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Public Health Aspects of Bird Control

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Bird Control Seminar, sponsored by Bowling Green State University, U. S. Fish and Wildlife Service, Ohio Pest Control Association and Toledo Health Department, held in the Dogwood Room, Union Building, Bowling Green State University, Bowling Green, Ohio, September 9 and 10, 1964,

- - - - - _ Conference opened, 9:30 A.M. - - - - -

DR. Wm. B. JACKSON: We are glad to have all of you here. I have gotten to meet some of you, and I hope during the next day or so I can get around and get acquainted with all of you.

Tonight, as indicated on the program, is a relatively informal period. There will be movies in here. I will give you more details on this later. And the various commercial exhibits will be open and you will have a chance to discuss the merits of various products with these particular men.

I have just a couple of brief introductory comments before we lead into the first panel. Today we live in an era in which decisions are more difficult to make. These are decisions which must be made, not on the basis of black and white, but rather on many shades of gray. We are working under a number of shadows. Perhaps one of the longest shadows that we, in this group, are dealing with, is that which has been cast by Rachael Carson; and perhaps this is good, for it has forced us of necessity to re-evaluate our knowledge and our techniques, and to focus in much sharper detail that which we know and that which we use to the solving of our problems.

Those of you that were here for the first conference two years ago may remember that one of the themes which seemed to re-cycle through the conference was that we must become practicing ecologists. We must understand the bird first of all as a biological organism, and then secondly, we must understand the bird as an organism living in its environments as an organism, as an animal, a part of a very complicated and diversified situation. This rather inevitably leads us to the philosophy of the game manager: that to increase or decrease a species, we need to manage the environment. We need to change or manipulate the environment.

When we talk about control, we are not talking about elimination or eradication, because this is rarely possible, and is, probably, rarely desirable. Rather, we are talking about reduction - in our case probably -- reduction of the population. This may be a matter of shifting the population from one area to another, from one economically desirable crop to another crop which is considered a weed species, for example. We may be changing the actual environment, the carrying capacity of the environment, so it can no longer support all of the so-called pest species; or we may be in some way introducing a biological organism into the environment to change or alter the carrying capacity. But all too often, in the present state of our knowledge, or perhaps I should say ignorance, we are unable, by environmental manipulations to do what we would like to do. Then we are forced, in many cases, t

use direct lethal means of control. But quite often, these provide only temporary relief. We get rid of the birds this year. They are back next year, and we have to do it all over again.

Birds evolved in a varied environment, one in which many plant species were mixed together, one in which many animal species, both prey and predator, were present. But modern man in all his wisdom has changed this. We have gone to what we might call monocrop agriculture. We have tremendous acreages of corn or wheat or grapes — whatever the case may be. We, in our asphalt jungles, have created endless lines of architectural gingerbread. In doing so, we have created magnificent environments for birds, insects, mammals — take what species you may — to become very abundant. A bird which is adapted to living in cornfields or wheatfields or vineyards has an ideal and almost unlimited environment. Birds can move in and become very abundant. Birds also have found that the architectural gingerbread in our cities, going on building after building after building, creates an ideal environment to live in or to roost on. By creating this massive uniformity in our environment, we have drastically upset many of the ecological relationships which previously had maintained balance between populations, and we now are dealing with pest populations of many kinds.

But one word of caution: while we are concentrating here, at this conference, on how to get rid of pest species, how to manage pest species, let us not forget that these pest birds are only a small handful of the several hundreds of species of birds which are found in northern Ohio, in California, in New Jersey — wherever you may live. Certainly there are aesthetic qualities involved here — the cardinal singing from the top of a tree is a very desirable thing in the spring; the meadowlark singing from a fence post; the re-winged blackbird on a cat-tail. These are desirable, and yet somehow we must keep a balance.

Some studies certainly have shown that birds are unimportant in insect control, I suspect all of us have been well indoctrinated in grade school about how the world would be over-run with bugs of various kinds were it not for the wonderful birds. Some studies have shown that this is just not so. Other studies have shown that birds can play a role in acting as a predator.

So let us keep in mind that, as we are fighting the flocks of starlings and blackbirds I, grackles, and as we may be losing some of the songbirds as we fight the Dutch elm disease, that it is desirable to preserve and build up, the environment and the populations of aesthetically desirable birds. Along with that, let us be careful that in doing so we do not turn some of these birds which we now consider desirable into undesirable birds. For after all, a rose in a cornfield is still a weed.

So with these very brief comments, I would like to indicate that our purpose here is to share and evaluate some of the materials and techniques that have been used on a commercial basis and on an experimental basis in the last couple of years, to arrive at a better understanding of the rather complex

ecological, biological, legal, sociological, medical, and veterinary aspects of the problem; and I hope, that out of these two days of sharing, we will be better prepared to move ahead and deal creatively with the problem ahead of us.

We have, in terms of this first panel, a presentation on the aspects of public health. As a number of you are aware, encephalitis has become a rather acute problem in the country this summer,, Texas is in the midst of a rather interesting epidemic; an out break has occurred recently in Illinois, and Dr. Schnurrenberger, who was to have, been the moderator for this panel has gotten himself tied up in this investigation, so that he will not be here; but in his place we have Dr. Ralph Masterson from the Ohio Department of Health, who will give Dr. Schnurrenberger's paper and moderate the session.

MODERATOR MASTERSON: Thank you, Dr. Jackson, Well, as all of you have heard, Dr. Schnurrenberger will not be here* The panel this morning is not going to be in exact order as published. Dr. Schnurrenberger was to talk first; but Dr. D. O. Jones, I think, feels a little easier when he gets to be first, because then he can say anything he wants to and doesn't have to worry about anyone stealing any of his thunder. Not only that, we feel that we have quite a bit of time here this morning, and know that Dr. Jones is never at a loss for words. He can keep on talking and be very interesting to all of you; so we thought we would let him get going first.

We will have a break after the first two talks because we would like to separate this session into the zoonoses -- that is the animal disease -- and then public relations. After the last talk from the Toledo Health Department by Mr. Mowrey, we will have time for some questions. Unless you have a question that you think is real burning at the time someone is giving a talk, please wait until the end and then ask the questions.

I would like to introduce the members of the panel.

Here, by me is Dr. D. O. Jones, D.V.M, of the Department of Preventive Medicine, Ohio State University Veterinary College.

Next is Dr. John Morley, M»D₀, Health Commissioner, Akron City Health Department.

Then Mr. Mowrey, R. S., is the third man to my right, and he is with the Toledo Health Department, Sanitation Division,

Then Dr. Roderic Jones, M.D, who is almost a neighbor of mine, is Health Commissioner of Zanesville City, Cambridge City, Guernsey County, and Muskingum County. I don't know whether I missed any cities in that group or not. I may have.

So without any further ado, we would like to start off with Dr. D. O. Jones. He is going to tell you a little bit about epidemiology as well as deal with the exact title that he has.

DR. D. O. JONES: Thanks very much, Dr. Masterson. I did want this morning to discuss disease in general, rather than being specific. We could stand up here and list the diseases of birds transmissible to man, but I am sure you have this list.

I wanted to philosophize a bit about ecology and epidemiology. There isn't much difference between these things. I noted Bill mentioned ecology. He thinks of himself as an ecologist. I think of myself as an epidemiologist. There is no basic difference. Epidemiology is nothing more than medical ecology. We may use different terms, but we are thinking the same way. We think you should think this way, too.

Disease is not a misfortunate-bad luck-mistake of nature but, like birth, death, work and thought, is part of the great biologic law which governs lives. These laws of ecology, which Bill mentioned a little earlier, govern the behavior of all living things, whether you are talking about man, animals, or disease agents which ultimately are nothing more than little animals, as Leeuwenhoek described them.

