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Transcript of Proceedings

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

OFFICE OF THE SECRETARY

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SIXTH MEETING

OF THE

SECRETARY'S ADVISORY COMMITTEE

ON

AUTOMATED PERSONAL DATA SYSTEMS

- - -

Bethesda, Maryland

Thursday, September 28, 1972

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Stone House
National Institutes of Health
Bethesda, Maryland

Thursday, September 28, 1972

The meeting was convened at 9:00 a.m., Mr. David B.H. Martin, Special Assistant to the Secretary of HEW, Executive Director of the Committee, presiding.

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AFTERNOON SESSION

MR. MARTIN: Could we come to order, please.

The first presentation this afternoon will be made by Joseph C. Wilberding, Executive Director and General Counsel of the Medical Information Bureau, whose office is in Greenwich, Connecticut.

Mr. Wilberding, Frances Grommers, the chairman of the committee, expresses her regret, intense, at not being here, and looks forward to seeing the results of our discussion with you in the record which will be made of your presentatoon.

After you have made your initial presentation our practice has been to go around the table and give members of the committee an opportunity to ask questions or extend aspects of your presentation that interest them.

MR. WILBERDING: Certainly.

Members of this committee, I hope I talk loud enough that you can hear me. You will have to talk loud to me, because I had a bad cold last week and my hearing is practically destroyed.

My name is Joseph C. Wilberding. I am the Executive Director and General Counsel of the Medical Information Bureau, which is frequently called the MIB in inner circles, and our offices are at 35 Mason Street, Greenwich, Connecticut.

Niel M. Day, my associate and assistant, is sitting

with me, hopefully to call to my attention any of the more obvious mistakes I make, and to fill in and remind me of points that I have not covered.

We appreciate Mr. Martin's invitation to present to you today information regarding a computerised medical information system as operated by life insurance business. It has been going for over 70 years and we think that over that period our organization and its immediate predecessors have run a reasonable institution, which takes reasonable steps to safeguard the interests of the individuals concerned.

Now, by the individuals concerned, I mean those who are applicants for life insurance, those who are already insured, and those who are life insurance underwriters.

Details of the operation and the steps that we take to protect these various interests, including security, and correctness of information, are complicated and detailed. As you probably know, security and securing correct records is a matter of many steps and many layers of security. Each one may be small in itself, but taken as a whole we believe that they have created, in our case, a secure institution that does have correct information.

Because of the fact that there are so many detailed facts involved, it is not easy to find people who will look thoroughly into what we do without preconceived notions, and we welcome this opportunity to explain this to your body

because we understand that you are willing to do this.

I understand the format you prefer is a brief discussion by myself followed by a question and answer period. I believe each of you has already received copies of our constitution and rules and copies of a pamphlet entitled "The Automated MIB" and copies of a statement I presented at a Senate Subcommittee in May. It is possible I may repeat, in the course of this initial 10 or 15 minute discussion, some of the material that is already in that. I trust you will bear with me to the extent that you already know what I am talking about.

I say again it is not easy to summarize in a few words this institution. If I find that I have omitted anything, I hope you will cover it in your questions. Also, I hope and I understand that if it is not answered to either our satisfaction or yours, we can submit a memorandum covering these matters later on.

MR. MARTIN: You may.

MR. WILBERDING: I would start out with some very simple statements, including some of the basic principles of the life insurance business.

First, the primary purpose of the Medical Information Bureau is that it should serve as a cooperative effort to beat cheaters and those who forget.

Almost all life insurance companies who write any

real volume of ordinary life insurance belong to the Medical Information Bureau. It covers both United States and Canadian companies, and we have nearly 700 members.

Second, all competitive insurance markets in the world have some sort of a similar cooperative exchange of information. You will find this is true in England; you will find this is true in Germany; you will find this true in South Africa. You will find this true wherever there is a competitive insurance market.

Not only is the MIB a help in the individual case of attempted fraud, but its existence also serves as a protective measure to deter those who might be thinking of fraud. The existence of this exchange is widely known among insurance agents and brokers. The details of our operation and the details of the individual items of information are not, but the idea that the existence of such a bureau is a total secret, as appears in the press once in a while, is false. You will find any insurance broker or agent worth his salt knows there is an exchange of information.

