is serious long range interference; and these frequencies must be shared by both Municipal and State Police.

Your Committee does not make specific recommendations as to either the exact frequencies needed, nor the number, for reasons previously stated.

The Municipal police U.H.F. Fixed Station Frequency Allocation situation is urgent. As previously pointed out, there must be additional frequencies made available. The Municipal police already need them badly and the State police should have some exclusively State Police frequencies.

(c) Municipal Police U.H.F. Police Car Frequencies (AM and FM)

(Group "C")

The U.H.F. police car frequencies are allocated for Municipal police cars exclusively.

However, there are six (6) states using these frequencies, in

some cases at least, because they wish to work into existing Municipal receiving points. This sharing of the Municipal frequencies by State Police is not favored as a permanent policy. That for two reasons: (1st) The State police units using those frequencies, usually involving their greater crusing radius, are likely to experience an undesirable degree of long range interference from municipal police cars, which is not conducive to good service if adopted on a widespread basis. As pointed out the State Police should have exclusive state police car frequencies. (2nd) The use of these Municipal police car frequencies by State police cars only adds to the long range interference on these Municipal car frequencies, which is already being experienced, seemingly more in the lower car frequencies.

We wish to point out that there is no systematic allocations of the Municipal police car frequencies, every department, generally speaking, being permitted to select the frequency they desired. We recommend that studies be made by APCO and the Commission as to the possibilities of such regional allocations of car frequencies to alleviate interference. In connection with which we foresee difficulties, in that all available frequencies are now utilized in metropolitan areas, which areas in many cases are at proper distances from each other so as to produce long range interference. It appears that the only answer is more mobile frequencies, although Frequency Modulation must be given due consideration in this particular interference picture.

(d) Municipal Police U.H.F. Repeater Station Frequencies (AM and FM)

Your Committee wishes to point out that, in connection with the ultra high frequencies in the 116 megacycle band, the police cannot afford to lose any of the frequencies. Although they are not being used much as yet, they will be used extensively for repeater-station transmitters at Two-Way-Car pickup points, as this phase develops in the near future.

No. 3. Radiotelegraph Frequency Allocations (Code)

(Both State and Municipal Stations)

The Radiotelegraph Frequencies, only 9 total, are the frequencies used by the police radio stations on the nationwide Radiotelegraph Network for radiotelegraph (code) Intercity and Interstate Communications.

This system was begun in 1936 when the police themselves, seven police departments, set up 7 experimental stations, conducted extensive day and night tests, and requested the F.C.C. to make the Radiotelegraph a permanent police service and allocate the frequencies necessary for the work. In that connection, it will be recalled the nationwide police radiotelegraph system had its beginning not directly as a police request for Radiotelegraph, but was actually the result of a general uprising of police departments of the nation against the F.C.C. when the F.C.C. refused to permit the police departments to communicate with each other by radiotelephone. This uprising of the police reached its climax when police communications men from all over the United States met in St. Louis, Missouri, in January, 1935, to form a national organization to promote development of police communications generally. The result was our own organization--The Associated Police Communication Officers, Inc.--

and, a proposal by the F.C.C. that we start using Radiotelegraph.

After months of experimental tests and observations, the F.C.C. made the Police Radiotelegraph a permanent service and allocated six frequencies. Later, after further tests, it allocated 3 more frequencies (5135-5140-5195) for longer range daytime work.

During the period of experimental work and meetings between APCO and representatives of the F.C.C., the police were led to believe that the F.C.C. would continue to make additional frequencies available for the service, in order that it could expand and become a permanently satisfactory service.

This new service very quickly proved its value, its importance to the police, and the speed and accuracy with which the police could communicate over hundreds or thousands of miles. One police department can now send its messages direct to another police department, without the delay of messenger boys on bicycles, etcetera. Likewise, this new radiotelegraph (code) network quickly demonstrated its value in covering wide areas with "All Station" broadcast messages, a service which is not practical by TWX Teletype, due to costs, and which would not be practical over expansive nationwide leased-wire teletype networks, for the reason that they could not carry the increased load.

There are now 93 police radiotelegraph stations in daily operations, scattered through 27 states. Twenty-eight of those stations are Interzone Stations, handling the long range and "All Station" traffic. The remaining 65 are zone police stations, working in the zone (state) networks.

This radiotelegraph has proven an indispensible system to the police. It has gradually expanded, as more and more stations come into the network.

Yet, we have lost 3 of the most satisfactory frequencies, which loss, added to the already serious need for more frequencies to handle the expansion, has made the Radiotelegraph frequency situation the worst in all the police services.

The Radiotelegraph Frequency Allocations are the most urgent of the police services at the present time.

Present Radiotelegraph Frequency Status

In the trade with the amateurs, discussed previously, we lost three valuable zone frequencies, which number was inadequate at the time, and in the trade (after 4 years) obtained only 2 new State police radiotelephone frequencies. The valuable frequencies we lost were: 2036 KC, 2040 KC, and 2044 KC.

Those frequencies must not only be replaced with frequencies having similar characteristics, for zone work, but the police need several additional zone frequencies.

When we lost the above 3 frequencies we obtained three additional Day Only Interzone frequencies (7480, 7805, and 7935). At the same time, the status of 3 existing Interzone frequencies (2804 KC, 2808 KC and 2812

KC) was changed to Zone frequencies, not to be used as interzone frequencies; the status of the 3 existing Interzone Day-Only frequencies (5135 KC, 5140 KC, and 5195 KC) was changed to Interzone Day and Night frequencies. The frequencies involved are:

(#1) Old Zone Frequencies (Lost in Trade): 2036, 2040, 2044

(#2) New Zone Frequencies (Previously Interzone): 2804, 2808, 2812

(#3) New Interzone Frequencies (Previously Day Only) (Now Day and Night Interzone): 5135, 5140, 5195

(#4) New Day Only Interzone (Cannot be used at night): 7480, 7805, 7935

The present deplorable situation in radiotelegraph frequencies cannot be permitted to continue if this service is to continue. We must do something as soon as possible about it. Following are the facts:

(a) We have lost the good zone frequencies in 2000 KC band (#1). They must be replaced with frequencies having similar characteristics, for zone work, but in addition several more zone frequencies must be made available. There are now 27 zones in operation on the ridiculously small number of only 3 zone frequencies (2804, 2808, 2812).

(b) We are now forced to do all zone communication on only 3 frequencies (#2 above). They are in the 2800 KC band and have long range interference characteristics at night. Therefore, they are not satisfactory for Nighttime Zone Work. On the other hand, they were good for nighttime Interzone work. They should be changed in status to Interzone and additional frequencies of similar characteristics made available.