Disease is nothing more than the result of the forces of ecology in operation. Rene DuBois, who is one of the outstanding microbiologists in the world, has written a very interesting introduction to one of the common textbooks that is used in medical schools and veterinary colleges. He points out not only the importance of disease but also the importance of looking on disease from the ecologist's or epidemiologist's point of view.

The health and disease of any community, whether you are talking about a community of bees, a community of man, a community of starlings, or what-have-you, is a result of a dynamic relationship between three factors. These three ecologic factors, which we consider and must consider in any disease situation, are the effect of the host, that particular individual which is affected by the disease; the agent of the disease; and the environment. And oftentimes the importance of the environment outweighs both the importance of the host and/or the agent.

The same laws of ecology govern the behavior of these disease processes, whether they be infectious, communicable, or sporadic nutritional types of disease. To consider disease as a mere interplay between organisms and their host, between animals and the "germs" that cause the disease is unwarranted, over-simplification, of any disease process, because disease is more than a mere interplay between the host and the agent. As I have mentioned, the environment oftentimes outweighs both the importance of the host and the agent in any particular disease.

We characterize disease by assuming epidemic production, epidemic situations. All diseases are characterized by this type of activity. An

epidemic prevalence may characterize any disease. We have just had an epidemic of automobile accidents over the past week-end. This has been a predictable occurrence. Based on past records, the safety people are able to predict and to come reliably close to how many people we are going to kill on the highway over the Labor Day week-end, because the same laws govern the behavior of man in the automobiles that govern the behavior of starlings, virus particles, et cetera. Under any situation, an epidemic is only a temporary phase, and it can only be understood when it is related to preceding and succeeding events.

An understanding of mass disease is to be had only when we view all factors concerned which may enter into the disease production and place each of these factors in its proper perspective. We label this a theory in multiple causation of disease. We are gradually passing through and out of what I call the etiologic age or the golden age of microbiology. Now, microbiologists don't like to have me say this. I am in no way casting aspersions, because you can't be an epidemiologist without the microbiologist; but for too long we have been so fascinated by the little animals we see under the microscopes that we have tended to overlook some of the more important factors.

Moses was one of the first great epidemiologists. Unfortunately he was a poor clinician. When the ancient Hebrew laws were written, these people were concerned with the factors that produced disease in their population. They didn't know that *Trichina* in pork was what caused this disease,, All they knew was that when they ate pork, a lot of people got sick, so they didn't eat pork.

When we are thinking in terms of the variations of which mass disease is capable, we have to draw on worldwide experience. No longer can we be concerned with our own little sectional problems. Now, don't let me get carried away here either. You have got to worry about what is going on at home, but you can't let this be the limit of your interest. There isn't any place in the world, at this time that is more than twelve hours from Bowling Green, Ohio. I don't know how mobile tsetse flies are, but we do know that a jet airplane can harbor a tsetse fly. I don't know what is going to happen to our agriculture, to our pets, to ourselves, as a result of the invasion of foreign animal disease.

We have a veterinarian, Col. Mowrer, who spent a few years in Africa, working with these people on diseases, like African swine fever and African horse sickness, which are so similar to the diseases we experience here in the United States that we can hardly tell any difference by a cursory examination. Yet their potential introduction occurs every day, and the same thing happens to your bird populations.

Of course we are interested here today, I, presume, more in birds, although I will bet that many of you are interested in other pests, but we will try to direct a few of our remarks in the direction of birds,, We are talking about this epidemiologic concept of disease, and that is nothing more than a method of studying and a method of describing disease. Anybody that has some horse sense is an epidemiologist. It is nothing more than an orderly,

scientific, organized way of investigating disease and considering all factors that might be concerned in disease.

This science of epidemiology, or ecology, or whatever we want to call it, draws on many disciplines. No longer can we be the all-in-one man; we must rely on each other to help solve our problems.

When we interpret mass disease in terms of ecology, the principles of prevention and control become all the more evident. Now, here I make a rather bold statement – that no disease has ever been conquered by an attempt to treat every affected individual. By appropriate means, man has been able to stamp out mass disease locally and temporarily, but never generally and permanently. Eradication of communicable disease would not seem to be too local. Now, I say this with tongue in cheek. We can get into an argument here in semantics when we talk about eradication. If you mean eradication as I interpret it, you mean the elimination of a disease; you mean that you are going to control all of the environmental host and agent factors. You can eradicate mass disease locally, temporarily. But I question whether man, in the foreseeable future – now, I never make a bold statement that I don't try to weasel out of – perhaps some day, as Aldous Huxley described it in "A Brave New World," – will be able to permanently eradicate disease.

The practical aim of any disease control program is to modify the condition to innocuousness, to try to control the thing, to remove the hazards and the problems associated with it. Now, this is one of the big factors, I think, that we must consider when we are talking about control of bird disease and the problems of bird diseases as they are related to our animal and human population.

One of the big problems facing us as far as birds are concerned is that we don't really know enough about the causes of mortality in birds to be able to assess their importance, as far as disseminators of disease is concerned. Work is being done along these lines, but a great deal more needs to be done. Somebody will want to ask about TGE and we will discuss this, but as yet I'd have to qualify my remarks that there is not enough known about mortality in birds to really estimate their potential as far as disseminators of disease is concerned.

Some birds probably play a lot more important role in the dissemination of disease than do others. Host specificity comes in as a very important factor. Certain birds, certain animals, are specific hosts. Other birds and animals are not specifically affected by any particular disease, but they may harbor diseases.

To quote Rene DuBois again, infection without disease is the rule in nature. This means that latent carriers of disease, recovered cases, individuals that are harboring infection, showing no signs of disease themselves, are the rule rather than the exception. Disease is the exception. DuBois points out that perhaps the natural circumstance involving disease is not parasitism

but commensalisms, or symbiotic relationship. It is an ineffective or a poorly organized disease agent that maintains itself in a highly fatal state, because if it kills off its host, it kills off its source of food, and unless it has an awfully good mechanism for transferring from those hosts, it is going to be out of business.

I'd like to discuss rabies here. The rabies virus is a very unsuccessful parasite. When I was a student, I was taught that this particular virus was a hundred per cent fatal on any animal diseased. We have discovered since that time that there are some hosts in which the rabies virus is a fairly innocuous disease - bats for example. We don't know how many other animals may be able to harbor this virus, but I was taught - and I am not too old - that rabies, when contracted as a disease, was one hundred per cent fatal in every warm-blooded animal which it affected.

Well, we have changed our way of thinking about this. Primary epidemics of disease appear to be somewhat uncommon in wild birds. At least there aren't a great many well tabulated illustrations of epidemic-disease-controlling situations in wild bird populations. There are some authentic reports of disease in free living species of birds being transmitted to animals, and to mammals. But the question is: How much of this actually does occur? Potentially the most important species of birds, as far as we are concerned in the veterinary profession, are those which are, familiar birds, or birds which commonly associate with domestic stock, which frequent farmyards, pastures, gardens, and parks. We are thinking of birds like starlings, robins, pigeons, and game birds which are used as food by man, gregarious birds which roost and live in big communities.

In getting ready for this talk, I was making myself a bird expert. I never realized that starlings roosted in such tremendous numbers. I read a report in which it was estimated that three million birds roosted in an area every night. They were trying to study the normal mortality of starlings, and they picked up about seven hundred dead birds from under this roost every morning. The ecologist estimated that this was not even the expected mortality rate from natural causes in one night from three million birds. (Ed. note: Dr. Jones inferred the population estimate might be much in error.) They weren't able to demonstrate that there was any significant disease problem causing the mortality in these birds. Most died from natural causes; only about eighteen per cent of the dead birds died of some diagnosable infectious disease.

All right, gregarious birds, then, are potentially a problem, carrion feeders, crows, gulls, and others potentially are a problem as mechanical carriers of disease, as well as living carriers of diseases. Migratory birds, of course, potentially pose a problem because of their far-ranging habits and the possibilities that they can transmit disease over wide areas by the introduction of arthropods, external parasites, intestinal parasites, and things of this sort. So these, then, are potentially the species that we must be concerned with. These birds may carry disease in one of two ways: either as a living agent - the bird is diseased or infected and transmits the disease in his

droppings or excreta of some sort; or he can carry the disease mechanically.