I think it should be clear to all of you that the condition of health and medical history of an individual is a necessary area into which a life insurance company must inquire when an individual applies for ordinary life insurance. I emphasize "ordinary life insurance" because there is another form of life insurance called group life. In group

insurance the amount of risk for each individual is relatively small, and the individuals who receive the insurance receive the insurance because they are members of a group and don't make an individual election. In so-called ordinary life insurance the individual applicant decides when he wants to apply and for how much he wants to apply, what the amount shall be. He can wait until he is at death's door, actually, and unless the truth comes out he may get some insurance. He probably won't because the truth probably will come out.

Nevertheless, the time of the application is his choice. He can apply for amounts up to -- recently there have been individual policies issued up to $15 million on one life, and even over that. And he can apply for this amount at his own election. He may not receive the full amount because he may not have the finances to justify it, and there may be other reasons that don't justify a tremendous amount on a comparatively -- what should be a small-risk case. But he can apply. He makes his own choice.

Fourth, the people in the companies who make the judgment as to whether or not a policy should be issued and in what amount and at what premium are called underwriters. They must make the independent judgment for their companies as to, first, whether or not an individual is insurable, at what premium rate, and at what amount, up to the amount that the insured applies for or the applicant applies for.

There is no possible way that these underwriters may safely and intelligently make this judgment without having some representation by the individual, and information as to his age, his health history, and his financial background.

If, as in the 1920's -- this actually occurred -- the underwriters get careless and do not do a thorough job, then the death claims against the companies mount. For many years after 1930, some companies found they were paying claims far in excess of the statistical calculations. I would make the point that it is really the other policy holders, past, present, and future who make up most of the difference for such adverse mortality expense.

The fundamental principle of any life insurance is to assemble groups of people to share the risk. Most of the money comes from the group in the way of premium payments, not from some outside source like a moneyed corporate entity or from rich stockholders. As a matter of fact, in the United States, by far the largest amount of life insurance, ordinary life insurance, is issued by mutual companies. There are no stockholders.

So the companies do make inquiry into the applicant's health. They have to. He is asked questions on his application. He is examined by a physician or perhaps in a so-called paramedical office. And sometimes, but only with his written permission and authorization, information is obtained from

his personal physician or from his hospital.

In the non-medical areas such as finances, the life insurance underwriters will ask investigative agencies such as retail credit or other agencies who are concerned with non-medical matters to submit reports. No one wants to snoop for snooping's sake, but if a life insurance underwriter didn't try to get this information he couldn't make an informed underwriting judgment. And if you don't make an informed underwriting judgment and thereby give the individual a policy he doesn't deserve, he will have an instant estate of very large size, all at the expense of other people.

Now, it has been the experience of life insurance underwriters in the United States and Canada and all over the rest of the world as well, that when an individual applies for life insurance and his application is declined, an offer is made of a so-called rated policy, in other words, extra premium, that this individual or his agent or his broker is highly likely to try another company, at which point some of the previous information may be forgotten or concealed. This is where the MIB comes into the picture.

The first company that found any relevant information is pledged to make a brief report of it to the MIB, to this Bureau, and this indicates in general form the nature of their findings. The action, that is, whether or not the first company issued or rated or declined the case, is not

indicated or not reported to MIB, but sufficient information in a brief, coded medical code is put into the Bureau so that when another company receives an application from that same individual, the second company will have a warning or an alert signal as to what may be significant information to its underwriting decision.

It is, of course, possible that the underwriters of the second insurance company could discover the same information without MIB. It is further possible that a business such as the life insurance business could operate without the Bureau entirely. However, it is the considered opinion of the underwriters in our business -- and they spend an awful lot of money for this purpose -- that this would have two adverse effects to the consumer, if you terminated the MIB.

First, it would markedly delay the issuance of the policy to everyone, pending a thorough investigation of each individual case. And these investigations are expensive.

Second, it would probably substantially increase the mortality expense of the companies. And as I explained before, this expense would ultimately fall on other policy holders.

The MIB is not infallible. It doesn't protect against all cheaters. Some of them slip through anyway and in big amounts. But if it did not exist, it is the considered opinion of our underwriters that many of them would be

successful.

Furthermore, the knowledge that our institution did not exist, if it became widespread among the agents and brokers, would encourage many people who had not tried to conceal their medical history to do so.