(c) The new Day and Night Interzone Frequencies (5100 KC band) are excellent for daytime operation up to a few hundred miles, but are practically worthless for nighttime operations. They actually skip over an area of several hundred miles at night, so that very little of the nighttime interzone work can be handled on these frequencies. For example, it is often necessary for Indianapolis to relay traffic through Denver, Colorado, and back to Springfield, Illinois. That is also a ridiculous situation for the police departments of the nation to have to contend with.

There must be an adequate number of proper nighttime interzone frequencies made available.

(d) The situation is so bad, what with lack of a sufficient number and the poor nighttime characteristic of the present Zone frequencies (2800 Band) and the nighttime worthlessness of the present night Interzone frequencies (5100 Band), that traffic is often delayed for hours.

Zone communication is delayed at night, because only a few zones can work simultaneously, due to long range interference and lack of zone frequencies.

In fact, the situation is even worse than that. Interzone traffic is also greatly delayed, both the point-to-point direct traffic and the "All Station" traffic. At night the Interzone stations are forced to work on the three 2800 zone frequencies, which were formerly interzone frequencies, in order to move traffic at all. The radio operators of the network are forced to do it in order to move traffic. Yet, they are prodded by their superiors for permitting delays. Such operation, we note, is a violation of F.C.C. Rules and Regulations, since those frequencies are licensed for zone work only. Yet, the radio operators have to sit back and wait until stations already working on the networks complete their traffic, then try to get in. It usually happens that several stations are waiting for the break and all pounce in at once, every man for himself.

Thus, it is clearly seen that at night nearly all 93 Police Zone and Interzone Radiotelegraph Stations are forced to work on only three (3) frequencies. The only exceptions are those stations who, at short intervals, have long range Interzone traffic and use the 5100 Bands.

All of the above points show how bad the Radiotelegraph situation is. In that connection, we may be challenged by certain groups that operating conditions on the network are bad. Such can be easily refuted, for those conditions are the direct result of the frequency allocations situation.

(e) The three (3) Day-Only Interzone Frequencies, 7480, 7805, and 7935 KC, have excellent long range daylight characteristics. However, they were accepted by APCO under protest because they are so widely separated from each other that they make transmitter design and transmitting antenna design complicated. Likewise with receiver inconvenience while operators are standing watch. In addition, the 7935 KC band is often very badly interfered with by Second Harmonic interference from the amateur 80 meter band. This interference not only occurs from amateur stations in the same city as the receiving police station, but also from several hundred miles. These cases are a matter of record. Which gives rise to the conjecture that these frequencies were probably released by a commercial service for that very reason. The police now have them, as permanent allocations.

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Your Committee, concluding above it's discussion of the present unsatisfactory status of Frequency Allocations in each branch of the Police Services, wishes to again point out that we are not making specific recommendations for either the exact frequencies or the number of frequencies needed by each branch of the service. We have deliberately refrained from doing so, as stated previously, for the reason that past experience of the

Police indicates conclusively that we could expect little or no results from such requests.

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E. FINAL COMMITTEE RECOMMENDATIONS

In addition to the above recommendations and facts, all of which are based on several years of past experience both in the Police Service and in dealings with the Federal Communications Commission, we now submit our final recommendations.

The following facts and recommendations have the unanimous approval of the Frequency Allocations Committee, only two being absent; of the Engineering Research and Reports Committee; and of the Chairman of the Communications Committee of the International Association of Chiefs of Police:

One: The Police of the nation drastically need more frequencies to properly carry on and expand their State and Municipal radio systems, including their Intercity and Interstate Networks.

Two: That the Federal Communications Commission has consistently, during the past five years, followed a policy of appeasement with the police services, first, in that we have been led to believe we would obtain necessary frequencies to carry on our important work, and second, only to tell us later that no frequencies were available for the particular service under consideration at the time.

Three: That, in the past both the International Association of Chiefs of Police and the Associated Police Communication Officers have endeavored to cooperate with the F.C.C. in every way possible.

Four: That APCO has consistently worked hard on preparing specific requests to the F.C.C., which we have submitted jointly to them, with the IACP, only to learn later, after patient waiting, in one case 4 years, that we receive little or nothing in the way of more frequencies.

Five: That we have been told by the F.C.C. that we would have to submit specific requests.

Six: That even when we did make reasonable and specific requests, jointly with the IACP, we have had them returned to us by the F.C.C., actually by F.C.C. representatives in person, with statements by the F.C.C. which presented almost insurmountable obstacles to the Police.

These obstacles are the statements by the F.C.C. that:

(a) IACP and APCO will have to make presentations at formal hearings, before the Commission in Washington, represented by the best legal and engineering talent, to present complete re-allo-

cation engineering data; and,

(b) To show specifically what frequencies "we are going to take"; and,

(c) To show what radio services "we" are going to take frequencies away from; and,

(d) To be prepared, with the aforementioned legal and engineering talent, to fight the other licensees (including the big Commercial Corporations) to take the frequencies away; and,

(e) To show the Commission what specific frequencies it will give those services from whom we take them; and,

(f) That we must include in our frequency allocations plans the countries of Canada, Cuba and the island of Puerto Rico; and, that, further

(g) That we--the police--must be prepared to fight these individual licensees in the highest Federal Courts, in case we won at the formal hearings and those licensees should appeal.

Seven: That in the beginning, when APCO was first formed, the F.C.C. had considerable respect for the potential political power of both IACP and APCO; and, that, for that reason, in the beginning the police did fare better. Since that time, however, the F.C.C. has found that they could send representatives to our annual National Conferences and interim meetings, make propositions that seemed fairly satisfactory and reasonably certain to happen; then go home. We then wait patiently for another several months or year, and get no more frequencies, or perhaps a few, or some with temporary so-called trading value. Our trades have not proven profitable.

As time went on they have found us to be a conservative, fair minded, and trusting group, which, generally speaking, works along engineering lines--who could be easily dealt with.

It is our opinion they have been following the only logical path, for their position--the path of least resistance. For we must freely admit that the Commission, including everyone of its engineering staff, are under tremendous and high powered pressure from dozens of different services. They have all they can stand up under. Everybody wants frequencies. Big paid lobbies are maintained in Washington and they use pressure. Among the large-group licensees the police are the only ones who take what is given them. If they give us more frequencies, it is just that much harder to find frequencies for those services that they are forced to find new ones for. The Commercial services have continued to get more frequencies, but

not the police. We have lost several, about 8, in the past few years.