As I prefaced my remarks, I would like to close by saying – and this is always a college professor's out, we don't have the answers. We need more money for research, but this is really potentially the problem. Too often we go off half-cocked.

I have got to tell you a little personal incident. We used to laugh at our surgery prof, when I was a student, because he ranted and raved about the substitution of antibiotics for surgery. "You cannot substitute antibiotics for good aseptic surgery," he would say. We felt that you can be as sloppy as you want to be, give them a shot of penicillin and they will recover. Well, this is fine, till you start having staph epidemics and fungal diseases that you had never even heard of before, and then you wake up to the fact that antibiotics are a wonderful thing. But used indiscriminately – and this is what has happened in veterinary medicine -- oftentimes they can create more problems than they solve, and this is probably just as true in your field as it is in mine. Insecticides and poisons are handy as the devil, but be careful; they can be potentially a greater hazard than they are a benefit.

Now, I am not sure of this particular reference; but I read an article a year or two ago about the Chinese Communists being concerned about that rice bird episode. I don't know how this leaked out of Peiping. They were having a problem with the rice birds, so some "wise" ecologist said, "We will eliminate the rice birds," which they proceeded to do. Of course, the following year they didn't have any rice crop because apparently there was some parasite on the rice on which these birds were feeding. Apparently some parasite that the birds had been helping to keep under control took the crop. Perhaps something else happened – maybe they had blight or something they had never experienced before. But this was used as an example, and these problems arise every day.

I brought a little article that appeared in the very last issue of the Farm Quarterly, which talks about the dissemination of disease from birds to animals and birds to man. New England is not a grain-growing area, and yet their agricultural economy is dependent on feeding of livestock. They couldn't compete with the mid-western corn belt. So one of their solutions is to feed the waste from chicken roosts. Actually they are scooping out the litter, mixed with sawdust and wood shavings, and feeding it to the beef cattle; and they are getting phenomenal gains in their beef cattle. Actually, they are feeding the cleanings from their large hatcheries and their large commercial brooder operations to their livestock. This litter consists of twenty-three per cent protein and apparently is really doing the job at a fraction of the cost that corn and some other things do the job.

Now, their biggest concern at the moment is that this is going to get into the general news media and that people are going to stop eating beef, because it is going to taste too much like chicken, but apparently they haven't considered the problems that are arising here. All they have to do is to have a very few of these birds be infected with Avian tuberculosis, and they

are going to practically eliminate the worth of the thousands of dollars that have been invested in their bovine tuberculosis control program. This litter material is not being treated at the present time by heat, chemicals or any thing else. It is just scopped out, put in feeders, and fed to beef cattle. Potentially, tuberculosis, and who knows what else, could be contracted by these cattle and on into man; and these are the problems that we have to be every alert to. You try to convince these beef feeders that they are creating a public health problem, and you will probably get thrown out, because it is an economic problem to them. Yet these problems arise every day.

To get in a little plug here for my profession and the particular species which we work on, I really don't consider animals as great a hazard to man as man is to animals. It is true that animals are capable of harboring and transmitting many of the diseases to which man falls heir. But a good healthy animal is less of a hazard to man than is a good healthy man, and we live in a changing society; we live in close proximity. Let's not create problems which are going to make bigger problems than the one we are trying to solve.

DR. MASTERSON: I think it is too bad that our physicians have to talk on public relations after some of the challenging statements that Dr. Jones made regarding humans being a danger to other humans instead of animals, because I think maybe they might like to debate some of these questions. I hope they feel free to deviate a little bit if they do want to talk about some of these as well.

As all of you know, Dr. Schnurrenberger couldn't be here; he did send a couple copies of his talk, so I will present it as I think he would. Most of you are going to have the benefit of seeing these slides for the first time, just like I will. In other words, when they are flashed on there, it will only be the second fleeting glimpse I have had of them, because I just put them in order.

The title of Dr. Schnurrenberger's paper was "Public Health Aspects of Bird Control or Zoonoses."

"Since the members of this conference are not neophytes but are experienced workers in the field of bird control, my first thought was to bypass a listing of the bird-borne diseases and the birds which commonly transmit them. Instead, I intend to describe some specific outbreaks which have been traced to our common pest birds.

"Following this fine line of reasoning to its next logical step, this question arises, 'If this group is sufficiently aware of the potential problems of disease transmission from birds to man, they are also at the point where they don't need to have everything presented through rose-colored glasses (hearing aides in this instance). Perhaps they would like to learn of some of the problems which still remain unanswered.'

"One disease where a relationship between nuisance birds and serious human illness has definitely been established is histoplasmosis."

I'd like to deviate and say that as most of you know, this is not a disease that you get directly from the birds, but merely that their fecal material or excreta furnishes an ideal media for the organism to grow.

"For years we have associated this fungus infection of the lungs with individuals who have recently cleaned out abandoned chicken houses or church steeples inhabited by pigeons. Both of these situations provide a large volume of bird droppings, an excellent medium for the growth of the fungus, *Histoplasma capsulatum*, which is introduced by the wind. Persons working in this confined area are then infected by breathing the dust which contains large amounts of the fungus."

I think I should deviate again and say that I think we do have many cases which we cannot tie down to any such incident as cleaning chicken houses and the like, so there are natural occurring cases from other causes that we cannot always tie down to a given instance. However, we are reporting on one here.

"Recently, there have been a few reports of histoplasmosis outbreaks in people under markedly different circumstances. The individuals have been exposed in open areas and the bird implicated has been the starling. I would like to describe one such outbreak which occurred in North-western Illinois in the summer of 1963."

"The first notice of this outbreak was a letter from a public health nurse in a city of 16,000 describing four cases of histoplasmosis in two adjacent households. The problem seemed to center around the remodeling of an old house recently purchased by one of the families".

"Our first step was to visit the area, obtain work and illness histories"— this is a step of epidemiology — "from everyone connected with the remodeling and search for other cases in the community. At the same time, blood samples were obtained from the individuals involved and soil samples were collected from the area."

In figure 1 I think you can see that "X" is exposed, and then you can see when they became ill. On this side (ordinate) are the initials of the people, except for the electricians and the carpenters, and this (abscissa) is the onset dates of illness. You can see here the first one came down on the 14th, the day of the first clinical illness, and then our second case, K. A. with the last initial D. came down on the 18th of June. Most of the cases would have been discovered from laboratory means — in other words, blood tests, X-rays and the like.

"Figure 1 illustrates the dates that each person worked on the house and when each person became ill. Ten cases of clinical illness occurred among the sixteen persons who actually worked on the house."

"Laboratory evidence of infection was found in two others. The remaining four were not tested by laboratory methods, but they were not clinically

ill. It is interesting to note that three of them were electricians and carpenters who did all their work inside the house. The fourth was a contractor who habitually worked at construction sites and might be expected to have some immunity from previous exposures. Two more clinical and one sub-clinical infection occurred next door in the wife and two daughters of one of the sub-clinical infections. In addition to living next door, these three laundered the clothing worn by the father and son."

The reason this is brought out is to indicate that they may have picked up the fungus from clothing during the laundering and maybe not through actual contact. If they lived next door, there is a good chance that they visited back and forth.

"Since it was now definitely known that a histoplasmosis outbreak had occurred with its focal point the house being remodeled, the next step was to pinpoint the exact date and spot where the exposure had occurred. The lack of cases among the electricians and carpenters had already suggested the source was outside, but this could be misleading if they were immune.