These are the basic reasons for our institution's existence. We have other purposes as well, but fundamentally MIB was organized and exists for the mutual prevention of fraud.

Let me turn to a brief review of the background and history of the organization and then a working of the system.

As to background and history, the Bureau is an unincorporated non-profit trade association. As I said, we have 700 members in the United States and Canada. Each member must be a life insurance company qualified within the definition of the Internal Revenue Code. Organizations that write only accident and health insurance cannot qualify for membership. Each member is required to have a local licensed physician serving as medical director, and he must individually pledge, as well as his company, that he will protect this information and treat it confidentially.

The Bureau was founded in 1902 by the Association of Life Insurance Medical Directors and until '47 was operated as a function of that organization. The 1902 organization succeeded a prior exchange founded in 1890. So this thing

has been around for a long time.

In 1947 the Bureau was reorganized as a separate, independent association and since then has been governed by an executive committee with nine company officers, four of whom are medical directors, physicians, four of whom are company officers other than physicians, and one of whom is a general counsel. This executive committee is responsible for the management of the Bureau.

Going back to the Medical Directors Association, I still report annually at their annual meeting with regard to the activities of the Bureau during the past year. So we do keep a close connection with that association and with the medical profession.

The staff of the executive committee consists of an executive secretary, myself -- and I have been in this job since 1947 -- my assistant, Mr. Niel Day, who is with me, as I previously stated, an administrative assistant and three secretaries, all of whose offices are located in 35 Mason Street, Greenwich, Connecticut. We are not a very big institution as far as that office is concerned.

Since its inception MIB has operated under a constitution and a set of rules and its medical directors have individually pledged to abide by these rules. I believe you received copies of those through the staff. The present constitution has been in effect since 1947, and our rules were

revised to become effective in April of 1971. You have also received those.

I would mention or ask you to note that they contain provisions as to disclosure and disputed accuracies.

As indicated by the effective date the rules were revised to comply with the Federal Fair Credit Reporting Act. At the request of the Bureau of Consumer Protection of FTC, MIB furnished detailed material covering its organization and operations to that Bureau, the Consumer Protection Bureau.

On April 6, '72 we were advised by the staff as follows:

"On the basis of the information presented, it would appear that the Medical Information Bureau has established adequate procedures to effectuate compliance with the Fair Credit Reporting Act."

In addition to being looked at by the Federal Trade Commission, we have also regularly been examined in the past by the New York Insurance Department. The last examination was five or six years ago. We have always accepted that examination and in case you hear that we are not subject to public supervision or control, to the degree of operating a life insurance business and being subject to examination by the New York Insurance Department, we are under control. I believe I have sent a copy of the report of the last examination to staff but I don't think they sent it out to you as it

is quite detailed.

As to the workings of the MIB system, this executive committee I mentioned has drawn up a list with a broad spectrum of health conditions and other factors that may be of some significance to life underwriters. If a member, in considering an application, finds one of these conditions, that company is pledged to report that information and treat it in coded form to the MIB. The average number of digits in a MIB report is under 90. I include digits and letters. And in the 90 are included the man's name, his date of birth, and other identifying factors. So when I say these reports are small and simple and are not a huge dossier as sometimes is alleged in some of the more -- well, some reporters' comments -- we don't have big dossiers. We only have a slight, small digit of information that indicate what is in the reporting company's file. If there is a dossier anywhere, it is in the reporting file of the member company.

Most of these coded reports are very general in nature. The code, itself, is a pragmatic one made up by our committee. It doesn't follow -- it's a three-digit code and some of the meanings are taken from one medical code, if you are familiar with it -- psychiatrists have various codes in their area. We use the same meanings for some of our codes as they use. The ICDA, the International Code of Medical Terminology -- we use some of their meanings. But we do not

use their code numbers and there can't be any cross-linkage.

These coded bits of information reported to us by our companies are transmitted daily to a computer center in Boston. A member company is forbidden to seek access to these entries unless it has a signed application for insurance in its home office. That is our rule and we check on it.

The MIB computer receives information only from MIB members. There are no outside member sources. We don't go out and hire detectives or doctors or this sort of thing. The Bureau has no employees who go out to investigate or examine individuals. Member companies do not indicate, as I said before, whether or not an application has been rated, declined, or postponed. They also do not state the amount of insurance applied for or issues. In some the underwriting evaluation of the case is not reported to or known by the MIB.

