History of the U. S. Food and Drug Administration

Interviewee: Kenton L. Harris

Interviewer: Ronald T. Ottes

Date: October 30, 1991

Place: Bethesda, Md.

DEED OF GIFT

Agreement Pertaining to the Oral History Interview of

_____

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INTRODUCTION

This is a transcript of a taped oral history interview, one of a series conducted by Robert G. Porter, Fred L. Lofsvold and Ronald T. Ottes, retired employees of the U.S. Food and Drug Administration. The interviews are with persons, whose recollections may serve to augment the written record. It is hoped that these narratives of things past will serve as one source along with written and pictorial source materials, for present and future researchers. The tapes and transcripts will become a part of the collection of the National Library of Medicine.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
Rockville MD 20857

TAPE INDEX SHEET

CASSETTE NUMBER(S) 1,2

GENERAL TOPIC OF INTERVIEW: History of the Food & Drug Administration

DATE: October 30,1991 PLACE: Bethesda, Md. LENGTH: 90 minutes

INTERVIEWEE	INTERVIEWER
NAME: Kenton L. Harris	NAME: Ronald T. Ottes
ADDRESS: [redacted]	ADDRESS: U.S. Food & Drug Administration
Bethesda, Md. 20817	

FDA SERVICE DATES: FROM 1937 TO 1966 RETIRED? Yes

TITLE: Special Assistant to the Director, Bureau of Biological & Physical Sciences
(If retired, title of last FDA position)

CASS. NO.	SIDE NO.	EST. MIN. ON TAPE	PAGE NO.	SUBJECT
1	A	0	1	Harris background and education
		3	2	Joined FDA
		8	3	George Keenan
		11	4	John Wildman
		14	5	B.J. Howard
		18	7	Henry Welch
		20	7	Early microfilth work in food
		23	8	Field Investigations
		28	10	Defect Action Levels
1	B	0	11	Defect Action Levels cont.
		6	13	Clean Grain Program
		12	16	Congreaaional Hearing insect damaged wheat
		15	17	Glen Slocum
		18	18	Field or storage grain contamination
		27	21	Jim Gentry
2	A	0	22	Dick Gorham
		3	23	Retirement from FDA
		12	27	Walter G. Campbell

CASS. NO.	SIDE NO.	EST. MIN. ON TAPE	PAGE NO.	SUBJECT
2	A	21	30	O'Dean L. Kurtz
		23	32	Frank Nicholson
		25	33	Wrap-up
		28	35	End of interview
			36	Addendum

RO: This interview is one of a series of oral interviews on the history of the Food and Drug Administration. Today we are interviewing Kenton L. Harris, a retired FDA scientist[redacted]. The date is October 30, 1991. I am Ronald T. Ottes. This interview will be deposited in the National Library of Medicine and become a part of the Food and Drug Administration's oral history program.

Ken, to start this interview, I'd like to have you give us a little background on your education, where and when you were born, and what brought you into the Food and Drug Administration, and some of the positions you held in FDA.

KH: Okay. I was born June 29, 1913, in Oakland, California, lived in the Oakland/San Francisco Bay area all of my early life. And it was an assumption by me and my family that when I left high school I'd go to the University of California. I got interested in insects in high school through my high school teacher and started doing his insect work in high school. And by the time I graduated from Piedmont High School, Piedmont, California, it was I assumed I was going to work with insects.

In 1931 I went to the University of California at Berkeley as a major in entomology and parasitology, went there class of '35, stayed with my entomology major at the university for the four years, graduated with a degree in entomology and parasitology in '35 when there weren't any jobs around. So I went job searching for a while. All the biologists, everybody in agriculture were all taking government exams. We were all looking for jobs. Nobody had work. We just kept taking civil service exams.

One day I got a notice of an opening in the Cotton Division of the Department of Agriculture here in Washington D.C. I got married, came to Washington on the basis of the job which paid the magnificent salary of $1,440 a year--not a month, $1,440 a year. I was one of many who went to Washington with the idea that if you could get to Washington and had civil service standing, you could go on from there. The job I had in the Cotton Division was not to my liking. It was a routine

job measuring length, breadth, and so on of cotton fibers, which I didn't give a darn about.

After working there for about a year and a half, I got a job at the Bureau of Entomology in Beltsville, which still didn't pay very much--I guess I was instead of a junior, I was assistant scientific aid, probably made $1,620 there--and heard of the seafood service of the Food and Drug Administration. I had been interested in FDA. I knew it was there and I liked the work they were doing. George P. Larrick, who later became commissioner, was head of the seafood service. He interviewed and hired me to go down to Biloxi, Mississippi, as part of the shrimp inspection, seafood service.

RO: I didn't realize you started with the seafood service.

KH: Well, I didn't.

RO: Oh, you didn't.

KH: I didn't go down there. Although George hired me and saw the possibilities, I was married at the time, and he didn't think Biloxi was any place for a young white woman to be stuck with her husband off inspecting shrimp everyday. While I was in the hiring process openings appeared in the, then, Microanalytical Division. George Larrick told me about these openings, and he said, "You're hired in the seafood service, but this is a better job. (Laughter) If you can land it, take it."

That was 1937. At that point four people, Bill Eisenberg and myself, and then a month or so later Gordon Helsel and Frank Smith, were all interviewed by the, then, chief of the Division of Microbiology, B. J. Howard. Howard was getting close to retirement. And Paul B. Dunbar, who was then, I think, chief chemist of the FDA realized that somebody had to take over as Howard and George Keenan retired, and

the four of us were thrust upon B. J. Howard. He didn't want us; as a matter of fact, he didn't even want to interview us.

Most peculiar interview I've ever had, because Howard talked the whole time, just as I'm talking now. At the end of that time, all he knew about me was I didn't smoke, because he kept me there so long that if I smoked I would have pulled out a cigarette. If I had pulled out a cigarette, he would have turned me down. Same thing happened to Bill Eisenberg. Neither of us smoked at the time. Bill learned to smoke a little later.

Paul Dunbar knew I was an entomologist and liked what I had done at University of California. Bill Eisenberg was a botanist, and the division also needed a botanist. Frank Smith, I don't know much about his interview, but was a good field biologist. He'd been working on the Eastern shore, knew rodents very well. Gordon Helsel was a pre-med biologist. I put the four of us together, because we all came in together within about a month. And the new work divided up on the basis of the four of us. So I don't know where to go from there.

RO: What did George Keenan do?

KH: George Keenan was a crystallographer, and Bill Eisenberg eventually picked up that work. Keenan was a thing unto himself in the FDA. He was a hermit crab, but he was *the* FDA microcrystallographer and probably one of the eminent ones of the whole Washington area. He got samples from the FBI; he got samples from the Smithsonian; he got samples from all over the world. The unique thing about crystallography is that you can take a crystal or two or a tiny amount and come to a specific chemical identification.