"Examining the dates of exposure it was found that June 14 was the only date when some of the cases had been in contact with the house. If we continue in our assumption that this house was the source, we must assume that exposure occurred on that date. Since the back porch had been torn down on the 13th, the job of the children on the 14th was to clean up this wreckage from the backyard and dispose of it by burning or dumping it into an old cistern. At the same time, the adults proceeded to dig the footings for the new enlarged back porch while the electricians and carpenters inside completed the wiring. This information threw the spotlight of suspicion upon the area immediately surrounding the back porch, an area which was shaded by a large elm tree, the favorite roost of starlings in that portion of town.

"Figure 2 .lists the clinical symptoms and laboratory findings of the persons involved in the outbreak."

Patients' initials are across the top, and these (on the ordinate) are the symptoms -- fevers, ranging from 102.8 on up to 105.4, in one instance. I think then, you can see that we have fatigue with this disease, chills naturally if you have fever, as a rule, you have chills; chest pain, because this is most generally a chest type of disease, similar to tuberculosis (and it does eventually end tip as calcification); malaise; pallor; weight loss; sweating; headache; anorexia; .cough; weakness; tight chest; sore throat; vomiting; dizziness; sore eyes.

I think that you can see that there are a number of symptoms, but some of the more common clinical symptoms, found are the chills, fatigue, fever, and of course, malaise, and pain in the chest.

These are the ways that you clinically diagnose the disease. CF means complement fixation - CF titer is a lab test (the titers usually start

out at 1-1). A great many people will usually carry some titer for this disease, showing that they have been exposed – not necessarily immune, but exposed to the disease. A certain per cent of people in Ohio will carry some titer to the disease, or show positive to a skin sensitivity test.

I wasn't sure from the slide whether Paul meant that the X-rays were questionable where he had the question mark, or whether they were not done. I would assume that they were not done, and the others were questionably as to whether they were positive or not. I think you can see they had fairly high titers in most of these individuals. If you have a complement fixation titer of greater than one to 64, this is pretty good evidence of recent infection.

"Figure 3 is a map of the premises, showing the location of the soil samples collected."

I think you can see where they took samples. Negative is the one mark by the double-X sign. The star is the positive soil sample. I think that there you get a pretty good picture of the house and where the tree was that was the favorite roost of the starlings, and then where the stuff was taken off of the edge of the porch. In a discussion with Paul over the phone, he said that they took samples from under the porch, after, of course it had been dismantled, and there might have been some movement of soil. They did take samples from the ground that would have been under the porch, and they found no evidence of histoplasmosis when they tried to grow out the fungus. It was found only from under the tree and from the edge of the porch.

"Two samples were from beneath the porch and two under the tree just behind the porch. One sample each was collected from debris in the porch gutter, around a dog house at the rear of the lot, a flower garden separating the two houses, and a decaying tree stump in the front of the house. The only isolations of Histoplasma capsulatum were from the two samples under the tree used by the starlings.

"The evidence against starlings in this case is purely circumstantial, yet people have gone to the gallows on flimsier evidence."

I'd like to relate a disease that is similar to this which has a higher fatality rate and this is cryptococcosis. This occurred in a worker at a university similar to this who was a security officer for the university. He was trying to assist in the eradication of a pigeon colony from one of the dormitories, and after going to two or three different doctors, cryptococcal meningitis set in. He has been off work now better than four months, and whether he will ever fully recover or not we do not know. It does carry about an eighty percent fatality rate, and the disease is also associated with droppings, and has a similar history to histoplasmosis, except that it is a much more serious disease. I would like to add a note of caution. Any time that you are investigating a case of histoplasmosis, I think that you should also think if there has been exposure to pigeon droppings that it might be cryptococcosis that you are looking into, because

they do cross-react on this complement fixation test to some extent.

"The case against wild pigeons as reservoirs for human psittacosis is less substantial. There are many well documented cases of psittacosis (ornithosis) among pigeon fanciers who, without question, have been infected by their birds. At the same time, studies in various parts of the United States have revealed that infection rates among wild pigeons may be as high as forty per cent. This demonstrates the vast potential for human infection presented by wild pigeons, especially in some of our cities where the flocks may number in the thousands. Yet it is extremely difficult to relate a sporadic case of psittacosis in man back to exposure to a specific group of pigeons, then isolate the organisms from the pigeons, while ruling out other sources of infection.

"There is no question about whether wild pigeons can cause psittacosis in man. The problem is one of documenting enough infections of this type in such an airtight manner that critics cannot dispute the importance of the problem".

"An even more difficult problem is the one currently facing the public health authorities of Houston,, Texas in defining the role of birds in their outbreak of arthropod-borne encephalitis. There have been well over two hundred human cases of St. Louis encephalitis in that area in the last month."

I'd like to change that, because we know from a recent Tuesday morning report that there are at least 239 cases.

"We commonly speak of arbovirus - arthropod-borne-virus ----- encephalitis as having a wild bird reservoir and a mosquito vector, just as though we knew all the answers to the problem. This is far from the case. In fact, it is just within the last few years that we have decided to change the name of eastern equine encephalomyelitis to eastern encephalitis and western equine encephalomyelitis to western encephalitis."

I think the other reason for the change was that this led a lot of people to think that the horse was the intermediate in this, and this was not the case. It merely was a victim of the disease, similar to man being a victim.

"This change marks the final realization that horses are not a reservoir of infection for these diseases. This much we are sure of. Beyond this point, we are faced with a forest of unknowns and false leads. For example, eastern encephalitis has been isolated in Colorado, western encephalitis in Rhode Island, and St. Louis encephalitis from coast to coast. In fact, the first reported outbreak of St. Louis encephalitis was in Illinois.

"For an outbreak to occur in a given area we must start off with a large population of birds. These birds must be a species capable of carrying the virus in their blood stream for a long time so there will be a good opportunity for mosquitoes to feed to them."

In other words, this goes back to Dr. Jones opening remarks, that we do have species specificity, that certain birds will throw off this infection in all probability in such a short time that it would be impossible for mosquitoes to become infected from these.

"They must also allow the virus to multiply in their blood stream and reach sufficient numbers to infect mosquitoes. Next we must have numerous mosquitoes near enough to the birds to feed readily. They must be willing to feed on the birds and must be capable of maintaining the virus in their bodies long enough and in large enough numbers to infect man."

This again gets into species specificity for the mosquitoes.

"Lastly they must be willing to feed on man and man must be available.

"Realizing that each of these three diseases have different requirements and knowing the fantastic variation in the species of mosquitoes and birds native to the various parts of this country you can understand the difficulties encountered in trying to define the culprits in any given outbreak. Don't ask the Houston Health Department any specific questions, yet."

They have only really got one bird so far — and I am not going to mention it.

"Birds implicated at various times and places have ranged from the English sparrow, grackle, red wing, crow, and pigeon through the cliff swallow, white ibis, cardinal, flicker and robin, to the teal, quail, chukar part-ridge and pheasant.

"In spite of this complexity, large outbreaks can and do occur almost annually in this county. When one starts in your vicinity you should be interested first in controlling the outbreak but second in learning how and why it occurred.

"There is an abundance of information on experimental laboratory infections with various diseases in different species of birds. We have journals full of surveys reporting the presence of certain diseases in bird populations after these diseases have been found in the human or animal populations. However, the question often remains unanswered: did the disease pass from bird to man; from man to bird; or from some third party to both man and bird? We are in dire need of many more long-range, prospective studies to provide answers to these questions."

I think, to add a little bit to this, that this goes back to another opening statement Dr. Jones made, in that we do not know enough about the diseases of birds to state with all finality that they are the culprits here or in the past. I think there is long overdue some study on this part, to find out what role they do play.

That is the end of the paper. Now, I will open it up to get Dr. Jones on the spot with some questions.

MR. MOONEY: Dr. Jones mentioned that the strain of rabies that we find in larger animals is different from the strain we find in bats. Can you dwell upon that.