All MIB information is sent to the computer located at a service office known as the recording and statistical division, Sperry-Rand, in Boston. We have taken what we believe are all reasonable precautions to secure accuracy and security to see that no unauthorized person can obtain access to the information stored in that computer. And I have a separate part of this. I will talk with you about that this afternoon.

This has been a brief review of this institution

which I manage. It takes many procedural and administrative steps, quote, "to protect the confidential nature of the information exchanged and the interest with respect thereto of the applicants, of insureds, and claimants, as well as the insureds concerned."

And I quote that because it is in our constitution. That is what I am supposed to do. And I think we have made a good, reasonable effort to do it.

Now, we do want to go on to some questions, but I understand you are particularly interested as to a summary on security, how we keep this information secure.

I have split this into two areas. One is our member companies, what we do and require at our member companies, and the second area I would like to cover is what we do or require our servicing agent in Boston to do with respect to these companies.

Now, as to the member companies -- and these are a whole series of steps, each one mutually interdependent.

We require of each member company a pledge signed by the president and the medical director as an individual in writing to enforce MIB security.

Second, each code book -- and remember, I said this information is sent to us in this code -- at a company is registered by number, and it is accounted for each year. We check this with each member company and make them account

for where their code book is.

Three, the code books and the MIB reports in the companies are required to be available only to underwriting and claims personnel at home offices. They cannot be distributed to agency offices, sales offices, or this sort of thing.

Four. Most of our companies communicate to the computer by communication wires, by wire communications. And this means that they have terminals in their companies. Now, these communication terminals must be located in a location inaccessible to unauthorized persons, and must be located in the underwriting department. A communication plan must be filed with us before we will give permission for them to use this type of access to our computer.

This plan covers this matter of the location of the machine, who has access to it, who is responsible. It also requires that a log be maintained detailing what persons ask for what MIB reports. The log must be kept for two years, and the plan also requires the periodic security checks by the Medical Director to see that these arequirements are being lived up to. We also make some visits in which we check into these matters. And as I said before, those in charge of the terminal are named.

Six: Above and beyond these requirements of the companies, Mr. Day and myself and other people do make or have

made visits to the companies, and we do check on these matters. Naturally, with 700 companies, it is not the easiest thing to visit them all too rapidly. But we know where we want to go and by visiting in each city, by being on the programs of the Medical Directors Associations, we do take strong action to make sure that these rules are lived up to.

Now, at the recording and statistical company, which is our servicing agent, the input and output from the computer is subject to hand-shake routine. I assume you know what those are. In other words, the terminal device, say, at the XYZ Insurance Company -- when they want to find out if there is any record on Mr. Smith, they send his name in to us. But before the computer will receive that, that sending device has to be identified as a proper person from whom such an inquiry can be received.

Now, as to the line being held open while we reply -- we break the connection. It is very important to our security arrangements. Somebody might get into us but they are not going to get the reply back on that same wire. We have to call back again on an authorized number. The computer does this, of course. And once again there is this hand-shake routine, "Who are you?" and identifying numbers, which are changed periodically. That is the way the information is given out again.

In the offices at the R&S, the computers themselves

are kept in a quiet area away from everybody else, under lock and key. We have security badges showing security clearance. We use a system similar to the government of "need to know." If you don't need to know, then why should you be there or be in that area? If you are not authorized to be in that area, you have a different color badge than the other fellow.

We have 24-hour guards, six to eight persons in this office. The office has other activities, too, in addition to the computer file. Our original input file is manual and we have girls who work in that area, too.

Tasks in the computer area room, in other words, access to the computer, are performed jointly by two or more persons. If it is going to be suborning of people, it has to be more than one; it has to be two. No one person has unsupervised access to the computer room.

A duplicate data base, printed -- we print a duplicate data base, run it off once a week, additions to it -- and this is kept at one of these security places that the banks use and other large corporations, which are highly secure. We can give you the name if you want it and the details of it, but in the New York area there are mountains that have been tunneled into and these are used for storage of records by many large corporations.