Eight: That it should be the responsibility of the F.C.C. itself to make available and utilize not only the expert legal and engineering talent but also the engineering data, necessary to provide correct and sufficient radio channels to the police services. In that connection it should be pointed out that the F.C.C. has on its regular staff the expert legal and engineering talent and has in its files, or available from the U.S. Bureau of Standards, all the necessary technical data on frequency characteristics, etc., that would ordinarily be required in supplying the frequency needs of the police services.

Nine: That hereafter APCO will present to the Commission, jointly with IACP only the general needs of each specific branch of the police radio services, without attempting to accurately specify each separate frequency, and that we shall not even attempt to present elaborate technical and engineering data simply as a means of prosecuting our case, for the reasons that the police cannot collectively finance nor carry on the coordinated laboratory and extensive technical investigations necessary to obtain such data, over a period of many months or years; and because it should be the duty of F.C.C., as a branch of the Federal Government, not only to learn the needs of the police of the nation, in the way of radio frequency-allocations necessary for the protection of public life, safety, and property, but their duty to make these frequencies available to the police for those purposes.

We quote from the Communications Act of 1934, as amended: In Title 1 we find "....for the purpose of promoting safety of life and property through the use of wire and radio communication, ...there is hereby created a Commission to be known as the 'Federal Communications Commission,' which shall be constituted as hereinafter provided and which shall execute and enforce the provisions of this Act."

Section 4 (o) of the Act states "For the purpose of obtaining maximum effectiveness from the use of radio and wire communications in connection with safety of life and property, the Commission shall investigate and study all phases of the problem and the best methods of obtaining the cooperation and coordination of these systems."

Section 4 (k) of the Act states "....Provided further, That each year, at the beginning of the session of the Congress, the Commission shall report to the Congress whether or not any new wire or radio communication legislation is required better to insure safety of life and property. If any such new legislation is considered necessary the Commission shall make specific recommendations thereof to the Congress."

Section 303 states "....the Commission from time to time, as public convenience, interest or necessity requires, shall---- (g) Study new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest;...."

Section 305 (a) states "Radio stations belonging to and operated by the United States shall not be subject to the provisions of section 301 and 303 of this Act. All such Government stations shall use such frequencies as shall be assigned to each or to each class by the President...."

Ten: That the future policy of the APCO in dealings with the F.C.C. or its representatives shall continue to be entirely cooperative, fairminded, and shall be directed toward the advancement of police communication throughout the nation.

Eleven: That APCO and IACP jointly can and must do something about the Frequency Allocations situation. That we will not put up with the situation any longer, and that we will now begin an active and aggressive campaign through one of two methods:

(1) Political pressure on the F.C.C. through all U.S. Senators and Representatives, or,

(2) Through Federal legislation to put the Police of the nation in the same status as the Army, Navy, etc. That is, so police allocations will be made by executive order of the President.

In connection with which your Committee wishes to point out the following:

(a) The first method is extremely distasteful to all of our membership, but it would be one way of accomplishing results. That method, however, would provide only a temporary solution and would not give the police a permanent and more satisfactory place in the allocations picture.

(b) Your Committee recommends that this organization proceed with method number two (2), and attempt to obtain Federal Legislation, probably by Amendment of the existing Communications Act of 1934, to specifically include the Police Services in the same category as branches of the Federal Government.

(c) That in such legislation specific provision must be contained to provide proper representation for the police, probably on the Inter Department

Radio Advisory Committee, which makes its recommendations directly to the President.

Twelve: We recommend that this report be accepted and that, if it is accepted, a meeting of the APCO Executive Committe, Frequency Allocations Committee and IACP be called as soon as possible to lay out the plan of action, place responsibility, and begin work on the plan.

Respectfully submitted,
APCO Frequency Allocations Com.

Robert L. Batts, Indianapolis, Ind., Chairman
E. F. Brown, Des Moines, Iowa
A. A. Curry, Indianapolis, Indiana
R. E. Franklin, Houston, Texas
T. M. B. Lowe, Springfield, Illinois
M. B. O'Neil, New Orleans, La.
C. M. Smith, Jr., Raleigh, N. C.
*F. H. Schnell, Chicago, Illinois
*E. C. Denstaedt, Detroit, Michigan

* Not present.

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PART 5

OCCUPANCY OF

FREQUENCIES ALLOCATED TO POLICE DEPARTMENTS OF U.S.

BY THE FEDERAL COMMUNICATIONS COMMISSION

DECEMBER 1940

———0———

APCO Frequency Allocations Committee
Robt. L. Batts, Indianapolis Police Dept., Chrmn.

———— 0 ————

MP -- Municipal Police
SP -- State Police
M -- Mobile Station
P -- Portable
PM -- Portable-Mobile Station
F -- Fixed Stations
REF -- Refer to Note

Medium Frequencies (F.C.C. Sec. 10.41)

State Police

State Police (Cont'd.)

Frequency	Ref.	Usage	No. of States on Frequency		Total No. of Stations on Air	No. of States Alloc. Freq.
1. 1610	#1	SP-F-P	2		29	3
2. 1626	#1	SP-F-P	2		17	4
3. 1634	#1	SP-F-P	3		17	3
4. 1642	#1	SP-F-P	2		9	4
5. 1658	#4	SP-F-P	4	Shared by Municipal Police (Alameda, California, etc.)	15	5
6. 1666		SP-F-P	2		12	4
7. 1674	#4	SP-F-P	2	Shared by Municipal Police (Palo Alto, California, etc.)	11	4
8. 1682		SP-F-P	3		18	5
9. 1690	#1	SP-F-P	2		6	3
10. 1698	#1	SP-F-P	3		13	6
11. 1706	#1-#4	MP-F-P	1		27	2
12. 1714	#2-#3	MP-F-P	0		0	1
13. 1722	#3	SP-F-P	1		2	1
14. 1730	#3	SP-F-P	1		6	1
15. 2414	#4	MP-F-P	1		129	1
16. 2490	#4	MP-F-P	Same			
			TOTAL-----29		TOTAL--311	TOTAL--47

Municipal Police

Frequency	Ref.	Usage	No. of Cities on Freq.	Total No. of Stations on Air
1. 1658 KC	#4	SP-MP-F-P	4	5
2. 1674 KC	#4	SP-MP-F	6	6
3. 1706 KC	#1-#4	SP-MP-F	3 (Shared by State Police) Oregon	3

Municipal Police (Cont'd)

	Frequency	Ref.	Usage	No. of Cities on Freq.	Total No. of Stations on Air
4.	1714 KC	#2-#3	MP-F	44 (Shared by State Police--1 allocated)	51
5.	2326 KC	#1	MP-F	0	0
6.	2350 KC	#1	MP-F	0	0
7.	2366 KC	#1	MP-F	2	2
8.	2382 KC		MP-F	17	19
9.	2390 KC	#1	MP-F	0	0
10.	2406 KC		MP-F	13	14
11.	2414 KC	#4	SP-MP-F-P	54 (Shared by State Police) Washington	56
12.	2422 KC		MP-F	24	25
13.	2430 KC		MP-F	27	30
14.	2442 KC		MP-F	54	56
15.	2450 KC		MP-F	39	46
16.	2458 KC		MP-F	27	29
17.	2466 KC		MP-F	34	35
18.	2474 KC		MP-F	21	21
19.	2482 KC		MP-F	8	8
20.	2490 KC	#4	SP-MP-F	40 (Shared by State Police) Washington	43
				(TOTAL)----417	(TOTAL)----449

Notes:

#1 - Subject to condition that no interference is caused to Canadian Stations.