MODERATOR MASTERSON: He may have implied this, but I don't think he really meant that this was a different strain. He can correct me if he wishes. What he means is that virus has been able to live in harmony, so to speak, with the bat. It is the same strain, as far as we know. Now, it may be a different strain, but it does have the ability to cause disease and death in almost all of the other animals that get the disease. Now, of course, we can cite incidents of where we know that animals are infected by the rabies virus or exposed to the virus. They become immune and do not die of the disease, but they do not get clinical symptoms of the disease either. As far as we know, the bat is the only animal that can live with the disease today.

MR. EBNER: You mentioned this case of cryptococcosis here

MODERATOR MASTERSON: Not at this university.

MR. EBNER: Wherever it was, it was a few months before they diagnosed it?

MODERATOR MASTERSON: I said he was in three different hospitals and that he had been off work for four months.

MR. EBNER: Now is this disease hard to diagnose?

MODERATOR MASTERSON: I think I should let the physicians answer this, but I will take a crack at it.

The sorting out of different types of encephalitis is very difficult. In other words, we are dealing with these epidemics of encephalitis now. They are not real sure always of what type of virus they are dealing with, or whether it can be bacterial such as leptospirosis or some fungus. All you can do is isolate the organism or let enough data such as complement fixation titers accumulate in an individual until you can definitely put your fingers on a diagnosis.

I am not saying that the hospitals were wrong. It is just a matter of time before the titers develop so that they tell a tale of what the disease is. You can have a clinical diagnosis of typhoid fever today, but our laboratories would not pick this up possibly for two weeks. You might initially end up two weeks later at another doctor and he runs exactly the same test that the first doctor ran, yet he will end up with the proper diagnosis. The patient is going to run to the first doctor and say he is incompetent. And this isn't the case. You just didn't give the body time to develop the antibodies that we must test for.

Do you want to comment on that, Dr. R. Jones or Dr. Morley?

DR. MORLEY: No, I think you have commented well.

MR. COWAN: How was the soil infested with feces treated? What did you do with it?

DR. SPEAR: I had a letter from Dr. Furculow in charge of the Public Health Service in Kansas City, I think in July, and he said, at that time, there was no means of eliminating the Histoplasma organism in the soil. Simultaneously I received a paper from Emmons at the National Institutes of Health, in which he described removal or the stoppage of the ability to infect when the soil was covered by six inches of clay. This was in one instance in a period of tests over six months.

MODERATOR MASTERSON: Of course, I wouldn't say that you were getting rid of the organism; you were just covering it up so it wouldn't infect. You could also remove six inches, if this was possible, I suppose, and get rid of the organism, but you probably would have some scattered around yet. All you need is that ideal media, and then a few weeks later the wind blows and you are right back where you started. So soil disinfection for any purpose is real difficult, I do know this.

DR. SPEAR: Is it possible, however difficult?

MODERATOR MASTERSON: Is it possible to disinfect soil?

DR. MORLEY: Why certainly. They do this in greenhouses all of the time if you want to use steam heat and pressure. It is not very practical in the outside world, but if you want to use small amounts of dirt, you can sterilize it the same as you can sterilize bandages or anything else in autoclaves.

DR. SPEAR: In the instance on the screen, in which a rather small amount of soil was infected. These people are millionaires, let's assume. Can they remove the infection from this soil?

DR. MORELY: This would be just as much work as removing the soil and replacing it. I don't know how much the soil had been turned over, the depth of the fungus spores, but you could take all of this material and sterilize it. It would be a tremendous amount of work. It is not practical. No one would consider doing this, and when would it be re-infected? You might put it right back out and the next starling - if this is the case - would fly over it and you start all over again.

MR. SCHICK: They sterilize soil in nurseries for damping-off disease.

DR. MORLEY: Sure, and you can protect it again from re-infection, but outdoors this is not done much.

MR. HARKIN: In the methyl bromide fumigation with polyethylene, will it sterilize the soil since it is a fungus?

MODERATOR MASTERSON: My first reaction to that question is: do you get enough penetration? Any time that we attempt disinfection of anything, we feel that we have to get penetration, and if you knew the depth of the organism and were sure that you had a chemical such as you mentioned that would penetrate to this depth, you might get disinfection, but I just doubt if you would ever have this type of agent.

MR. COLLIER: How long do the spores remain in the soil, assuming you got rid of the birds in the tree and there were only the droppings that were there originally?

MODERATOR MASTERSON: I don't know.

MR. PRICE: We live in the histo belt. We have had samples taken years after the birds have been removed - chickens particularly. We can still find spores in those droppings or in that soil years and years later.

I'd like to add one thing, Dr. Furculow, in various conferences with him, has pointed out that if you will spray just water on those droppings and use a respirator, your chance of developing histo is rather limited.

MR. EBNER: What preventive measures could we take, for medical supervision, for men who are going to be exposed to these diseases? Is there any way we can have a medical checkup to make sure we haven't contracted a medical disease before it goes too far?

MODERATOR MASTERSON: Would one of the physicians want to answer this?

DR. MORELY: Before it goes too far? Sure you can diagnose whether you have been exposed to it by the skin test - you can diagnose it later. I don't know of any way of minimizing the effects of this disease personally.

MODERATOR MASTERSON: There is a drug, amphyterracin B, which has been used when you know that you have a clinical illness of the disease, but one of the ways that you might - if I interpreted the question right - know whether you contracted the disease, is to have a blood test. If it was negative and you kept this up on a repeated basis - in other words, if it remained negative - and then at some later date you developed symptoms similar to what we had here that were not entirely compatible with histoplasmosis, you could also run another test. If the antibodies, which I spoke of, had developed, this would give a fairly good indication that you had developed the

disease between the time of your first negative test and the positive test.

MR. EBNER: How often in one year would you suggest that this blood test be taken?

MODERATOR MASTERSON: I think it would depend on the nature of your work.

MR. EBNER: Once every three months, or would this be comparatively safe?

DR. D. O. JONES: I would assume that you should be more interested in not taking any chance on becoming infected and that your big problem is if you are working in these kinds of enclosures or an area like this. It was pointed out that this particular disease is an inhaled disease of dust and so forth; wet the dust down so you don't get all this dust kicked up and wear a mask or a respirator if you are going into an area like that. I don't worry about just that disease. There are many others that you could get by getting this dust.

I got hog ascaris - and this is an interesting experience, too. Just take appropriate preventive measures. Don't worry about drugs. Wash your hands and wear a mask. I am just throwing this out, but this is what I think your concern should be, rather than being retested. If you are a pest control operator, you have probably got a disease now.

MR. EBNER: The idea is that if we could take a test every so many months to make sure we don't have this disease, it would be to our advantage. But so far they have never tested me for any of these diseases.

MODERATOR MASTERSON: I don't think this is entirely practical. If you think you are in the type of work that might tend to have you exposed to these diseases in great numbers, why it might be of interest to mention this, but that would be all.

MR. STECKEL: Would Dr. Jones elaborate a bit on T.G.E.?

DR. D. O. JONES: T.G.E. stands for transmissible gastroenteritis. It is a disease of baby pigs, a virus disease of baby pigs. Starlings have been suggested as a possible mode of transmission.

The people at Illinois have done some work to show that starlings can pass this virus through their intestinal tract and pigs can become infected by eating starling droppings. Now, the question arises: does this occur naturally? This we don't have the answer to. There is circumstantial evidence that perhaps starlings could be a factor here; and we should be concerned with this because we do know that the virus can pass through the intestinal tract of starlings. We don't want to steal too much of our buddies' times over here, but the people in Illinois say this is a real problem.

The people in Indiana — now here we are, right next door, our neighbors here — Halderman in Indiana says it is no factor. The boys in Illinois say we had better get concerned about it.

The people in Ohio think we have a lot more T.G.E. when the starlings roost in the feeders. So they say, "Don't blame the starlings entirely, but also blame all the farmers with their dirty boots."