If security is broken, say, and a MIB report is obtained, the individual who has broken the security still has

to obtain a code list which he will need to decode the report. And even after he gets it, he has got very limited information in this three-digit code form. It really is not of much use to anybody except a life underwriter. He has got to get a life underwriter to explain it to him.

Once translated the report only describes the general conditions of little practical significance to a cheater. It is far from clear that even surreptitious review by a skilled underwriter would make the report so meaningful that you could underwrite the case on it.

Now, that is a brief review of our security measures. I understood you particularly wanted to hear about this.

I have another area which seems to bother people, and this is: How do people eliminate errors? Supposing an error creeps into the system -- and I think it is axiomatic that no system can exist without errors. We do our best and we don't accept errors. We don't say "Oh well, let it go." If it is an error concerning an individual it has got to be withdrawn if we know about it. But what happens if one gets by undetected?

There are various steps here that an applicant can take.

First, he or his agent can ask the company that rated or declined his application as to why he was rated or

declined. And under the new Fair Credit Reporting Act, if the information is non-medical information, the company has to tell him the source of whatever it was -- if they got it from retail creditor Hooper Holmes, or whoever it is.

If it is medical information, the Fair Credit Reporting Act does not require that the individual be told what it is. However, almost all of our -- in fact, almost all of our companies are willing to give to the man's attending physician on request what is the basis of their rating or decline. This is almost the uniform practice of the insurance business and has been for many, many years.

Well, supposing the applicant doesn't want to go back to that company. What else can he do? He is dealing through an agent, and remember this agent has a commission, a sizable commission that is riding on this. It is a commission equal to sometimes 50 or more per cent of the first year's premium. He is anxious to see this policy placed.

He can go back to his agent or broker or apply to some other companies. Some people are more lenient in the area of, say, diabetes, than others.

Once again, even if that company has the MIB report from the first company, they are still required, under our rules, to make an independent investigation. They cannot rate or decline because of that report.

Now, in the course of this the agent knows about

the MIB under these new procedures that we have adopted, the Fair Credit Reporting Act type of thing, and he can come to us and ask for disclosure. Now, we will tell him what the non-medical codes are, the non-medical sources of information. If it is medical we have a procedure that goes beyond the Fair Credit Reporting Act. We do require our companies, if a person comes to us, to acquaint the individual through his attending physician -- not direct but through his attending physician -- as to what the information is that they have assembled on their own examination, or sometimes people forget and give the company information they don't think matters and that is what causes them to be rated. They will tell him what he told them, himself.

If they have received the information from the attending physician, however, there are areas of professional consequence. If the fellow has a new medical advisor, a new attending physician, the first company may not want to tell him, that new physician, the full details of what a prior doctor told them, in which event they are required under our rules to tell the second doctor where they got the information, from Dr. X or Dr. Y, so that this doctor can go to him direct and we are a medical institution, I believe. Doctors are prominent in our system and control, and this is the type of medical confidence that relates one doctor to another that we feel we must follow. Remember, in any event, it is

beyond what the Fair Credit Reporting Act requires.

Now, if there is an error in the record, it can be corrected by the original member company. It can review its prior report, locate an error, and it is required to file a notice of medical record change with us to correct the prior record. I note that last year we received nearly 60,000 in one year of this type of change-of-record form.

The second company reviews the record and if it finds the health conditions indicated in the record are not present, they can put in a special report to us which is a "Q" report. "Q" means, with us, "Failure to find report previously reported."

If they believe the prior record was false, a misdiagnosis or something like that, there is provision for the individual to -- not the individual, but for the record to be withdrawn by our office. We occasionally have this type of thing.

If there is a question whether or not a MIB report covers more than one person, we have a very detailed identification procedure. These are instituted both by our member companies and by our servicing agent. Last year we had 39,000 of these. This procedure is a form in which on one side there are about 20 questions -- actually including a facsimile of the man's signature. And the first company sends this out and it goes to the company that made the report

and they are supposed to fill in the other side so as to make sure that it is the same person involved. I think 39,000 of those is a fair indication of a lot of activity.

I guess I would make the point that this file, which actually includes records concerning 11 million to 12 million people -- last year 2,200,000 reports came in in that one year. Notices of medical record change numbered 63,000; Q reports, 8,000; and the number of checking inquiries numbered 18,856,000; and the number of inquiries where records were returned to the company numbered 2,998,000. Nearly 3 million, or about 16 per cent of the names checked, do have records.