Keenan also had the interesting habit, he tasted almost everything that he got. Put it on the end of his tongue and tasted it and usually halfway made up his mind

on that basis. Well, none of his tasting killed him, but he must have tasted some seriously potent alkaloids in his time.

RO: Howard was the chief of that unit. Had he developed his Howard mold count method at that time?

KH: Howard had developed the mold count method by the time we got there. It was locked in. John Wildman from Syracuse University was also in the division at the time. It was Howard, Keenan, Wildman, and Hodges. Hodges, bless his heart, was always around. I don't think he contributed very much, but Hodges was there. Hodges and Wildman were the younger ones, and Keenan, the crystallographer, which was under Howard only because they had to put him someplace and he worked with microscopes so they put him there. But he never was really part of any investigational work. He looked at crystals, period, for everybody in the Washington area. Howard was the Howard mold count.

Wildman had discovered that insects will float out of an aqueous mixture if something like gasoline or mineral oil or any oil was added to the mixture. The insect clung to the oil and floated up in the oily layer. He had discovered that by chance; you know, this can go on and on . . . Did anyone ever report on how Wildman discovered the Wildman trap?

RO: I don't believe so, Ken.

KH: Wildman was working on cherry insects in Michigan. And he was doing mold count work and discovered when he was doing mold count work that there were a lot of insects in the cherries and so got interested in the cherries, cherry insects. In order to preserve his mold samples, he usually added formaldehyde as a preservative.

One evening he finds himself in his motel room and he has no formaldehyde, but he's got a car outside. And he added some gasoline to preserve his mold

samples, and carried those samples around with him for a few days. How many, I don't know. He liked to say he put them in his pocket, but whether he did or not I don't know. And in a few days he took his mold-preserved samples out, and there were a bunch of insects floating up in the gasoline, which took him off on a completely different track.

He was doing the mold work, because that's what Howard assigned him for, but he also knew that there were a pile of insects in those red sour pitted cherries and conceived the idea of purposely stirring in gasoline and seeing what insects were present. Then Howard picked that idea up and adjusted it in California for the tomato insects, and then Wildman followed and did the tomato insects in California, because you could stir the gasoline in and if insect fragments in tomato puree or tomato ketchup or tomato juice would float up in the oily layer. But that's a whole other story.

RO: They were looking for fly eggs and maggots, then, in the tomatoes. Is that right?

KH: Well, no. They were looking for corn borer. The corn borer is also called the tomato fruit worm. And they were looking for the tomato pinworm. Both of them are caterpillars. Both of them occur in tomatoes and other fruits and vegetables. And both of them they knew were in the tomatoes, were being ground up into tomato paste and tomato puree and tomato ketchup--mainly tomato ketchup.

And with Wildman's finding in Michigan, they immediately started mixing gasoline in and were floating out fragments of tomato fruit worm, which is the same insect as the corn ear worm, and tomato pinworm, and then filtered them out. Floated them up into the neck of an Erlenmeyer flask, which became the Wildman trap flask. If Wildman had been a chemist instead of the generalist which he was, he would have used a separatory funnel, and the whole thing would have ended up differently. But he didn't, and the Wildman trap flask, which is a bastard type of a

separatory funnel, emerged. It turned out to be pretty good, because there were things you could do with a floating layer in a Wildman trap flask that couldn't have been done with a separatory funnel.

The fly eggs and maggots were another problem, because they didn't float out but did settle to the bottom, so that's a whole other story. All of the stuff that floated out came from the cherry worm stuff in Michigan and later in California. And also, I guess Howard liked to go to California. He preferred California to Ohio. But Howard and Wildman also worked in Ohio, but usually they went to California for their early work.

RO: Well Howard was about ready to retire, you said.

KH: Howard was ready to retire. That was '37 we came in. Everybody knew Howard was going to retire but Howard. He was never going to retire. So by '39, Wildman was doing most of the mold count work. Billy Eisenberg was coming into the mold count work. Smitty, Frank Smith was getting into the mold count work. But Bill Eisenberg and I--excuse the expression--were always a step or two ahead of Helsel and Smitty. It ended up they were doing a lot of our work. We're getting a couple layers involved there.

The FDA, Dunbar, was getting Howard ready for retirement, even though he never admitted it. So they were seeing that Wildman was pushed forward. And Wildman assumed he would be head of the division when Howard retired. What Wildman didn't know was that he was a fine lab field man, but that he was no more an administrator than Howard was. He just wasn't an administrative person, that's all.

RO: Well, then, who followed Howard?

KH: Howard retired about '39 or '40. Meanwhile, the Food and Drug Administration had brought Henry Welch in to head up the antibiotic testing. We were in the war. And to give Henry Welch a division, he was made chief of the Microanalytical Division. Henry Welch didn't know anything about any of the work we were doing, but he was an organizer. He could take individuals and make them into a group. This was sorely needed. None of us wanted to be organized. We had it real good as individual operators. So Food and Drug needed a good enough position to justify his salary, so they made Henry Welch chief of the Division of Microbiology, which included microanalytical (us) and bacteriology.

When Hunter died Dr. Slocum became head of microbiology which by then included the Microanalytical and Bacteriological Branches. Finally it got sorted out when Welch headed antibiotics, and the microanalytical group came down to the first floor. Bill Eisenberg was made chief of the Microanalytical Branch. Glen Slocum was head of the Bacteriological Branch. And I was assistant to Glen Slocum working in both ways. I was part of the old Microanalytical Branch, but I was also assistant to Glen Slocum. And a little entomological team formed under me. It only worked because we made it work. It wasn't a good organizational setup at all.

RO: Was there ever any division in the Microanalytical Branch of the group that was working on the separation and isolation of filth elements as opposed to the group that was working on the identification of the insects?

KH: No.

RO: It was never that way.

KH: Correct. And for a good reason. (Laughter) I'm going to get on a crusade now. Here's my crusade. The microfilth test work was never done as an entity, for its own self. We only did micro on chewed up material--applesauce, apple butter,

pureed corn--when we couldn't see the big stuff, the whole insect. So that it was always done to take care of ground up insects that could not be seen as such.

The problem was not to identify fragments. The problem was to identify those insect pieces which were indexes of prior contamination. For example, Gordon Helsel and I were working on cornmeal. The reason we developed the methods for cornmeal was because the whole corn used to make the meal was infested. The need was to develop a method for meal that would related to the contamination in the whole corn. What insects are in the corn, as harvested? What insects develop as it's stored under the conditions that it was stored in then, which were pretty bad? Similarly, how does one detect in meal the rodent pellets that were present in the corn from which it was made?