So we have considered all these factors. Let's be concerned with primary control measures. I am not trying to put my physician friends out of business. They keep me healthy, and I am no expert on electrocardiography or anything else. But you can have one run every two months or every three months and a week later die of a massive coronary. But let's quit smoking and let's start going to bed nights and get a little regular exercise.

. . . Short recess . . .

MODERATOR MASTERSON; without any further words from me, I would like to introduce our next panel speaker, Dr. Roderic Jones, who will speak on "Public Re-ations."

DR. RODERIC JONES: Dr. Masterson, ladies and gentlemen. I feel totally inadequate to be up here among such a group speaking on this particular subject, and what little I have to contribute will be mostly on what we experienced in Zanesville and Cambridge in putting on our pigeon control program there.

We have had two approaches to it. In Zanesville we have had the program for two years now, and in Zanesville we have a city manager form of government. The city manager happens to serve as my Board of Health, so I have only one person to refer to there as pigeon problems arise. We have found that the people were quite up in arms over the fact that the buildings downtown were defaced with droppings and that, on a few occasions, people had been bombed by the pigeons flying overhead. We had one particular area in the town where enough of the droppings had accumulated that we had quite an odor and quite a mess, to say the least; and it was underneath the windows of one of our best department stores. Some influential people there were quite up in arms over this situation, and contacted the Health Department as to what to do about it.

Well, we declared the woman's roof and eaves a nuisance and had her clean the eaves of the droppings. That didn't seem quite right that we didn't go further than that, so we talked about putting on a pigeon control program. We consulted with the U. S. Fish and Wildlife Service, and Mr. Beck came to our town, and he made a survey of the situation. He declared that it was a nuisance and a problem. We did have a pigeon problem, so the city manager was of the opinion that we should not inform the public of our intention of putting on a program. He felt that it would cause too much comment and that we could quietly put on the program and that there would be no comment from the public.

So we started out on that basis, and it has been in progress two years now. We put out our prebait, and then we put out the poison. I'd say one thing, that when we did put out the poison, that we alerted the city road people as well as our sanitarians so they would be out on the road picking up the pigeons that were dead. I think that one way that the program went over was that we did get the bulk of the pigeons that fell in downtown Zanesville.

The program was put on during the winter two years ago, and it didn't meet with as much success as we had anticipated. We had hoped that we would have better results, but we still had pigeons flying at the end of the winter. However, we destroyed quite a large number and we felt that the program was partially successful.

The second year we went ahead and continued the program, and I think this past year we really got better results. I think we may have learned more about how to bait them. We were spending more time pre-baiting and weren't in quite such a hurry in putting out the poisons. I think we were probably in too big a hurry to put out the poisons and didn't do enough pre-baiting. I think that was our problem the first year.

As far as public relations went on the program in Zanesville, we had a few more calls than usual of why didn't we do something about the pigeon problem. We didn't have the first adverse call about the program. We had no inquiries whatsoever about what we were doing or anything about the pigeons except one call. One person called up and wanted to know if there was an epidemic among the pigeons, and wondered if there was anything dangerous going around. We assured her we felt there might be an epidemic in the pigeons, but that we didn't feel it was anything for the public to be alarmed about. That seemed to satisfy that one particular person.

One other instance, one individual did send a pigeon in to the laboratory of the Agriculture Department for diagnosis - for autopsy and diagnosis- to see what the pigeon died of. But as far as our information went, I don't believe they found any poison, so that that didn't cause any comment.

So we have had a program for two years in Zanesville and so far the public has not been informed about it. It is no secret really. The men have to go out and put out the bait, and they do that in the day time; and they go out and pick up the dead pigeons and the public can see them, but there has been very little curiosity on the part of the public of what we are doing. As far as I am concerned, the program has been successful, and we haven't made a point of informing the public. The public haven't been curious, and it seemed to be working out all right.

In another city under my jurisdiction, Cambridge, we had a quite different experience. The first comments were from the City Council, The men that had stores on Main Street there were quite upset over the pigeon droppings; it was all over the sidewalk, it was hard to find a place where you could walk between the droppings, and it was really quite a mess there in Cambridge.

They approached the Board of Health and wanted something done about it.

Well, the Board was reluctant to act at first. I told them my experience over in Zanesville, but due to the fact that part of it came through the City Council, they felt that they wanted to publicize the program. If they were going to go into it, they wanted to make known to the public just what they were doing and why, so we consulted with the Council. The result was that they decided that we would publicize the program. Some articles were put in the paper, and it was over the radio that we were going to put on a pigeon control program and it would be a poisoning program. There again we didn't have the first telephone call and objection to the program, but we did get quite a few more calls wanting us to be aware that a group of pigeons in this block were around somebody's house or here or there. So we got quite a large number of calls that they did have pigeons in various neighborhoods throughout the city.

We couldn't get to all those places to bait, and it has meant that some of the people have been more concerned that we didn't get to every place that pigeons appeared. It has caused more comment that way in Cambridge than it did in Zanesville. In Zanesville, no one expected us to be out there chasing pigeons. In Cambridge, it was different.

We have a list of about five to ten places when we start again in November; we plan to more or less emphasize the work in that particular area, depending on some of the calls that we get. The public have accepted it well in both places, and we have had no adverse comments in either town from any group. I feel that what little information I can bring to you is that our experience would be that you could do it either way, and you would have a fairly satisfactory result. It took the second year before we felt, in Zanesville, that the results were showing up and that we really could see the marked difference in the number of pigeons we have flying. In Cambridge we noticed some difference, but there again I think it will take the second year before we make the definite inroads on the pigeon population.

I feel it has been worthwhile and it certainly has reduced the amount of un-sightliness in both downtown areas, and we have been very well pleased with the results. I think I can recommend either way as a satisfactory way of approaching the program from the public health standpoint.

MODERATOR MASTERSON: Now, our next speaker is Dr. John Morley, and he will speak on public relations, as well. He is from the Akron Department of Health. Then we will have some questions for these two speakers, and then we will go into the other talk.

DR. MORLEY: Thank you, Dr. Masterson, and ladies and gentlemen. It is a real pleasure and honor to be invited here. I think sometimes here in public health, when we speak of public relations, we use the term rather loosely. I am reminded of the hermit who had lived all of his life out in the boondocks, and he had heard of the city, so he walked some miles to the nearest

neighbor and said, "I think I will go and spend a week with the city folks and find out all about them."

The neighbor was quite intrigued, so he questioned him* He said, "Well, I'd like to hear of your experiences. On your way back would you like to stop and tell them to me?"

So he agreed he would. Two days later he showed up again at his neighbor's and said he didn't want anything more to do with those city folks. He said there were too many of them.

So the neighbor was asking him about what he had seen there, "Well," he says, "one of the things that I did, I went to church,"

"Tell me about that," the neighbor said,

"Well, he said, "I started in, and before I even got to the front door there was a pusher there who directed me and pushed me through the front door."

The neighbor said, "That is right, but it was an usher not a pusher,"

He said, "Then, when I got inside there was a man that led me down the alley."

The neighbor said, "Not an alley; that was an aisle."

He said, "That is right, an aisle. That is what they did call it. Then," he said, " they shoved me into a pen."

The neighbor said, "You don't mean a pen, you mean a pew."

He said, "That is right, that is what the lady said when I sat down beside her."

I was grateful to hear both Dr. Joneses. We don't have an experience in Akron however where we were able to try two methods and compare them.

I think in our public relations, we often have to regain the public confidence. When Rachael Carson's book came out, we approached this also, because there was quite some concern over it. We did go on the television and radio on a forum type of approach and tried to gain the confidence of the people in our community that we were fully aware of the dangers of pesticides; but, also we were fully aware that they were useful and there was a happy balance between them. So I think from that point of view, you have to gain and continue to have the public confidence in your own department if you are going to carry on programs of the nature of pigeon eradication. That is what we have tried.