These records -- it is in our rules but I don't know whether you noted it. They are kept for seven years. At the end of seven years to a day the computer will no longer give out a record. It is kept in the file. The file, itself, is purged twice a year. But as far as an inquiry goes, the day after the seventh year, the computer is programed not to give out any further information.

I have covered very broadly what we are and our rationale. I hope I have stirred up some questions. I have given some information regarding two areas that seem to be of interest.

I would now like to open it up to questions, but I guess before that I should say that staff did send us --

and we didn't receive it until Monday -- this checklist of questions that you ask people or intend to ask people. We have prepared quite hurriedly answers to each of these -- not in formal form. We can submit them in more formal form if you want. But I think maybe you might want to make this the basis of any questioning you have. And if you have a specific question here, let me know where it is and I can dig down into my papers and get out what we wish to say about it.

MR. MARTIN: Mr. DeWeese, would you like to start the questioning.

MR. DeWEESE: Yes. I want to ask two questions basically. Have you kept track of how many positives you have gotten in the sense of how many people you have got either being forgetful or being cheaters?

MR. WILBERDING: No, we don't keep that. That is in our member companies, that type of information. But we assume that they do find some to sufficiently justify what is a quite expensive system of following medical records.

When we went on a computer it cost over $8 million to do this job over a period of four years, and we are quite proud that we did it within the time limits of both money and time. It got done on time. But we don't keep that sort of information. If the company feels they are not getting worthwhile information, they can resign.

MR. DeWEESE: The second question I had was: What

type of non-medical information do you use for underwriting purposes?

MR. WILBERDING: We have approximately five so-called non-medical codes. Aviation is one of the biggest ones. We have a code -- a general non-medical code, which means "you had better get a retail credit report or a Hooper Holmes Report or an investigative report in this case."

MR. DeWEESE: Because of what?

MR. WILBERDING: Well, it doesn't say. We don't say that the man's morals are bad. I think it is Jack Anderson who said we keep track of who is sleeping with whom and that is just not true.

MR. DeWEESE: That is one category. You have a general code on whether or not the insurance company should look into a person's background deeper?

MR. WILBERDING: Whether one company thought -- they found information that they considered significant in that area, yes.

MR. DeWEESE: What other types of non-medical information do you keep besides that?

MR. WILBERDING: I mentioned aviation.

MR. DeWEESE: You mean if the person is a pilot?

MR. WILBERDING: A pilot or flies a lot or parachutes a lot or sky dives a lot. This would be of interest. It is unfortunate but there are certain types of flying, such

as, for example, the type of Reserve flyers -- is the press here? Certain types of Reserve flyers who fly jets -- it is not conducive to longevity because they don't fly often enough and the jets are real tight.

MR. DeWEESE: What other types?

MR. WILBERDING: Maybe I could read them to you.

MR. DeWEESE: I was just curious for the record.

MR. WILBERDING: Hazardous sports is one, scuba diving. Some people think that is hazardous.

We do have areas of medical informaton that can come from a medical source or can come from an investigative source. For instance, use of alcohol is one. We consider that medical information.

MR. DeWEESE: Regardless of the source?

MR. WILBERDING: We would code it in that fashion, indicating that if it came from a source that did not meet -- if it is what we call a medical code and it came from a source that did not meet the requirement of the Fair Credit Reporting Act, which means it must come from a medical source, that is indicated -- but not whether it is neighbors or this sort of stuff. Alcoholism -- as I say again, we consider alcoholism a medical matter. I think it is generally considered that now. But it is not -- such information may not meet the definition of the Fair Credit Reporting Act because it didn't come from a medical source, in which event

it is so coded in our code.

MR. DeWEESE: But it is still kept.

MR. WILBERDING: Excuse me?

MR. DeWEESE: It is still retained?

MR. WILBERDING: No.

(Discussion off the record.)

MR. WILBERDING: Alcoholism does not get coded as a non-medical item specifically. If a company reporting alcoholism to us receives that information from a doctor, they just report the code. They say "238" -- that is not it, but they would say 238,meaning alcoholism. If it came from a source that was not under the act they would say "238" --

MR. DeWEESE: But if it does not come from a source under the act you still retain it?