We were doing the separations and identification because we needed it to prove the prior history of insanitation or contamination and so on and so on. So that when Gordon Helsel worked on peanut butter, he worked on peanuts from the time they were harvested to the time the dirt, which ended up as water insoluble inorganic residue, appeared in peanut butter.

RO: Well, then, as you were working on this, you'd go out in the field. Is that right?

KH: Yes, we were working on both the basic biology and the laboratory methodology. We spent sometimes all summer. There was one summer I didn't see my wife from the thirtieth of May until Christmas eve. She went home to live with her mom. (Laughter) Because I started on the corn crop as it, south and worked it north into Ohio, as it was harvested then and put into storage. I followed it across the Midwest to get a picture of corn as it occurs as it's harvested, the conditions under which it's stored, and how do all these rat and mouse pellets and insects get into the corn? So that was half the year.

RO: Did you have as much of a problem with field insect infestation of corn as you did in wheat and things of that kind?

KH: More. Insects in corn for meal are more of a problem than insects in wheat. They are less of a problem in sweet corn for canning, but they are nevertheless a series of different problems. The field insects in corn going to canned and then later frozen corn were serious problems, but back to corn for cornmeal. The field insects that went into corn that ended up in storage that might be for animal feed or for human cornmeal was largely winnowed out by the cleaning process. What we then worked on in corn and in wheat, what we're more and more interested in, was the storage insects, which became a whole problem in itself. The *field* insects in wheat are largely grasshoppers, some thrips and mites and aphids. But Food and Drug considered them more or less normal and they'd be subject to what we now call defect action levels.

What we were most interested in were the preventable contaminations that occurred during storage and/or insanitary manufacturing.

RO: Did you go out alone, or did you usually go out with a field investigator?

KH: I went out and picked up a field investigator depending on what district I went to. If I went to Cincinnati, I'd go to Cincinnati, report in, pick up an inspector and a car. And the inspector would, when he was working with me, we'd do investigational work and sometime he'd go off on his own and do inspections. What I was doing was investigating the significance of rodent hairs and insect fragment findings.

(Interruption)

RO: What were you doing in the field?

KH: All of us in Micro were doing two things: Looking at food production to see if there were decomposed raw materials being used, insanitary practices, etc., and secondly, if there were such practices, to see how to test the finished products to prove the existence of the field or manufacturing conditions. However, I must say that usually the manufacturing conditions were first reported by a field district and we were sent in to do the research work.

One of these programs had to do with insanitary conditions in bakeries and flour mills, and, thus, with insect fragments and rodent hair fragments in cereal and cereal-based foods.

RO: Can you give me some more background?

KH: Okay, but let's start a bit further back. What we now call Defect Action Levels began as a hodge-podge of various announcements from the USDA, trade notices from the FDA, and disclaimers that there were figures at all. Except when there were individual notices, the standard FDA line was that foods were adulterated if they consisted in whole or in part of filthy substances or packed under insanitary conditions. Over and over again we said that there were no tolerances for filth. Filth made food filthy, period.

At the same time a few individuals had their own personal "black books" that contained figures at which the FDA would take action and we coordinated them with each other. The "standard" book began with L.D. Elliott and continued with his successor, J. K. Kirk. Meanwhile, Kirk, as had been the case with Elliott, consulted with the technical people in Micro when there was a tech. question. By the time that Howard was gone, that meant Bill Eisenberg or me--so we began to coordinate our decisions, and the result was three "black books" held by Kirk, Eisenberg, and Harris,

each containing the non-existent filth tolerances of the FDA. A copy of mine is right there on the couch behind you.

Certain figures were shared with the industry. For example, the 10 percent figure for infestation and mold in dried fruits were shared with the Dried Fruit Association of California and from there became generally known to dried fruit importers. Yet if someone asked FDA for a figure, there was none. This gets us closer to the wheat-flour and corn-cornmeal episode, but first one more digression or background piece.

The tolerance of not taking action on insanitary mill or bakery insanitation unless there were hair findings in the finished product was a fiction. There were rodent hair fragments in flours, and therefore baked goods, whether or not there is food plant insanitation. The hairs came from the mouse pellets in wheat and the rat pellets from the corn. I knew this; George Wagner of Pillsbury knew this. Eric Kitely International Milling knew this. Moreover, we all shared each other's information.

RO: How does this relate to the clean grain program?

KH: I could get there faster, but since this is a one shot deal for mankind I'd like to get in as much as I can. Just as the Dried Fruit Association of California got cooperative treatment because of political clout and because they were, themselves, policing their own industry, and the producers of tomato juice, paste, puree, and catsup for a complex set of reasons that spanned the whole spectrum from practical necessity to cooperation with the USDA, so did our relationships with the milling industry. I had pretty free rein that came directly from George Larrick, Commissioner of Food and Drug, and concurred in by J. O. Clarke, Chief of the FDA Central District, to work with the milling technical people.

The FDA made it a point to work through and with industry groups and individual companies. For example, we were very close to the mold count people of

H. J. Heinz and Libby who were leaders in the work for lowering the tomato mold counts.

Just as we had a very close relationship with the then-called National Canners Association and a somewhat adversary cum cooperation relationship with the American Spice Trade Association, so we worked with the Millers' National Federation and the American Corn Millers' Association.

We were also close to the Millers' National Federation and a few of the flour millers. Through them and my own work we knew that, while the FDA was taking action on baked goods and flours because of insanitary conditions--confirmed, we claimed, by the presence of rodent hairs in the product--the fact of the matter was that there would be rodent hair fragments in flour, meals, and baked goods when there were no insanitary conditions. As some of us knew, the hair findings had nothing to do with the insanitation. They were just there as part of the contamination of wheat and corn by rodent pellets.

From time to time the FDA would get together with the National Canners Association and arrive at a mutually agreeable action level for canned tomato product mold counts, a "tolerance" if you will. We would agree to not take action at a tighter level for the season that the one agreed to, and they would agree that the industry would not, as a group, contest our seizures. At a much lower administrative level we scientists dealing with grains would get our heads together on what was reasonable for flours and meals.

Just as you cannot contract for Peppers in Penang and ship them here absolutely free of rodent hairs and insect fragments, you can't purchase wheat in Fargo, and corn in Dubuque, absolutely free of the same type of contamination and make flour that does not have some of the contamination still in it.

While some of us knew that a tolerance was necessary, we were being so successful cleaning up the bakery and milling industries that no one would pay attention to the fact that our claim of hair fragment proving insanitation.