#2 - 1714 KC is a new frequency agreed upon at APCO Orlando conference. (Editor's Note:- 1712 KC was deleted by F.C.C. 12-27-40)

#3 - Frequencies shared by police and government (F.C.C. Mimeo #45-806 12-27-40)

#4 - Frequencies shared by State Police and Municipal Police.

Occupancy of

Ultra High Frequencies (F.C.C. Sec. 10.42)

Group A

(Fixed Station, Unlimited Power)

The following 9 frequencies are allocated for both Municipal and State Police Fixed Stations, without limitation as to power. Either Municipal or State Stations may operate their own Mobile or Portable-Mobile units on their fixed station frequency. (s)

	Frequency	Total Cities Using	MP and SP Total Simplex	MP and SP Total Duplex	Cities Using 1-Way Rd.	Total States Using
1.	30700 KC	22	17	3	3	1
2.	31100 KC	22	20	2	1	
3.	31900 KC	14	9	1	4	
4.	33100 KC	83	61	15	10	
5.	33940 KC	14	10	4	1	
6.	35500 KC	13	8	3	2	
7.	37500 KC	21	15	4	2	
8.	39100 KC	10	8	2	0	
9.	39900 KC	16	13	1	2	1
	(TOTAL)	215	161	35	25	2

Group B

(Fixed Stations, 250 Watt Maximum)

The following 6 frequencies are allocated for both Municipal and State Police Fixed Stations with a 250 watt maximum power limitation. Either Municipal or State Stations may operate their own mobile or portable-mobile units on their fixed station frequency. (s)

	Frequency	Total Cities Using	MP and SP Total Simplex	MP and SP Total Duplex	1-Way Radio	Total States Using
1.	31500 KC	71	55	16	2	
2.	33500 KC	50	42	6	2	2
3.	35900 KC	23	21	3	0	2

(Group B - Cont'd.)

	Frequency	Total Cities Using	MP and SP Total Simplex	MP and SP Total Duplex	1-Way Radio	Total States Using
4.	37100 KC	89	78	8	3	1
5.	37900 KC	28	25	3	0	1
6.	39500 KC	17	15	2	0	0
	(TOTAL)	278	236	38	7	6

Group C

(Portable - Portable Mobile - Municipal)

The following 10 frequencies are allocated for municipalities desiring frequencies for use by portable stations of 1 watt power or less, portable-mobile-stations, or mobile stations different from those which may be allocated under section 10.42 (A) and (B).

	Frequency	Total Cities Using	Total States Using
1.	30580	144	2
2.	30980	29	
3.	31780	42	
4.	33220	69	1
5.	33780	30	2
6.	35100	15	
7.	35220	23	
8.	37220	24	
9.	37780	15	
10.	39380	24	
	(TOTAL)	415	5

Group D

The following 4 frequencies are allocated for states desiring frequencies for use by portable-mobile or mobile stations different from those which may be allocated under section 10.42 (A) and (B). These frequencies are also available to states for portable stations of 1 watt power or less:

Group D - Cont'd.

	Frequency	Total States Using	Total Stations Licensed (P-PM-F)
1.	35780	6	25
2.	37380	1	2
3.	39180	0	0
4.	39780	0	0
	(TOTAL)	7	27

0

MR. WAREING: I wonder why you left out the municipal police for medium high frequencies.

MR. BATTS: So far as I know there are no requests for additional frequencies to the municipal police.

MR. SCHULER: I thought there was a request in Kansas City for municipal and county use where they covered a small county like some of our states. I think you have forgotten that.

MR. BATTS: I don't remember anything like that and the Committee has had no request for anything like that during the past 15 months.

MR. WAREING: Texas and California always brought that up.

MR. BATTS: At one time we passed a resolution on increased power for California. Mr. Schuler, no one has called this matter to the attention of the Committee. I talked with you about it in Kansas City.

MR. VICKERSON: Are we going to try to get some more ultra-high frequencies for the municipal stations? We find that in and around Boston and New York City it is no longer possible to give anything near a clear channel.

MR. BATTS: I can read that section of the report if you desire.

MR. VICKERSON: No, that is not necessary.

MR. ALLEN: In regard to the ultra-high frequencies, what consideration has been given to the interference of sky waves?

MR. BATTS: We have not gone into detail on that. We are leaving it to the Commission. We want what we need and have found that it doesn't do us any good to work along those lines. However, we point out that APCO should continue to cooperate with the Commission on such matters. There are definite zones in which sky wave does interfere with other locations within a certain radius and it seems logical to give that some consideration. They have that information and could make it available

to us, but we can't get it.

MR. BARROW: Were there any recommendations regarding trunk lines?

MR. BATTS: No, sir. I think personally that would be more of a procedure committee activity, inasmuch as the commission did not specify anything, when they released these 7900 frequencies, as to how they would be used, on a calling and working basis or trunk line; the committee did not take that up.

MR. BARROW: Is that included in the procedure report?

MR. BATTS: I don't know. Is there any further discussion? If not, we will entertain a motion regarding the report.

MR. WILT: I move that this report be accepted.

Second to motion by Mr. Smith.

Motion carried.

MR. MORROW: Gentlemen, in connection with the work of the resolutions committee there is something that we have been chasing around and haven't been able to get in the form of a resolution. The subject came up several times during the discussions regarding the selection of a delegate, an alternate, and an advisor to the National Defense Board Sub-committee with regard to the fact that the fire chiefs are represented on that sub-committee. In the interest of still furthering the progress of our own service and enhancing the protection thereof, it occurred to some of us that it might be well that a resolution be introduced here and action taken thereon to the effect that the police communication services recognize the difficulty in which the fire-fighting services find themselves in regard to radio communications. In view of the fact we thoroughly recognized that and have taken cognizance of it, we recommend that the officers of this organization be instructed to contact the officials of the International Association of Fire Chiefs or other interested organizations of that nature, telling them of the fact that we do know their problems and offering our complete cooperation in any possible effort to provide them with adequate services in connection with our facilities.