MR. WILBERDING: Yes.

MR. MARTIN: Mr. Wilberding, could you supply for the record the data base which this code translates to, so the committee could have a record of the full range of the kind of information, both medical and non-medical which it is possible to input to and have stored in the system?

MR. WILBERDING: Well, we gave to the Federal Trade Commission a copy of our code with the code numbers eliminated.

MR. MARTIN: Yes, I don't think the code numbers would be of interest, but what they translate to in plain

English.

MR. WILBERDING: We would do this. This is part of our security, you might say. We are not anxious to have this spread around.

MR. MARTIN: No, no, not the code, sir.

MR. WILBERDING: I understand. You want a listing of what the codes mean.

MR. MARTIN: Right.

MR. WILBERDING: Well, of course, if you want it -- I would ask that you give us some sort of assurance that it won't appear the next day in the New York Times or something like that. Because it would be of use to people if they wanted to break the code. It is a piece of the code. We will give it to you.

MR. MARTIN: Fine.

MR. WILBERDING: But I hope you will treat it as a confidential document.

We won't give you the numbers.

MR. MARTIN: Right. I don't think we are interested in the numbers.

MR. WILBERDING: But even part of a confidential document we consider to be confidential.

Could I ask this, that we give one copy to staff and if anyone wanted to see it or excerpt from it or whatever you wanted to --

MR. MARTIN: Fine.

Mr. Anglero.

MR. WILBERDING: Yes, sir.

MR. ANGLERO: You do not get direct information from individuals?

MR. WILBERDING: What?

MR. ANGLERO: Do you get direct information from individuals?

MR. WILBERDING: No, MIB gets no information except from its member companies. The individual may give information to the company to whom he applies for insurance, in which event they may have reported to us, yes.

MR. ANGLERO: If you know, the insurance companies - do the clients, the insured persons or potential insured persons, know that all this information that they provide will go into the MIB?

MR. WILBERDING: I don't know. Some of them do. One of our associates had a public relations study made for them by an institution called "The Pine Research Corporation" which I believe is recognized as not being subject to giving reports such as you want, and one of the questions was asked in this public relations poll: "Do you agree or disagree that a life insurance company has a right to investigate an applicant on the following items?" And the first was his health and medical history. And 6 per cent disagreed and 92 per

cent agreed.

People know that you are going to have to look into their health in order to --

MR. ANGLERO: But do you know if they consent specifically?

MR. WILBERDING: No.

MR. ANGLERO: Do they know that will happen or they do not consent as such? It is not part of the record of the individual?

MR. WILBERDING: When they apply they not only sign an application, but they ordinarily sign what is called an authorization. And this authorizes the life insurance company to whom they are applying to go to any medical source or to any insurance company or to any other organization that may have information concerning them.

You may note this in our rules, the MIB rules of which you have a copy. I am giving you that quickly, but this is required under Rule 17.

MR. DeWEESE: So whwn we do fill out a form, we are consciously or not, depending on how --

MR. WILBERDING: When you fill out that form, you authorize the company to go to any source and get information about you, yes.

PROFESSOR WEIZENBAUM: May I help out. I think the question he is asking is a little bit different. He is

not asking, I believe, whether or not the applicant has given his consent for the insurance company to investigate him. I think he is rather asking whether the applicant has given his informed consent that the insurance company, after it investigates him, forwards the record for further dissemination over the next seven years or not. I think that is the question he is asking.

MR. WILBERDING: Well, you use the word "disseminate."

PROFESSOR WEIZENBAUM: Potentially disseminate by putting in a data bank which other insurance companies may look at over the next seven years.

MR. WILBERDING: If he applies for insurance again.

MRS. HARDAWAY: But does he know it?

PROFESSOR WEIZENBAUM: Is he informed that the information he is about to give or the authority he is giving to the insurance company to investigate him, and whatever information may result from that investigation -- does he consent for that information to be stored for future reference should he apply for insurance again at some other time? Is he informed of that?

MR. WILBERDING: No.

PROFESSOR WEIZENBAUM: That is the question. Is that right?

MR. ANGLERO: Thank you. You helped me out.

PROFESSOR WEIZENBAUM: Excuse me for taking your turn.

MR. ANGLERO: I understood that the records are kept only for seven years.