I remember having a talk with J. O. Clarke, chief of the Central District of the FDA. I can almost quote him verbatim. "Ken," he said, "let me give you some advice. Just forget about it. We are doing so much good that it would be a shame to spoil it all." That was probably the summer of 1949. I told the same story to Commissioner Larrick: That the hair fragments were not truly indices of contamination. He simply did not believe me and could not understand the events with International Milling as they unfolded in 1950.

RO: I think it was in the early fifties--wasn't it, Ken?--that we got into what we called the clean wheat program?

KH: We had section 402(a)(4) of the FD&C Act in 1938 and among other things worked intensively on bakeries in the early forties and bakeries and flour mills in the later forties.

So one of the large efforts was on baked goods, which was close to the consumer--bread, bread, cakes, bread, cookies, cakes, bread always, cookies, cakes. And inspectors made inspections and found evidences of insanitation. You can't imagine. If you go into a bakery now, a commercial bakery, you'll find it cleaner than most kitchens, but you can't imagine the condition they were in then. There were rats and mice all over the place. Really, when I say all over, I mean, there were rats and mice and insects. So the inspectors found evidences of insect, rodent insanitation, insect too, but the story of '50-'51 began as a rodent issue.

They'd find evidence of insanitation. We'd sample the bread or cookies or pies or whatever it was by a microprocedure and the Wildman trap flask and float out debris and look at that debris under the microscope and find rodent hairs. And then we said, not only was there insanitation in the bakery, but there is filth that carried over into the finished product that is rodent hairs. Wherever we found insanitation we found rodent hairs. And we did a lot of good . . . Made a lot of

seizures, a lot of prosecutions, and did a lot of cleanup. We did the same thing with butter. I can talk for three days.

We worked on bakeries. Then we went back to the flour mill, and that's when I got into it. And the flour mills were in worse condition than the bakeries. There were so many insects sometimes, it would stop up the milling machinery. And there were rodents in the mills, but in this case mainly mice, because rats have a hard time in a flour mill.

And I was doing investigational work, and I had found that the rodent hair fragments in flour, which were the same rodent hair fragments that you found in bread, were coming largely from the rodent, from mouse pellets in the wheat. The wheat was being stored under miserable conditions, and it had rat and mouse pellets in it. Well, the rat pellets were too big, and they got sifted out in the cleaning process. But a lot of the mouse pellets were the same size as wheat kernels, and they got ground up with the flour. So it didn't matter in a bakery whether you examined it from a clean bakery or a dirty bakery. If you examined bread, you'd find rodent hairs.

I still remember the session I had with J. O. Clarke. Remember him, the chief of the central district?

RO: J. O. Clarke, yes.

KH: That's now '47, '48, '49, in there, and we, every time we did an inspection of a flour mill, we found a dirty flour mill, we'd find rodent hairs, insect fragments in the flour. And we in FDA sat on the technical truth for at least two, maybe three, years.

Meanwhile, a man in International Milling, Eric Kiteley, and especially George B. Wagner of Pillsbury also knew the facts, and we all sat on it. Pillsbury, bless their hearts, was really a leader in food sanitation. And they let Food and Drug do what their own entomologist-biologist, George Wagner, knew was pure

fiction. The three of us had an understanding, but we also knew that one day it was going to explode.

So we sat on the technical truth until 1949 or '50 when Food and Drug seized a large shipment of International Milling Company's flour. It was out of a Texas mill. I don't know where they seized it. And International Milling says, "Enough! We're going to fight you on this one." And Kiteley and their big shots--Kiteley from International and I sat down with Commissioner Larrick, and Kiteley laid it out that these fragments that you found in International Milling Company's flour came not from insanitation; they were an unpreventable legacy of dirt, filth in the wheat. And when Larrick turned to me and said, "Ken, that isn't true, is it?," I said . . . I didn't say, "Remember, I told you so." I said, "Eric and I have talked this over, and what he's saying is what I'm saying."

And an agreement was reached over a series of two or three or four meetings in Washington and in Chicago that International would not fight that seizure--they'd let it go by default--no prosecution, if Food and Drug would conduct surveys to find out where the hairs and insect pieces came from and what was normal for grain production. That's where the survey of '51-'52 came from. It came from an agreement that we're going to tell the truth about where these insect fragments and rodent hairs, especially rodent hairs, came from. And, of course, they came from the pellets in the wheat. And then we had the whole story. We would all, industry and government, agree on tolerances, but that is a whole other story in itself.

RO: Well, that is where we got the tolerance of one pellet per pint in wheat.

KH: In wheat, but not in corn.

RO: Oh, I know.

KH: Since corn is mainly a food and industrial grain, we in HEW and those in the USDA couldn't agree on a tolerance. Oveta Culp Hobby, secretary of HEW and, I believe, secretary of the USDA, sent the decision to the White House, to Dwight Eisenhower who was president. I hated him for it at the time, but he was absolutely right. He sent a note back--he just scribbled a note--"If you people who know all the facts can't agree, how do you expect me to do it?" And he was absolutely right. Eventually, we all came up with one pellet per pint for wheat.

There's an awful story on the insect thing that I have to tell you. We in Food and Drug said that if there was 1 percent insect damage in the wheat that a competent specialist, which I was supposed to be, could look at that pint of wheat and spot the damage in five minutes or less. We argued that at the 1 percent level it was so obvious that a person who knew wheat could rapidly spot the damage. Because the industry said, "We're buying and selling wheat by the carload, and we can't turn it over to somebody who's going to examine it, take two or three days and run a micro test. We need a rapid test." So we said, "We have a rapid test on insect exit holes."

And Larrick so testified at a Senate hearing attended by Senator Carlson from Kansas who was there leading the opposition. So they said, "We have a sample, a pint of wheat, which has 1 percent damage. We want you to examine it." And I'm sitting there, and Larrick says to me, we were ready for it, "Will you examine it?" I said, "Sure, I will." Well, I couldn't find the 1 percent. I couldn't find any damage in there. And I felt like a damn fool. I was sweating. I was there before God and everybody and on the record, and I never found the damage.

After the meeting, one of the underlings said, to Frank Nicholson who was there, he said, "Frank, I'm supposed to leak to you the fact that there was no damage in that sample. No hard feelings. Tell Harris he was set up." I will never forget that meeting. And Frank told the commissioner. He told Larrick, which got me off the hook, but I still felt like such . . . Because I was made to feel like a fool. He said, "They had taken that wheat kernel by kernel, and there wasn't any damage in that

whole pint of wheat. And then we were told that there was 1 percent damage and get your expert to find it." (Laughter)

RO: This was a visual examination.

KH: Visual exam. Yes, rapid visual exam. There were all kinds of tests, but the rapid visual exam. The mills are using x-ray again, I'm told.