PRESIDENT BROWN: Are you offering that as a suggestion that the Association contact the International Association of Fire Chiefs?

MR. MORROW: I think the best course would be to direct that a resolution be drawn and then action can be taken before we leave the conference. I think that view was shared by others in the meeting of the Executive Committee the other night, that it will add to the prestige of Mr. O'Neil's presentation to have the friendship and working cooperation of that group. I make that as a motion--that a committee be appointed to draw up such a resolution to be acted upon at this time.

Second to motion by Mr. Smith.

PRESIDENT BROWN: Is there any discussion?

MR. MURNANE: Would that give them the impression that we would allow them to use police frequencies?

MR. MORROW: We say "police facilities." From the standpoint of existing stations or any other stations government operated, that they be permitted to use them. It is a cooperative share basis.

MR. O'NEIL: Do you mean that to be a service on the ultra-high frequencies between fire-fighting equipment or fixed stations or all of them?

MR. MORROW: I would say, judging from experience in the City of Indianapolis, that it might well apply to both services, both mobile and fixed stations. I am not proposing any particular method of cooperation, merely that we offer them every possible cooperation.

MR. O'NEIL: I believe for the most part they have availed themselves of our police services in many instances already and this is really just making a gesture to their representative. It is well understood by those here who are operating equipment for their departments who already give service to the firemen that it would make no change in that service they have been giving in the past, but to acquaint those in the fire service with the idea that they are ready and willing to help them.

MR. MORROW: That is correct.

PRESIDENT BROWN: Is there any more discussion?

Motion carried.

PRESIDENT BROWN: I will appoint Mr. Morrow and Mr. Smith to immediately prepare such a resolution for presentation to the conference.

MR. SMITH: As secretary of the Atlantic Police Communications Association I should like to comply with our newly adopted constitution and hereby present the formal application of the Atlantic Police Communications Association for affiliation with APCO under our new constitutional provisions. This association includes the states of Pennsylvania, Delaware, Maryland, Virginia, West Virginia, and North Carolina, a regional chapter.

MR. WAREING: I move that the association heartily accept Mr. Smith's application for affiliation.

Second to motion by Mr. Curry.

Motion carried.

MR. MORRIS: We have had the good fortune for a long time now of having the services of an efficient Bulletin editor. I am not entirely familiar with his assistants but I have met some of them at the conventions, and it has come to my attention, by the usual way that things get around, that they work far beyond their regular hours of duty and at times dip down into their pockets with nothing else but their supper. I think at this time the association should find some means of placing at the disposal of the Bulletin editor an expense account. If I remember right, there was something brought up at a previous convention but I don't believe it has come up here and I would like to hear some discussion before putting this in the form of a motion. My idea in the matter, and I think it is proper, is to put it in the form of an expense account and they should not be

expected to render a detailed account of these expenses. By that I mean if they are limited to a small amount, I'd say $250 a year, that would be $5.00 a week, I know that isn't very much, and we know these people have worked very, very hard. Maybe $250 a year is away below what it should be but I just give that as a suggestion and I'd like to have a discussion.

PRESIDENT BROWN: I am glad you brought that up. I think it has been discussed by several member of the Association. It is my knowledge that they do a lot of the work outside their office hours. The editing of the Bulletin and the majority of the work is done after regular office hours.

MR. MURNANE: Even if I had Wherritt's editorial ability it would be impossible for me in my department to accomplish what he has accomplished, and I understand there are three individuals who are mainly responsible for the Bulletin. I think that the amount Mr. Morris happened to arrive at is insignificant in comparison to the work entailed. By Capt. Wherritt's editing the Bulletin we have saved ourselves the headaches of other organizations who have gone outside and hired promoters. I have had some experience like that. We hired a professional program editor and when he got through with his expenses there wasn't anything left for the organization for which the program was being prepared. I agree that something should be done to financially reimburse the editorial staff for the extra effort beyond their normal tour of duty that they put forth to prepare this Bulletin. On my own hook I went out and obtained an ad from a small manufacturer. There is a possibility that we in our respective states and communities have manufacturers who may not be manufacturers of complete radio instruments but who manufacture things that go into the manufacture of transmitters and receivers and whathot. I think we should constitute ourselves a committee of one to try to push this Bulletin across.

MR. WARÊING: I don't believe either of these gentlemen understands exactly what the situation is. A member of the Missouri State Patrol is not able to do much of this work on "company" time. All of the editing of the Bulletin, correspondence to advertisers, trying to get material from members, chasing down to the printers, setting up and tearing down copy, proof reading, etc., has been done largely on this man's own time and at his own expense - and he works just as long hours as any of us. I understand that Supt. Morris didn't understand the situation. I feel the Bulletin Editor should be allowed an expense account, outside the normal cost of the Bulletin and his printing and binding, etc., of at least $150 a month, providing he can get enough advertising to make it.

Second to motion by Mr. Schuler.

MR. BATTS: I wholeheartedly agree with everything said. I think if we are going to do that we can go a little further - we might also offer the editor and his staff, since he is going to have a little tougher job of getting sufficient money to keep going, that we might in addition to that $150 a month offer him 10% of the advertising proceeds, for which he would not have to account. In other words, that would all depend on how much the receipts from advertising amounted to. It might be well to ask Capt. Wherritt how he can operate on a remuneration of $150 a month.

CAPT. WHERRITT: I can tell you just about what our profit has been. We have a little over $1100 in the treasury; that has been the profit for fourteen months. That is approximately $80 per month cleared on the Bulletin. Now we are going to some additional expense in order to

print a good front cover and make the Bulletin up in the new magazine style, which will run the cost up $18 or $20 an issue. In order to clear $100 a month we are going to have to have 10% or 15% more advertising than we have now, which means we have to use a little more salesmanship. Another thing, in order to get that advertising we are going to have to increase our circulation because some of the advertising agencies feel that a circulation of 800 departments or police communications men is not sufficiently large to warrant their advertising. Some have written about direct results from it and I have talked to members who have made the statement to me that they are buying their equipment from the advertisers in the Bulletin. I have purchased equipment almost exclusively from Bulletin advertisers since the time I started editing the Bulletin. If we make a practice of supporting those who support us we can get that advertising. It is the advertisers who make possible the convention and the Bulletin. Understand what you are voting is expense money, so that I can employ others to do the work, not a salary for the editor.