You have to work with your mass media: your newspapers, your television, and your radio, and this is very difficult to do. We can gain the support of the newspapers, for instance, and they write very fine editorials that will support you; but when they have headlines, they often slaughter you. For in-

stance, you could take the subject of fluorides. They have supported us very well on fluorides, but when someone else gets up to talk, they will put up fluoride - rat poison, you see, and this is far more important than this editorial support. So you will often have to work with your paper very carefully. You try to get them to work with you, to write favorable articles, and usually the articles are favorable. It is only the headlines that try to be sensational and often defeat public relations.

Akron started out. on a pigeon control program, the same as most cities that have tried to have some program by the citizens themselves wanting action. The Health Department had, for many years, resented the number of pigeons that were walking around the court house, the city buildings, the police station, and so forth. Finally the appropriate thing happened.

You all know the story, I am sure, of the people sitting in the Michigan stadium and there were 101,000 people there. One fellow jumps up and tears his hair and says, "A hundred thousand people," Then he sat down. When he could not stand it any longer and he stood up again and said, "A hundred thousand people."

He was interrupting the game so much by jumping up and down and saying, "A hundred thousand people," that someone finally said, "What is wrong with you?"

He said, "A hundred thousand people and that damn pigeon picked on me."

The pigeon picked on the right person, one of the prominent judges who had his hat cleaned every week. He stepped out of the door one time from the Quaker Oats plant and the pigeon let him have it. This was the final straw. He went to Council about the situation, and one of our able lawyers who is on the Council came to the Health Department and together they drew up a very simple ordinance declaring that the common Asiatic pigeon was a nuisance. It did, of course, gain some publicity. Here again the paper picks it up as a sensational story, even though a simple ordinance passed in the early fifties was a very simple statement that it was a public nuisance.

And from there on the Health Department took it over to the Audubon Society and Humane Societies, because they did react a little bit, and rather than wait for them to unite or to react we met with these people. They were having, fortunately, a meeting very shortly after this ordinance was passed.

We explained to them what we wanted to do, how we would attempt to protect every other bird, the pets, and so forth, and would only work on the pigeon. We felt that we could do this, and do it humanely, and that we would use a fast-acting poison. It was well accepted, and we have really had practically no opposition, on any basis. Individuals perhaps objected, but no organized objection was received; and we have had a very favorable program. We have attempted to keep our program under cover and have not publicized our program very widely after the ordinance was passed. We used strychnine corn, and some thallium corn, where there were rats and pigeons together. We alerted the police and street people to pick up the dead birds very rapidly.

This was done, and we did not get any unfavorable reaction from dead birds lying around. We controlled our pigeons fairly well, but, as Dr. Jones said, you do not eradicate a species on a planned attack. We have never eradicated the birds at all. They keep coming back, so it is a continuous program.

As I said, we have tried to minimize publicity on our approach. This you can hardly do though at times. For instance, we have an ordinance that you have to feed pigeons in proper bird feeders off the ground. We have a prominent broker in town, who after many, many attempts to stop him from feeding pigeons on the ground, was found feeding these pigeons on the ground. On this basis, I took him into court. Of course, when I swore out the affidavit against this individual, why this the paper writes up a great deal.

Actually the reaction of the public was very favorable. As Dr. Jones said, we get so many calls from individuals in the city that we cannot handle all of the calls. And another thing we have always done, on individual or private properties, we have attempted to have them go to their pest control operators, where they can get the material and use it on their own responsibility. We try to teach them how to use it, rather than us going on to private property and putting out poison. We have used our poison in the downtown areas and on public and commercial buildings but not on those of individual property owners.

We had a good situation there in Akron because the baiting was all done for us| in from of the police station. People would put in pennies in the pea-nut machine while waiting for court and feed the pigeons in front of the police station. This was one of the great congregations of birds that we had. So then we substituted our corn there and watched it so that other birds or animals did not come around. Of course, corn is not very conducive to pets. They don't take it. So actually it was all baited and the pigeons took it very readily.

The other thing was the Quaker Oats Plant. In unloading their railroad cars they do spill grain; and while their housekeeping has always been pretty fair, we did improve it a great deal. We substituted again our poison baits and had excellent acceptance on that basis. Our program was rather effective from the time it started. We have, of course, had to use the fire department occasionally to help us on the viaducts, to get up into and eradicate the breeding spots in our viaducts and some of the major places like this; but our program has really gone on quietly. In general, we have been, I think, reasonably successful.

Something that startled us very much was last October in the Wall Street Journal when New York City was trying to put on a pigeon control program. Their article on October 9, 1963, started out with the headline "War on Pigeons Find Many New Yorkers on the Side of the Birds," and this is the way most newspaper articles would start. It goes on down through there and talks about disease.

It is very difficult to convince people about human disease. We humans are

not too interested in people being sick unless it affects someone very, very close to us. We may get excited over plague or polio now, and a few other diseases; but to talk about histoplasmosis or cryptococcosis or any of these diseases, it doesn't bring any panic in the neighborhood and you don't get any reaction.

This is the same when we tried to eradicate garbage feeding in Michigan for many years. From the human point of view, we tried to talk to the legislature to try to get them to pass some act to protect humans; but the minute swine cholera was involved and they showed that this affected the pocketbooks of enough people, a law was passed to prevent the feeding of raw garbage to pigs immediately.

This brings out that you can't affect people except by means of what they relate themselves to. Most of us relate to the pocket book, and when you touch the pocketbook -- and all of you know that in the human anatomy the most sensitive nerve leads to the pocketbook-- you can get action.

When you talk about the suffering of humans, it is far in the distance, and you do not get favorable action; but in talking about disease, you are far better off to talk in terms of something that relates to people. If you have enough desecration of the sidewalks and of the judges' hats, and so forth, you do far better than trying to convince people that you are going to protect them from some horrible disease that they have never heard of before and they have never known anyone to have.

Why I referred to this Wall Street Journal article was that in the last paragraph in this article, it says, "The killing of pigeons is difficult and relatively ineffective but at least one city, Akron, Ohio, quietly launched a successful pigeon extermination campaign in the early fifties. Health Department workers there spread poison cracked corn about late at night. The corn was harmless to cats, dogs and humans, but it killed the pigeons whose bodies were whisked off the streets while most residents were still asleep.

This caused a flurry of letters. We had to mimeograph a reply to the several dozens and dozens of letters which we received. Actually this isn't, of course, the truth at all. No one ever said that strychnine wasn't poison to dogs and cats, and so forth. We didn't give it to them, and we had no pets that were poisoned. We did whisk them off of the street day and night, whenever the birds were found dead, but we did use the two types of material. It has been done quietly, I think, and that has been, we think, one of the successes of the program. We have made no great claims on it. We still have pigeons around a bit, but we don't have them walking all over our public buildings to the extent that we did.

There are many things, I am sure, you could say about public relations. I, think, in the Health Department, we are not too good at it. We often fail. I think sometimes quiet programs are much more effective, if you can just quietly keep the confidence of the public that you know what you are doing, and that what you are doing is actually good for the community. This will do

much more than selling them the bill of goods in reference that you are going to protect them from disease.

MODERATOR MASTERSON: Does anybody have any questions for either of our medical doctors regarding public relations?

MR. EBNER: On these pigeon jobs that you did, did you take a survey of the number of pigeons before you started your work?

DR. MORLEY: We didn't have to. They were all over. When you walked out, they were just all over the sidewalk and they aren't there now. We did some studies to try to show there might be disease. We bled twenty odd pigeons and sent the blood in. At one high school there that was plagued with pigeons, we took the blood samples from the teachers and custodians there, and all of them were negative. We had no help on disease factors in our pigeons. They all seemed to be very healthy, including our human population exposed to them.

MR. BLANK: Were there any instances of secondary poisoning to pets?

DR. MORLEY: None that we know of. This may have occurred. We found a couple of little boys one time carrying a couple of pigeons home. We thought maybe they were going to eat them, and the policemen stopped them and took them away from them. Whether anyone would eat pigeons — it could happen — we don't know, but if anyone would eat entire pigeons this way it could be disastrous.