RO: Didn't they start to do some x-rays at that time?

KH: Yes, we started on weevil egg plugs, then shifted to the rapid visual, and eventually worked with x-rays. And it all died, but now it's back in again on the industries', bless their hearts, on their own they're picking up x-rays and using them.

RO: Because I thought Frank Nicholson was doing a lot of the work in the late fifties.

KH: Yes, Frank and I were now working as a team. How this team developed I don't know. It just grew. By this time I'm 75 percent administrative, my job description, and I'm . . . Glen Slocum is chief of the Division of Microbiology, and I'm now assistant chief of the Division of Microbiology. So I'm working in the Division of Microbiology. Bill Eisenberg is head of the Microanalytical Branch. But I'm working 75 percent as part of the division and 25 percent running sort of a technical team, which was the best of both worlds for me.

RO: When did Bartram come in on the bacteriological side?

KH: Bartram was there as long as I knew--Hunter, Slocum, and Bartram. He was in there . . . Bartram was part of bacteriology probably before '37 when I came into

Food and Drug. Bartram was one of the best of the lot. He was a more--do you know the German word *mensch*?

RO: Yes.

KH: He was more of a mensch than Glen ever was. Bartram was a decision maker, and Glen was a keep-everybody-happy maker. A fine bacteriologist who just inherited the chief's job.

RO: At what point in time, for the record's sake, did you have to determine whether an insect was from storage or whether it was from field infestation?

KH: The surveys of corn and cornmeal in '50-'51 and wheat and wheat flour in '50-'51, showed that there was a basic limit on the amount of purity you could expect on corn as it was harvested from the field and as it stayed in reasonably sound storage, that some insects, and sometimes mice would get in. Some mouse pellets might carry over as did the insects.

At the same time, there were people . . . But the war had gotten into this, too, and we were now conscious of grain losses as well as contamination. We were working both to prevent insect contamination and to prevent losses. The leaders were Cotton, Frankenfeld, and Wagner in the Department of Agriculture--were trying to prevent losses from occurring, because insects can create tremendous losses. If we can go back to before World War II and during the war, we were fighting a war on the U.S. grain stores. We fed the whole allied world; we fed Russia; we fed ourselves. And we don't want this all to be eaten up. We went into World War II with almost four years of wheat and corn in stores, thank God; we fought the war on that wheat and corn and emerged with a real appreciation of the devastations that insect and rodent losses could cause.

So while some of us wanted to reduce losses, those of us working under the Food, Drug and Cosmetic Act were more directly trying to prevent contamination. So we were trying to find out what was the basic minimum that you might expect, and how much insect fragment materials, weevils, borers, sawtooth grain beetles, Tribolium, how much of that was due to histories of insanitation in the wheat and insanitation in the stored flour.

And we began to separate out what we called the bran bugs, Tribolium and its relatives, which are now totally, almost totally controllable. And if you've got Tribolium fragments and a few others--but those are the classic ones--if you have *Tribolium confusium* and *Tribolium castaneum* fragments in the flour, it proves (as we said) that somebody has slipped up in the past, has had some insanitary storage conditions. On the other hand, the Sitophilus weevils, the borers, and a few others are more basic pests of grain. We don't like them but they're there, and in contrast to the insects that got in because of insanitation. So the Food and Drug programs on insanitation had and have the problem of identifying fragments, of distinguishing fragments from weevils and borers from fragments from the insanitation related insects. I had published a simple little A.O.A.C. paper that stated that we can distinguish between certain insect fragments, but I didn't know the full potential of what I had begun, of how far you could go. I just knew that various insects--just like people don't look like dogs and dogs don't look like cats--certain Tribolium fragments don't look like weevil fragments, and certain weevil fragments don't look like borer fragments, and none of them look like, and many of them don't look like any of the others. Well, anyway, the insect fragments look different. I didn't know how different, but they were different.

And we brought in--and the date I don't know--a young hot shot named O'Dean L. Kurtz. He was interviewed, I guess, out in Kansas City by the district chief, and they said, "He looks good, but he's young and cocky." I think that is what they called him. (Laughter) I interviewed and hired him, and we turned O'Dean

loose on identifying insect fragments by the micromorphology of their pieces. And there's a whole book of it behind you, second edition. We know we can go further. He went further than we ever dreamed we could go.

If called on you can identify a gnat's eyebrow, so to speak, because, for example, the head of a Drosophila gnat looks different than the head of a housefly. So we in Food and Drug have in our power the ability to really prove a prior history of insanitation, and we can do it in the lab often without inspectional evidence.

RO: Would the agency ever take action without inspectional evidence?

KH: No.

RO: So then it was really important to be able to identify the type of an insect to show whether it was field infestation or whether it was really from bad storage. Is that right, Ken?

KH: Yes, so far as insect filth is concerned, we've always had inspectional evidence. But it was nice to get on the witness stand and be able to say that these insects which . . . Sure, there were some insects in there that got in in the farm and so on, but these insect fragments that we're now talking about got in because this mill was contaminated with angoumois, with Indian meal moth, for example. It's nice to know where you are when you're enforcing an act.

RO: So if you had moth fragments, let's say, you knew then that that probably came from the mill and so forth.

KH: Yes, if the mill reported Mediterranean flour moth, we can go into those samples and find fragments that we can say, "Yes, these came from Mediterranean flour moths. The insect insanitation resulted in filth in the product."

RO: Today, is the Food and Drug Administration still looking for insect fragments and identifying them?

KH: Not as much as they should be. We've really softened that stand. The unfortunate part now is that the FDA relies too much on self-policing. The Dried Fruit Association in California, the National Canners (now Food Processors) Association, the Miller's National Federation, Pillsbury as a real leader, and many organizations and companies are expected to be their own FDA.

But since they only started this because Food and Drug pushed them, they don't always carry through. They need a push from FDA. My own work shifted to the U. S. Agency for International Development, Food and Agriculture of the U.N. and others. We were using the same technique to save grain that we had to keep grain clean.

But I now know that there's a softening, and I hope it doesn't slip back to where it was prior to '38 or in that period, because the industry is in a dollar and cents binge. Although this type of quality control costs money, and you have to reject goods and food losses are a loss to the world's food supply, I'm concerned about how far back they're going to soften.

RO: At one time, I think they used to say that the FDA knew more about identifying insects than anybody on the outside.