MR. MORRIS: I must admit I am a little bit embarrassed. I guess nobody around here wants to work for me. I must admit again, I think I was observed by the Bulletin editor when he was rendering his report this morning, he gave me a dirty look, I wasn't paying any attention to his report. I must have been discussing something about as important. What I want to bring out is that everything must be done with reason, that is why I specified $5.00 a week. I didn't know what the income was as a result of this publication, but I do feel on the other hand that we should use reason in deciding on what amount should be made available. It is rather embarrassing to ask the Bulletin editor to name his own salary but good men usually do. Some of them haven't a heart but I don't feel that is the situation with our Bulletin editor. I was wishing that he would express a figure himself. We don't have enough discussion here. We are all in sympathy with him; we want to encourage him, but I think that this $150 a month would be for the present a little too high. Something on a percentage basis entirely might be satisfactory.

MR. SCHULER: We might leave the editor to his own discretion - not to exceed $150. He has been running it a long time and I think that a very fair way, if it will carry the load. I am sure that Capt. Wherritt is in a position to know what the Bulletin will do and what he can expect it to do in the future.

PRESIDENT BROWN: I believe we are all agreed that the work on the Bulletin will daily increase. I know that it has been a task there in Missouri and that it has taken practically all of their outside time to prepare the Bulletin and bring it up into the type publication it is. I believe Mr. Morris' suggestion is a good one - that we hear from Capt. Wherritt in this respect, get his viewpoints.

MR. WAREING: Knowing Capt. Wherritt as well as I think I do, he will say $10 a month will be plenty. I want to point out that I have made that motion for the next year only, because that is as long as I know he will be editor. If the wrong man were given that he might ruin the magazine just so there would be a little more in it for him. That is why I don't like the idea of any percentage basis. My motion is that Capt. Wherritt be allowed to spend up to $150 a month, at his own discretion, for work on the Bulletin during the coming year, providing there is sufficient advertising to take care of it, and no detailed accounting of this sum will be required.

Second to motion by Mr. Schuler.

Motion carried.

MR. MURNANE: I have two suggestions for the conduct of the next annual convention. One is that there should be appointed a reception committee. There were some individual new members who attended this year and while they were made to feel at home by reason of the entertainment, they were not brought into our family circle too closely and I have heard a few criticisms. If we each undertook to make ourselves a committee of one to make those new members feel at home that would help. Second, I think that the complexion of next year's committees should change. A man should not be placed on more than two committees, and the committee members for the coming year should be men who have not been on committees this year, providing they attend.

PRESIDENT BROWN: I think Lt. Murnane's first suggestion is very excellent and it will be given as a suggestion to the convention committee.

MR. MORRIS: I think that a lot of those committees are continuous, so that not all are new each year. Incidentally, when any celebrity comes into a group of this kind he is generally escorted up and out. I was a little embarrassed when the Senator came in here and there was no one to meet him. We are just criticising ourselves for our own benefit. These clergymen should have been escorted to the platform, which our host did to the best of his ability, but he should have been met at the door and escorted up here and then taken to the door when he left and thanked again. That is a reception committee's job. It looks good and it leaves a swell impression. The bigger the fellow, the more he expects it. We are a little lax along that line and until Lt. Murnane brought it up I thought perhaps I was the only one that felt the responsibility. I hope the committee will do a good job in the future. Now this other committee business, if I remember right it is continuous. Last year we started that procedure so that all members are not appointed each year.

MR. WAREING: It was decided to replace a third of each committee each year. I tried to not put one man on more than one committee and spread them around the country as much as possible, but I think our new president will have the same trouble I had. I think you will find that most of our members don't know how to write a letter.

PRESIDENT BROWN: Lt. Murnane's suggestion to restrict the members to possibly two committees is a good one. I think you will find when you go to a conference if you are on more than two committees it is impossible to attend all the meetings. The names of the new committee members will appear in the next Bulletin because our current year will naturally be shorter than this last one, in view of the fact that we will no doubt hold our annual meeting prior to the I.A.C.P. meeting, which is usually held in August. If we hold our meeting prior to that time our committees will have only about nine months to function. Is it the general thought that we should hold the meeting prior to the I.A.C.P. meeting?

MR. MORROW: As I understand it, the I.A.C.P. in their session in California gave to Captain Leonard and his committee full and complete authority to approve the actions of this organization, and that was a direct result of the question of our meeting in Kansas City at the same time of their meeting in California. They gave that committee full authority to

approve the actions of this organization, so I don't believe that question is moot at this time. I believe the time we hold our convention is immaterial.

MR. VICKERSON: I would like to go on record as saying that it is very nice to have the convention in cold weather, if going to a warm climate.

PRESIDENT BROWN: Mr. Morrow, do you and Mr. Smith have the resolution prepared regarding the Fire Chiefs?

MR. MORROW:

(RESOLUTION)

WHEREAS, there has come to the attention of the police communications services the fact that the fire fighting services of the several governmental bodies, which are also vital emergency services, are experiencing difficulties with respect to adjusting the matter of radio facilities in connection with the direction and operation of their vehicles and station house communications, and

WHEREAS, we recognize the fact that the matter of frequency availability presents a huge problem, and that there are not now available for the fire service frequencies in the spectrum;

THEREFORE, we the Associated Police Communication Officers, Inc., hereby resolve that our Executive Committee convey to the delegate of this organization to Sub-Committee No. 8 of the Defense Communications Board the authority to contact the Fire Service representative upon that board and advise him of our cognizance of their problem, and to extend to said fire service representative our offer of complete cooperation in the matter of working out methods for expediting coordination of the communications work of the Fire Services and the Police, in the matter of sharing our facilities, but that there shall be no interpretation nor construction of this resolution to mean that any of the frequencies now or later to be assigned to the police service may be assigned solely to fire service in any case, and

FURTHER, that copies of this resolution be forwarded to the Secretary of the International Association of Fire Chiefs, for the direct information of that body, and to the Federal Communications Commission through the International Association of Chiefs of Police.

PRESIDENT BROWN: Is there any discussion regarding the resolution?

MR. MORRIS: I move that it be adopted.

Second to motion by Mr. Kadow.

Motion carried.

MR. CURRY: Mr. President, the Engineering Committee wishes to report out of committee some problems referred to it yesterday. There were three problems that came up on the floor, problems regarding antennas, power, and frequency tolerance. The committee has taken the following action:

We propose that a resolution be drawn up and delivered to the Federal Communications Commission via the International Association of Chiefs of Police, in the customary manner, which resolution shall ask that the Federal Communications Commission consider the advisability of requiring the police services to comply with certain standards of good engineering practice in the design and installation of their radio equipment, which standards shall not be as stringent as those applying to the broadcast and other similar services but shall require a somewhat higher degree of excellence than that which is required by the present rules. This suggestion is intended to apply particularly to antenna systems used for radiotelephone by police on the medium high frequencies. This resolution shall also suggest that the Federal Communications Commission reexamine the question of maximum power to be allowed to police services on these frequencies, to determine whether present conditions make a revision of these power limits desirable, and that the Federal Communications Commission also seriously consider the desirability of reducing the frequency tolerances allowed to land stations on the medium high police radiotelephone frequencies, including all existing equipments, effective in the near future.