DR. RODERIC JONES: We didn't have any that we know of.

DR. MORLEY: There were some little objections because of the boxcars unloading at Quaker Oats; there were a certain number of pigeons that died in the boxcars occasionally that were not removed. We tried to remove them, and I believe we had a few comments on the dead pigeons in the boxcars, but apparently the person getting the boxcar next didn't like the dead pigeons.

MR. HOCKENYOS: I wonder if the doctors could give us a little more information on histoplasmosis infections. It is my impression that once you had the disease and recovered, you are immune thereafter. Is that correct, or can you get the disease repeatedly?

DR. MORLEY: Really, I don't know. I know that most people who have the disease by a lung scar and by positive skin tests and serologies actually have never shown they had the disease and apparently are immune. I don't know that we know enough about it to say you can never break down to have a second attack and all this.

I assume that there is considerable immunity to one attack, but whether there are any second attacks, I don't know, but I think one attack

generally gives pretty good immunity.

MODERATOR MASTERSON: Any other questions?

If not, we will go on to our last but not final speaker on this subject, Mr. George Mowrey from the Toledo Health Department.

MR, MOWREY: I think you can see by your program that I was assigned the topic of the local health department and nuisance bird control. Listening to the last two speakers, I found my topic very well covered. It is difficult, I suppose, to be the last one in line on the same subject. However, there is a little bit of each of their speeches in mine, and I think I will just go through with it.

Public Health Departments, over the years, have assumed a larger and larger field of responsibility. Commensurate with this responsibility has been the provision of legislative authority. The criteria for participation in new programs have generally been the same:

One, a public health hazard had been defined.
 Two, the public has either demanded action to abate the hazard or has been acquiescent to the control action.
Three, financial and legislative support has been given.

If we examine these criteria, as it applies to the nuisance bird problem, it becomes apparent why local health departments have been slow in developing or implementing bird control programs. Although complaints of birds creating nuisances have been received over the years, the complaints have usually been in the category of an esthetic nuisance. As an illustration, complaints usually cite clogged roof drains, defaced buildings, soiled laundry and in some cases "bombed pedestrians."

While health officials have been sympathetic with complainants, very little enthusiasm was ever generated. Add to this the protestations of bird lovers and a lack of general authority in legislation, and it is not difficult to see why so little had been done in this area up until a few short years ago by local health departments.

However, as research into the role of nuisance birds as vectors of disease produced some positive findings, the situation has started to change. Research alone was not the determining factor, however; better reporting by affected citizens and industry has had much to do with the change in the general public's and official agency attitude toward bird control. Literally, the public has demanded action.

Let me give you some examples of what I mean by better reporting. A local grainery was ordered by the Department of Agriculture to take steps to prevent the contamination of grain by pigeons. Instead of quietly trying to overcome the problem, the grainery officials confronted the local government

with the problem. They requested permission to poison-bait the birds. Of course, the only applicable legislation at that time was an antiquated "no hunting ordinance."

School officials at the same time reported that school toilet rooms were being invaded by ectoparasites from pigeons nesting on window ledges. This was repeated in a downtown office building adjacent to an abandoned structure housing a pigeon infestation.

A large refinery reported that pigeon and starling droppings had made high, metal catwalks a serious safety hazard to workmen. Of course, the downtown business men reported in a group that the "drop zones" in front of their stores were driving people away.

By this time, I think, everyone was convinced that something had to be done. No longer were we dealing with an esthetic, sometimes humorous, in the case of a bombed pedestrian, nuisance. A definite health and safety hazard had been defined. The responsibility of the health department was clearly indicated.

After a great deal of research locally into the extent of the problem, a report was submitted to the health board recommending legislation to allow effective control. The Board of Health quickly responded by declaring vagrant pigeons and starlings a public health nuisance.

An interesting note at this point was the news media coverage of the board's action. The reporting was excellent. No attempt was made to over-emphasize or dramatize the role poisoning would play in the control program. We feel sure this had a great deal to do with the public's acceptance of the board's action. Of fifty-seven telephone calls received after the initial publicity, fifty-six were requests for help in pigeon problems I Only one caller voiced disapproval.

The three major items of the criteria for health program development have been met. The latter two, legislation and finance are being handled in this manner:

A regulation titled "Nuisance Bird Control" has been composed. It will follow the standard line of a pest control ordinance.

One, it clearly states the health reasons for its existence.

Two, it defines terms and methods within the regulation.

Three, the responsibilities of everyone involved is outlined.

Four, provisions for strict regulation of methods and material use are made.

Five, last, but not least, penalties for failure to comply with its content are provided.

We felt, in composing the regulation, the responsibility of the Health Department would be to provide for the elimination of bird nuisances as determined by the health board by safe approved methods. This would leave enough latitude for the pest control operator to operate effectively and provide the control necessary to protect the health and safety of the public and desirable species

of birds.

The regulation places a great deal of emphasis on bird-proofing buildings and food supply elimination. Bird baiting is given the same priority as rodent baiting in the ordinance.

It is not the desire of the department to create a real hazard chemically which is greater than the potential health hazard that may be created by nuisance birds. If we follow this creed, health officials and pest control operators may keep the public confidence and a favorable attitude toward our work should be assured. Needless to say, we need public support and trust if our program is to have continuity.

To more specifically define health department responsibility in this type program, let me give you a brief resume of the part the Toledo Health Department intends to play. All complaints of bird nuisance will be investigated by sanitarians. Should a nuisance be found, orders will be issued to the responsible party for correction. This may call for bird-proofing, nest removal, cleaning up spilled grain or elimination.

The regulation states, however, that elimination or the use of any toxic materials can only be done by a licensed, bonded pest control operator under health department supervision. In addition, we hope to act as a clearing house for information regarding new methods and techniques in bird control. Sanitarians will get field experience and at the same time be in a position to experiment with new ideas while treating a few public buildings themselves. When the initial work has been completed on the public buildings, sanitarians will only be used in area type programs, dumps, parks, et cetera.

The resources of the U. S. Fish and Wildlife Service have been invaluable to us in getting our program off the ground. We look forward to their continued help in our efforts to provide another valuable health service to our citizens,

It has been mentioned before in this paper that the attitude of the public is important to the continuity of a nuisance bird control program. I do not think this can be over-emphasized. Everyone, particularly health agencies, have a role or responsibility in maintaining good public relations.

In summary, the health department, by virtue of its regulatory and legislative powers is the logical agency to initiate and administer nuisance bird control programs where such a program is proved necessary to combat a public health hazard.

The Environmental Health Division must be prepared to implement nuisance bird control programs. They must be ready to conduct surveys and through these surveys to determine what is necessary to abate the nuisance.

The environmental units must take the initiative in ferreting out individual nuisances caused by birds and taking all necessary steps to see that they are corrected by responsible parties. These units should gather and evaluate as

much material concerning control methods as possible and disseminate this material to participating groups. They should be responsible for determining the acceptability of methods and materials proposed for use by pest control operators. It goes without saying; environmental units must provide competent, trained technicians to offer consultative and educational programs to all interested parties.

We are very new in this business and we are planning on a cautious first quarter, hoping that we can learn by our mistakes, but making sure our mistakes are not big enough to put us out of the game before we have had our turn at bat.

MODERATOR MASTERSON: We do have a couple of minutes we can use yet. Is there any question anybody wants to ask Mr. Mowrey?

DR. D. O. JONES: Dr. Morley mentioned something that was rather dear to my heart, and this concerns the cooking of garbage. For years the vet profession has wanted to eradicate hog cholera, but we couldn't prevail upon people to cook garbage. We were trying to get a garbage cooking law in Ohio, and who do you think were some of the people opposing it? The health people, who couldn't get rid of it unless they fed it to hogs. The veterinarians have been trying to get this law passed for thousands of years, but these public health people have been holding it up.

Luncheon recess