KH: Yes, the agency does in some fields and in others it doesn't. I'm finding some real good people. I found a group out at L.A. about three months ago who is really expert in mites--not mice, mites. But the person who knows the most about insect fragment identification in the world is James Gentry, who owns the old--you know, Kurtz died--who owns the Kurtz lab in Melbourne, Florida. And the book, this two-volume *Microanalytical Entomology* that we published, is put together by Jim and by

me because we're over the hill and we don't have that long to hang around. We wanted to go, to put the record, put down as much as we knew before we died. Micro Branch has Dick Gorham, but otherwise the combined specialists-generalists who are also teachers-entomologists are no longer there. Gorham's two new volumes on insects (not fragments) are really masterpieces. Have you seen the new ones by him?

RO: No, I've heard of them.

KH: Oh, they're fabulous, absolutely fabulous. But Brickey (Paris) is just no leader. And a group like Micro needs a leader to charge their batteries, because unless you keep moving forward, you'll slide back. That's about what it amounts to.

(Interruption)

KH: Where we are now, as I see it, and I see it because I know the questions that people in the industry ask and don't ask me. They don't ask me that many basic questions. They're beginning to revert to, How far do we have to go to satisfy the FDA? And that's a bad question. The industry should be pushing cleanliness as far as is commercially practical, not asking what can we get away with, which is a bad way of saying, "How far is the Food and Drug going to push us?" As Food and Drug softens, they soften.

Now Gorham in his *Ecology and Management of Food Industry Pests* and *Insects and Mites, Pests in Foods* has two beautiful books which the food industry should use as tools to police themselves. And it comes out at a time when that book plus the new Gentry/Harris book on the micro part gives the industry a pretty, two, three darn good tools. The principles of *Food Analysis and Filth, Decomposition, and Foreign Matter*, 1981, isn't worth a damn. It is so superficial. *Food and Drug #2*

Training Manual for Analytical Entomology is so superficial it isn't worth a damn. But #3 and #4 are beautiful books.

I would like to see Food and Drug push those two and our new privately published one. I'd say, "Look, you guys, you've now got good fresh tools, and I'd like to see Food and Drug get on its horse again." But because--well, I must say it once more--because the softening I see I don't like to see, of the "what can we get away with?" attitude.

RO: You know, that happened as far as just plain sanitation. Back in the sixties, the agency decided to soft peddle on the food sanitation,and you know what happened.

KH: You see, filth is a funny thing. I'm going to philosophize for your tape just for a second. I know none of this filth hurts you, although . . . I know that. It's just people say to me, "It's cooked. Does it hurt you?" No. But when we started on filth, we carried a lot of good public health sanitation along with it. A company puts in a sanitation lab, and those people have dreams of improvements, once they've got a lab person, a technician, a manager maybe, two or three people. They make a career of it, and in making a career of it, they bring this company along on more than merely insect fragments.

The prime example in the one that I know very well is what Pillsbury did of bringing themselves up as the prime sanitation-oriented flour milling company. And they brought the whole industry along with it. And they did it on filth, but as you eliminate filth, you eliminate a lot of other sanitation problems as well.

RO: When did you retire, Ken?

KH: I retired . . . I left Food and Drug in '66, and left government in '69.

RO: Where did you go from . . .

KH: I went over to the Agency for International Development in a nutrition group. I couldn't stand Food and Drug anymore. We were passing too many papers. I went to a nutrition group. But in '62 I had been sent overseas by our government as part of Food and Drug. I was sent to Spain to work on pits in olives, and I had gotten bitten by the overseas bug. So I went to USAID with the idea of going overseas. And I went from a year and a half in Washington to two years in India, and then I left government in '69. I was in India when I retired from government, working on rats in India. That's a nice story, too.

RO: When did Glen Slocum retire?

KH: Slocum retired on a medical disability in . . . Oh, good grief. It was about . . . Was it before '66 or after '66? Was he still there when I left? That's a good question. I don't know when Slocum retired.

RO: Were you there when Olson came in as the . . . Because Olson came in . . .

KH: Yes, I was there when Olson came in, but not in Micro anymore.

RO: Okay, well then Glen had retired, because Olson came in after Glen left.

KH: Then Glen had to retire about '64 more or less. I was at that . . . I had been working as Glen's assistant in the Division of Microbiology and then went to the Bureau of Biological and Physical Sciences under Bob Roe. Bob Roe borrowed me for a few weeks, and I stayed in administrative work in what became the Bureau of Biological and Physical Science until I left for the State Department.

RO: That was in 1961 when you left Micro.

KH: That was about '61, yes. Yes, I couldn't . . . I'd have to look it up; be but about then. And then we moved around physically, and we built FOB 8, what, in '62, '63, '64? No, '61, '62, '63, something like that. And Dr. Summerson took up the Bureau of Biological and Physical Science. Danny Banes and I were assistants to Summerson and with a staff of four, including secretaries, ran the whole Bureau of Biological and Physical Sciences.

RO: So you never really went back then to the old division?

KH: No, I never went back to the division. When I worked as assistant to Roe, I had a relationship back to Kurtz. He and I continued to work together, but that was just on the side, or when we had a business together it was in my recreation room. But I never went back to the division after that.

RO: Let me ask . . .

KH: And that's a mistake, because it was much more fun as a technical person. It didn't pay. You went up because you got more money for it, but the work was much better, more fun.

RO: I remember them telling about Danny Banes when they pushed him upstairs. He said, "I'll go, but I want to spend a certain amount of time back on the bench."

KH: They gave Danny a lab at the bench. I didn't retain the lab. They gave Danny the right to work in the lab, but it was his undoing also. He couldn't be two people. When Summerson took over the Bureau of Biological and Physical Sciences he was a real taskmaster. I said to him one day, "Bill, you're a son of a bitch, but I

love every minute of it." He just drove us unmercifully. And the day I left I said, "Summerson, you're a son of a bitch, and I can't stand it any more." (Laughter) He was inhuman. He really was. The guy at the top ought to be like Larrick. He was a human being, and Dunbar was demanding but still a human being.

RO: So you'd left FDA before Goddard came in. You'd left when Larrick was still commissioner.

KH: Yes, Larrick was still commissioner.

RO: You worked under about three commissioners then.

KH: I worked under Campbell. When I was in Food and Drug and Campbell was commissioner, he was God. He was way up in someplace. Dunbar I knew personally. And Larrick I worked for.

RO: Crawford you probably knew.

KH: Yes, but Crawford was never commissioner.

RO: Yes.

KH: Crawford?

RO: Crawford was commissioner from 1951 to '54.

KH: Crawford followed Larrick. He followed Dunbar?

RO: He followed Dunbar.

KH: Okay, I'm wrong. But when Larrick was commissioner I was working directly, on the wheat and flour thing, I was working directly for the commissioner.

RO: Did you go out on a lot of the court cases?

KH: Yes, yes. That was the most fun of all. Yes, we had some interesting court cases, but I guess, I don't know how many, five, six, seven, something like that. I was going to tell you, each court case was a story.