PRESIDENT BROWN: Is there any discussion or a motion for acceptance of this report?

MR. BATTS: I move that the report be accepted.

Second to motion by Mr. Schroeder.

Motion carried.

Mr. Morrow suggested that in the future a flag should be displayed in the conference room, and the matter was delegated to the Conference Committee. Mr. Morris explained that he was responsible for having the Star Spangled Banner played at the banquet the previous evening and suggested that procedure be continued in the future.

PRESIDENT BROWN: Is there any other business? I might say before closing this session that we shall all take it upon ourselves to lend Capt. Wherritt every aid possible in the supplying of data for the Bulletin, and furthermore in assisting him in the solicitation of advertising. He is going to need all he can get from now on. I believe we should make every effort in the future to show our appreciation to the manufacturers who are advertising in the Bulletin and who have supported our conferences by giving them our business. Some of them have been very good to us; in fact, I often wonder how much some of these manufacturers really obtain from showing at our meetings. I feel that we should make every effort to patronize these firms.

MR. MORROW: There was a resolution passed back in Indiana before I came down here, during the meeting for the organization of the Indiana Communication Officers Association, in which I was instructed to report to the conference that the group has been organized, the officers selected and a constitution is in the process of being drawn; they have expressed their intention of applying for a chapter charter as soon as the setup will comply with the regulations.

MR. WAREING: I believe the Florida group has taken some steps in that direction.

MR. VIRDEN: We have been trying to get together to hold the final meeting. Mr. Bailey was delegated to draw up a constitution, but we have been unable to get together at all. However, we still hope to have it ready for presentation at some future date. Due to the distance between towns we have quite a time getting together for any functions at all. We had intended to get together sometime during the conference, but it seems that all the time has been taken up without having to go to meetings of state organizations.

While I have the floor, I'd like to ask if there are any other suggestions or criticisms regarding the Conference. If so, I'd like to hear them so that we can pass them on to the next Conference host and he can benefit by our mistakes. We know we have made mistakes, but they have been unintentional.

PRESIDENT BROWN: I am sure that any suggestions that any member may have will certainly be forwarded to Mr. McMurphy.

MR. MORRIS: There are two other small things I have in mind and one of them is that we might make a recapitulation of those things and keep them on the side to pass on to the Conference host each year. Number two is what happened at our banquet last night. I don't have a very imposing or impressive uniform - I look as if I were in civilian clothes. But I thought it was a swell idea to see the men in uniform at our banquet. It certainly improved the general atmosphere and way down deep inside I said, "I think I should have had my uniform here." So next time, if it's the consensus of opinion, let's everyone that has a uniform bring it. It will mean a little trouble, yes, we may have to have it pressed again, but as I said before I'd like to see more of it. Not as a member of a uniform force but just to make the banquet a little more colorful.

PRESIDENT BROWN: I entirely agree with Mr. Morris' remarks. Wearing the uniforms was a splendid idea. If everyone will bring his uniform we will make that an annual custom.

MR. MORROW: In connection with Mr. Morris' remarks, I asked him to do that. I know he had it in mind and was hoping that someone else would say it. Here is what I am trying to say: We have had a lot of discussion here with different members of this organization regarding the position of police communications men in the department. We had a paper that we didn't have time to present which dealt with that particular thing. I am thinking of the impression that superintendents, chiefs of departments, and officials of departments are going to get who have had the idea that a lot of us are just telegraph key men or "mike" men, when they come into a conference or banquet and see that after all there are a lot of us that are policemen and that one day we hope to arrive at the point where communications men of police departments will be considered of and in police work. I think that this is one of the things that will bring it about.

PRESIDENT BROWN: Are there any other matters to be brought before the meeting at this time? I would like to instruct the Conference Committee to obtain as much publicity as possible for the next Conference.

MR. MURNANE: I move that we adjourn.

Second to motion by Mr. Warner. Motion carried.

REGISTRATION AT 1940 CONFERENCE

Orlando, Florida

Adams, Ira, Police Dept., Orlando, Florida
Alexander, G. C., State Highway Patrol, Atlanta, Ga.
Allen, Wm. K., Police Dept., Mineola, N.Y.
Anderson, L. C., Police Dept., Natchez, Miss.
Andrew, Dale, Motorola, 2284 Granada, Atlanta, Ga.
Andrew, Victor J., 6429 S. Lavergne Ave., Chicago, Ill.
Armstrong, John L., State Patrol, Raleigh, N. C.
Arnold, Edward, 765 Montgomery St., Jersey City, N. J.
Avery, R. D., Box 1299, Richmond, Va.

Badis, J. S., 15404 Center Ave., Harvey, Ill.
Bailey, D. C., Police Dept., Tampa, Fla.
Bailey, F. P., 1040 Laura St., Jacksonville, Fla.
Barber, L. E., State Police, Little Rock, Ark.
Barrow, R. L., 2207 Eastview, Louisville, Ky.
Bassett, Rex, Niles, Michigan
Batts, Robert L., Police Dept., Indianapolis, Ind.
Bear, Neal, Radiart Corp., Cleveland, Ohio
Benson, G. G., 771 N. President St., Jackson, Miss.
Bernard, S. E., Muskogee, Oklahoma
Beville, J. W., Jr., Florida Power & Light Co., Miami, Fla.
Brittin, R. E., Police Department, Lincoln, Nebraska
Brown, E. F., Dept. Public Safety, Des Moines, Iowa

Carr, Wm. H., Police Dept., Kansas City, Kansas
Casteel, Frank, Police Dept., Terre Haute, Ind.
Childers, Forest H., Delco Remy Co., Anderson, Ind.
Cobert, N. D., Police Dept., Evansville, Ind.
Collings, F. C., RCA Mfg. Co., Camden, N. J.
Cooper, J. D., Police Dept., Sioux City, Iowa
Curry, Arnet A., 3845 Byram Ave., Indianapolis, Ind.

Davidson, Ralph, Route 1, Box 331, Evansville, Ind.
Davis, H. L., 15730 Marshfield Ave., Harvey, Ill.
DeBruyne, A. L., 906 Trinity Ave., Durham, N. C.
Demby, Ben, Police Dept., Miami, Florida
Dengler, C. E., Rochester, N. Y.
DeShaffon, Roy, Police Dept., Kansas City, Mo.
Dillard, Everett L., 7134 Main St., Kansas City, Mo.
DuVal, Herb, General Electric Co., Schenectady, N. Y.