RO: Do you know how many papers you put out, Ken, while you were with the agency?

KH: Yes, a whole drawer full. Do you want to see them? (Laughter) I think I say on my resume upwards of fifty or something like that. But a lot of them were A.O.A.C. short papers. And some were meaningful; some were just little blurbs--a method for the examination of cornmeal for, yak, yak, yak. And some were good studies.

RO: Would you like to give some personal insights into some of your colleagues that you worked with or for and some of the commissioners?

KH: I'd like to tell you a story of Walter G. Campbell, because . . . I'll tell you, this was a . . . I was a junior microanalyst. That's a P1, isn't it?

RO: Yes.

KH: $2,000 a year. And I examined some . . . I'll tell you two stories, both of which are good. In the first one I'd examined some peas, and a call comes from, through the office secretary, Maybeth Marcus. "Commissioner Campbell is going to

see the industry representatives and a member of Congress about those canned peas. He wants to know if you want to be present during the interview." This was like, almost as if God had said, "Do you want to come up here and be at my side?"

So I go to the commissioner's office in a brand new white coat. And I'm sitting with Campbell. He said, "Now, young man"--and believe me, I am young--"you're here. I don't want you to say anything. Just listen." (Laughter)

I'm sitting to one side, and the man came in from upstate New York about the peas, and he has his Congressman with him. And they started to argue about the insects in the peas. And Campbell said to the Congressman, "Look, I want to tell you this. This young man tells me those peas were contaminated with insects." I don't even say, "Yes, sir." I nod a yes or something, but he's told me not to say . . . "And I'm taking his word for it, and that's the position of the Food and Drug Administration."

Now he says, "As long as I'm commissioner, we're going to maintain these seizures," because there was more than one. "If you, Congressman So-and-so, want to be commissioner, you can make any decision you want. And if you will right now ask me for my resignation, in writing, I will resign and you can make any decision you want. But as long as I am commissioner, those peas remain under seizure." And they backed out practically backwards, bowing, like you went to the sultan of something or other. And that's a real commissioner talking.

I can remember another one had to do with a prosecution Food and Drug was doing against a Chicago something or other. It was a Chicago operation. Who was chief in Chicago? Stephens? It doesn't matter.

RO: It could have been at that . . .

KH: And the district recommended prosecution, and it came to me through Ken Kirk for a technical decision as to whether or not we could support the action. And I wrote just a little chit on a yellow piece of paper and sent it back to Kirk. And I

said, "We can't . . . We'll never prevail in court. The technical evidence is not there."

At the same time political pressure was brought in through Cook County. Was it Mayor Daly? Whoever it was. And political pressure was brought to the Food and Drug Administration that they didn't want us to bring this prosecution. And only because that political pressure was brought to bear, we okayed prosecution in spite of the absence of good evidence.

And Ken Kirk said to me, "Do you remember that note you sent to me?" And I said, "Yes." He said, "Come down here." He gave it to me. He said, "Tear it up in my presence." And we maintained the prosecution, and fortunately they pled guilty and we didn't have to try the case. We prosecuted only because of political pressure brought to bear. Can you imagine that happening?

RO: Well in those years, all of the recommendations that came in from the field regarding filth went down to the technical divisions for review, didn't they?

KH: It all came in through, mostly . . . Ken Kirk, you remember him.

RO: Oh, sure.

KH: I've never seen anybody handle correspondence like he did. And he'd farm it out to the technical divisions. If it was insect, it could come to me. If it was mold, it could go to Bill Eisenberg. And he'd balance the technical against all the commercial and other factors. And if Ken Kirk said, "Seize," it was almost certain to be seized or prosecuted--Pros. So it all came to Washington. No, not all, because certain decisions were delegated to the field.

RO: The field had direct reference on certain things.

KH: Direct reference seizures. But Ken Kirk could remember all the precedents and policies. He could remember and apply them for the rest of his life. Real giant of a person.

RO: Anyone else you have any stories about, Ken?

KH: Oh, we've got a lot of stories.

RO: You probably . . .

KH: Got a lot of stories. A lot of court case stories.

RO: Did Kurtz leave before you did?

KH: Yes. The Kurtz story . . . Kurtz and I wrote *Microanalytic Entomology for Food and Drug Control* and published it. It was all government work, government expense. And he left Food and Drug and went to Lauhoff Grain while that was in press. One of the reasons he left had to do with money; another was because he and Billy Eisenberg were always feuding.

As long as Kurtz worked for me . . . He worked crazy hours. Kurtz could come in at 10:00 in the morning, no explanation, no leave taken, but at 7:00 at night he was still there. He couldn't get up in the morning. And Bill Eisenberg couldn't stand it, and they had words. But I didn't care, because, you know, everybody would go home and he was still there. He was a glutton for work.

But Kurtz, the book was finished, and Kurtz went with Lauhoff Grain for his own self esteem and because Lauhoff Grain painted him an impossibly beautiful picture. Meanwhile, Lauhoff Grain Company, Danville, Illinois, in effect, by hiring him, bought the title page of that book. That identified O'Dean L. Kurtz as an

employee of Lauhoff Grain Company, even though the work was done in Food and Drug.

So he left very early on, worked for Lauhoff Grain, who was also one of the leaders in food sanitation. But when he got there he realized that he'd been bought, which didn't sit well at all. He also found that he was always doing work for his boss, Bill Schoenherr. He couldn't work as O'Dean Kurtz. So he left and formed O.D. Kurtz Associates, Inc., which was an analytical lab, and made a real good success of it.

When I left government, I was a private consultant, and I also was part of O'Dean L. Kurtz Associates, Inc., the lab. And that's a whole story in itself, because O'Dean Kurtz Associates Lab was O'Dean, Ken Harris, and a fellow by the name of Jim Gentry who worked for Baltimore Instrument Company and sold us most of our glassware and equipment out of Baltimore. And then Jim left that, and it was the three of us. When I left and then O'Dean, Jim owned the whole O'Dean L. Kurtz Lab. That's a whole story in itself. They do more filth work than all the other commercial labs in the country combined.

RO: Do you have any interesting stories of some of your colleagues?

KH: Stories of people--I don't know. I'll tell you an interesting story. Much of the insect fragment work started out with corn ear worms in tomatoes. The work was done by B. J. Howard and then John Wildman. Well, now, Smitty (Frank Smith) is working for Howard, but he's not looking back over his shoulder. He's a good investigator. And he notes that the corn ear worms molt four to six times. It varies a little. And that when they molt they often eat their old larval skins. Now, a corn ear worm is pretty small, and when its jaws chew something up, it cuts them pretty small.