Ellis, Robert, P. R. Mallory Co., Indianapolis, Ind.

Fetcher, Lee S., Cook County Bldg., Chicago, Ill.
Fettweis, Chas. P., Wheaton, Ill.
Fields, James, RCA Mfg. Co., Baltimore, Md.
Franklin, Robert E., Police Dept., Houston, Texas

Registration (Continued)

Geno, Lawrence D., 104 Phyllis St., Buffalo, N. Y.
Goodson, G. M., 307 West St., Montgomery, Ala.
Grieveson, N., Rex Bassett, Inc., Niles, Mich.
Griffin, J. P., RCA Mfg. Co., Camden, N. J.
Griffin, T., 18 Payson Ave., Camden, N. J.
Gronier, Ray, Police Dept., Madison, Wisconsin
Gulick, H. Marion, Police Dept., Tampa, Fla.

Harper, E. L., Police Dept., Evansville, Ind.
Harrison, Harry, Motorola, 3633 W. 147th Pl., Midlothean, Ill.
Hatfield, Floyd M. Jr., Seattle, Washington
Hehning, E. F., 1923 Johnson St., Little Rock, Ark.
Hicks, Ralph, Police Dept., Tulsa, Okla.
Hiday, John, Delco Remy Co., Anderson, Ind.
Hill, Harry, RCA Mfg. Co., Camden, N. J.
Hollis, Ralph, Police Dept., Palm Beach, Fla.
Hopkins, John T., Jacksonville, Fla.

Ingle, W. K., Police Dept., River Forest, Ill.

Jones, R. L., Jr., Police Dept., Birmingham, Ala.

Kadow, A. C., Police Dept., Elgin, Ill.
Kelly, H. O., Police Dept., Minneapolis, Minn.
Kinsey, G. W., 1117 E. Broad St., Columbus, Ohio
Knudel, C. H., 1836 Fernwood Ave., Toledo, Ohio

Lasensky, M., Wincharger Corp., Sioux City, Iowa
Lathrop, R. E., 907 Racine Ave., Waukesha, Wisconsin
Leighley, H. M., RCA Mfg. Co., Atlanta, Georgia
Link, Fred M., 125 W. 17th St., New York, N. Y.
Lowe, T. M. B., 601 Sangamon Ave., Springfield, Ill.

Mackey, F. J., American Bosch Corp., Dallas, Texas
Maeshner, Ed, 2171 McKinley Ave., Berkeley, Calif.
Marrs, Homer L., 4545 Augusta Blvd., Chicago, Ill.
Marshall, C. A., State Police Charleston, W. Va.
Martin, W. B., Kansas City, Kansas
Martiniez, Jose, Police Department, Havana, Cuba
McCall, Floyd, Galvin Mfg. Corp., Chicago, Ill.
McDaniel, R. L., Police Department, Gainesville, Fla.
McGregor, K. C., Charleston, West Virginia
McLaughlin, F. W., 4949 Quincy St., Chicago, Ill.
McMurphy, C. B., 116 Estabrook, San Leandro, California
Mickel, H. F., RCA Mfg. Co., Camden, New Jersey
Monks, Chas. J., 60 Amsterdam, Passaic, New Jersey
Morris, Gerald S., 240 Center St., New York, N. Y.
Morrow, Frank W., Indiana State Police, Indianapolis, Ind.
Mossman, J. E., Leach Relay Co., Chicago, Ill.
Murnane, J. E., State Police, Trenton, New Jersey

Noble, Prof. Daniel E., Galvin Mfg. Co., Chicago, Ill.

O'Neil, Maurice B., Police Dept., New Orleans, La.

Registration (Continued)

Pearce, M. H., Jr., Macon, Georgia
Peel, E. R., Peel Sales Engr. Co., Chicago, Ill.
Person, LeRoy, Police Dept., Hollywood, Fla.
Pettengill, G. W., RCA Mfg. Co., Camden, N. J.

Rankin, Geo. P., Jr., Police Dept., Macon, Ga.
Raub, Louis, Police Department, Erie, Pa.
Reese, A. L., 4545 Augusta Blvd., Chicago, Ill.
Rice, C. A., 42 Spring St., Newark, N. J.
Ricker, J. H., 34 Richardson Pl., Hempstead, L.I., N.Y.
Rodman, C. M., Doolittle Radio Inc., Chicago, Ill.
Rogers, Johnny, Galvin Mfg. Corp., Chicago, Ill.
Rowe, Howard, Police Dept., Ft. Lauderdale, Fla.
Russell, K. B., RCA Mfg. Co., Chicago, Ill.

Saylor, H. E., Police Dept., Portsmouth, Ohio
Schroeder, 25 S. 29th St., Lafayette, Indiana
Schuler, Robert M., Police Department, Fresno, Calif.
Scott, W. N., Police Dept., Columbus, Georgia
Searle, Geo. M., State Police, Troy, N. Y.
Simmons, D. F., Jr., State Highway Patrol, Atlanta, Ga.
Smith, C. M., Jr., 1802 Fairview Rd., Raleigh, N. C.
Stephens, F. P., 602 S. Hull St., Montgomery, Ala.

Taylor, Wm. E., 3608 Frankford Ave., Baltimore, Md.
Teeter, J. H., Police Department, St. Louis, Mo.
Temple, Arthur, Police Department, Secaucus, N. J.
Thomas, W. C., State Police, Richmond, Va.
Tyson, Henry F., U. S. Secret Service, Miami, Florida

Ussery, L. Bert, 23 Grace St., Montgomery, Ala.

Veazy, David J., RCA Mfg. Co., Kansas City, Mo.
Vickerson, Art H., 891 Hyde Park Ave., Hyde Park, Mass.
Virden, James, Police Dept., Orlando, Fla.

Ware, Harry L., Police Dept., Decatur, Ill.
Wareing, H. F., Police Dept., Milwaukee, Wisconsin
Warner, S. E., State Police, Hartford, Conn.
Wasson, E. H., Atlanta, Georgia
Wherritt, J. M., State Highway Patrol, Jefferson City, Mo.
White, L. E., Police Dept., St. Petersburg, Florida
Wilcox, R. L., State Patrol, Springfield, Mo.
Williams, R. O., Box 342, Roscommon, Michigan
Wimberley, Wm., Police Department, Orlando, Fla.
Wilt, Jack, Police Dept., Kansas City, Kansas
Wolking, Cliff, 415 Marsh Road, Charlotte, N. C.

Young, J. E., 1117 Riverside Dr., Sioux City, Iowa