So Howard is saying that all these pieces represent worms in corn. And Smitty now finds out that they necessarily weren't . . . They represent worms, yes,

but most of the fragments are cast skin fragments. So every head you found, doesn't mean a worm. Every head meant a worm or more usually a molt, which was a fact that B.J. Howard just couldn't handle, and he would not recognize, let alone publish, Frank Smith's work. Howard didn't want to hear it. But Smitty knew it, and we all knew it. We now recognize this in all fragment work. Most of the fragments come from cast skins, not living larvae.

RO: Frank Nicholson, at one time, was doing a lot of work on x-ray on coffee beans, if I remember right.

KH: Yes.

RO: He was trying to do the same with the coffee beans as with the wheat.

KH: That's right. Frank was a prodigious worker. It's too bad. We all felt it when he died. His life got cut short. As a matter of fact, I had given him hell about a month before for not working. He didn't tell us he was sick, didn't tell anybody he was sick. I said, "Frank, your work is slipping, yak, yak, yak. You've got to buckle down, yak, yak, yak." He sits there and listens to me. Then two months later he's dead. I wish he had told me. One of my regrets in life to have given hell to a man, a real friend, who unknown to me was really sick.

Anyway, Frank tried the x-ray on everything. He tried it on cocoa beans; he tried it on coffee. Coffee's a tough one to read, because the coffee berry is all convoluted. It didn't work for a couple reasons. The main reason is the industry wasn't ready for it, and coffee bean grading is an art in itself. So far as I know, they're not using it on coffee beans; they're not using it on cocoa. The industry's using it on wheat now again. I don't know if they're using it on corn or not.

Frank was a prodigious worker. Frank and I could go into a plant doing inspections together, and without saying a word to each other would divide up the

work and come back at the end of the day having covered the plant. And we didn't divide it up. We didn't say, "You take this line. I'll take . . ." There was just some simpatico between us. He and I could go to a lab doing extractions, and again, without saying a word, we'd work on a row of trap flasks. And we could work all day and hardly talk, or not talk about the work we're doing, and do the whole day's work. A lovely person, too. A friend who died too soon.

RO: Did the agency ever get a crystallographer?

KH: Yes, Bill Eisenberg turned into the crystallographer.

RO: Wasn't Al Tillson, too?

KH: Yes, but that . . . Now Bill is working on the crystallography and has got an administrative job, and Harris is working on the insects and has got an administrative job. His office was a lab room, just like my office was a lab room, and he's doing crystallography. We used to say, "The best thing that John Wildman ever did was to hire Al Tillson. Tillson was a botanist who took to the crystallography like a duck to water. Yes, and later Tillson did all of the tablet identification work. You remember how he could read the die impressions and tell if it was made in a certain plant in Philadelphia to prove interstate commerce and all that.

RO: Didn't he go to DEA (Drug Enforcement Agency) afterwards?

KH: Yes, he went to whatever it was called then. He went to the drug . . . Was it DEA? Was it part of Alcohol and Tobacco?

RO: Probably.

KH: Yes, whatever it was part of, he went with them. A fine worker, very . . . And a good witness, excellent in the lab. Microanalytic work is mainly detail, and Tillson was a fine painstaking worker-observer. As a result he seemed to always be in court. If I say every week I'm exaggerating, but it seemed to me several times a month, just to prove the interstate commerce part of a case. I shouldn't say "just." It was a very important aspect of our work.

RO: Yes.

KH: Yes.

RO: I've been out on some cases with Bill Eisenberg, on some of the OTC cases where Bill testified. Well, is there anything else, Ken?

KH: Oh, there's a lot else.

RO: You know, we'll get a chance to look at this and if there's some things that have been omitted, we could always have another session or we can insert it.

KH: Yes, I think it's important to, on the wheat and flour, to realize that the, parts of the industry, we were technically on thin ice, and parts of the industry knew it and they went along with it because it was doing it. And they were on our side really. But then when it got too much of a burden to carry, and International Milling brought a halt to it.

I think it's important to realize that in Gorham down there to Food and Drug is now one of their brilliant technicians. What is missing is the leadership some people such as Bill Eisenberg and I had with the industry. We were their enemies at times, but more usually their leaders in our joint search for excellence. We need some of that now. An FDA scientist needs to be at one with his industry counter-

parts, and in insect and rodent filth work this is not now the case, and we are all the worse for it--FDA, industry, and consumers.

(Interruption)

RO: Thank you, Ken. This is the end of the interview.

(Interruption)

ADDENDUM

Something should be said about the recognition and identification of insect fragments. B. J. Howard, who began it all, had some appreciation of *fragment* counts. He saw that there were certain insects in tomatoes--largely the corn earworm (*Heliothis zea*) and the tomato pinworm (*Gnorimoschema lycopersicella*) and he set about finding evidence of their fragments in comminuted tomato products and ways to bring about technical and legal corrections. He may be faulted for failing to separate insect fragments from the living larvae from cast skin fragments including those pieces of skin made into fragments by the cannibalistic habits of the corn earworm, but he did approach the work as a basic biological problem and, from there, developed laboratory and forensic solutions. And--and this is a big "and"--he always worked in and with the industry. The industry was always welcome, and information was freely shared. This has not always been the rule with many of the later investigators. Since Bill Eisenberg's time, the scientific approach of analyzing cause and effect has largely been ignored, and Micro has been operated as a secret sanctum.

Secondly, all too many, including people in and out of the FDA, have simply barged ahead in identifying pieces of insects and rodent hair fragments found in foods. The near disaster that resulted in the wheat-flour and corn-cornmeal surveys of 1951-52 was a result of this type of thinking in the enforcement echelons of the FDA.

Now, with possibly two exceptions, analysts in Micro are seeing particles under the microscope and seeking to determine whether they are insect or plant. Even if a determination is made as to the insect producing the fragment, the problem is not approached from the basic biology and food technology standpoint. Even training sessions in and out of government on insect fragment recognition are being

conducted on the basis of "is it or is it not insect" instead of looking for *significant* findings. The concept of seeding insect pieces and rodent hairs into test blanks and the concept of counting mite, aphid, thrips, and scale fragments as part of the "filth" picture--both of which the Microanalytical Branch has built into the A.O.A.C. Methods--is the ultimate extension of this type of non-science into enforcement of the FD&C Act.

The recently published volumes *Microanalytical Entomology for Food Sanitation Control* and *Insect and Mite Pests in Food* point us in the directions that were known to such "old timers" as Howard, Harris, Frank Smith, and O'Dean Kurtz, but have been largely ignored by much of the Washington staff for the last twenty or so years. They need to be heeded by the FDA managers and administrators.

Kenton L. Harris