MR. WILBERDING: Yes.

MR. ANGLERO: Suppose that the record is not used in those seven years -- I am assuming that. Suppose the guy applies in four years? Does the seven years start again?

MR. WILBERDING: No. The record is not started again.

MR. ANGLERO: The seven years --

MR. WILBERDING: The second company may add something to it and that would start a new seven years for the information they added.

MR. ANGLERO: Oh, the new information.

MR. WILBERDING: But the original information is still on the seven-year cycle.

MR. MARTIN: Your program, then, is a 7-year expungement for each bit of information? Your program says as each bit is stored, "When this bit is seven years old, expunge or stop disseminating"?

MR. WILBERDING: It is not that simple. The computer is programed so that if there is an inquiry on Mr. Smith and it develops that there is information in the file

that is seven years and three days old, it won't go out of the computer. Now, you can't purge a file like this every day. We purge it twice a year.

Does that answer your question?

MR. MARTIN: Yes.

Miss Noreen.

MISS NOREEN: Yes. I have one question. I was curious as to how individuals are identified in the files. Do you use names or social security numbers, or what?

MR. WILBERDING: No, we don't use social security numbers. I will tell you how they are identified. We use the last name, first name, middle initial -- last name, first name, middle initial. Date of birth is very important. Place of birth, where we can do it. There are some states that object to this and we can't do it, but most places permit it.

Then we have a rough occupation code. And we furthe have the United States and Canada divided into 11 territories, and we give the individual a territorial code as well.

So there are five items of identification. We do not use social security number. We have a place on our format, if it ever comes about, that it would be a good thing to do. We considered it when we went on a computer. We didn't do it because the Social Security Code is, as you know -- it doesn't have a check digit and we use check digits quite a bit in our procedure. It is not infallible. There are people

who don't have them. It is not easy to get sometimes. There are a number of reasons.

I personally, as a computer guy -- I am a lawyer but I am a computer guy, too -- I believe it is going to come and it is going to be a good thing when it does come, not from the MIB viewpoint but from the viewpoint of society generally. But you have got to get it in better shape than it is now for us to use it.

MISS NOREEN: Then I was also curious as to whether any researchers would ever have access to your files.

MR. WILBERDING: Not on the terms of individuals. We are cooperating with the Actuarial Society; we have in the past, in terms of mortality studies, morbidity studies, but no names are identified. No individual names are identified.

One thing that is so important I sometimes forget it and I don't know whether I made the point or not: This information goes only to our member companies. We are not keyed in to any other file. We do not give it to the FBI or anybody else unless they have a subpoena, and I have never had a case yet where the FBI or the Treasury Department has come in with a subpoena. We just don't give it to them since this new Fair Credit Reporting Act.

MR. MARTIN: Mr. Siemiller.

MR. SIEMILLER: Did I understand you to say that you stored in your computer financial background on applicants

furnished to you by member companies?

MR. WILBERDING: That is one of those non-medical codes that I overlooked. We have a code that says "Finances," which means if you get another application on the same guy you had better check his finances. You may not come to the same conclusion. Come companies get pretty liberal as to what they think is a fair indication a guy can afford the premium. Others of them are conservative.

MR. SIEMILLER: Don't they particularly like when they take out the insurance and pay a premium or two and then cancel -- it is all gravy?

MR. WILBERDING: That isn't gravy for the company, no, sir. There is what is called acquisition cost in life insurance, and a large amount of those first-year premiums go to the cost of putting the business on the books through commissions, through home office expense. And a good company, through its own self-interest, encourages people to pay premiums. It isn't a profit.

MR. SIEMILLER: You went to some great length to show the security that you use for your Code books, that they were numbered and that each member company, I think you said, only has one.

MR. WILBERDING: Excuse me. I didn't say that. There are numbers in the company.

MR. SIEMILLER: But you do have a chance for audit

or inventory to determine that each company has the same number of books that you furnished them?

MR. WILBERDING: We make an annual check and require them to report the number of code books.

MR. SIEMILLER: Would you agree that it is possible for some employee of some member company to duplicate the code book and sell it?

MR. WILBERDING: I thought I emphasized at the start that security is not -- there is no such thing as absolute security. I know that as well as anything else. Security is a series of overlays, overlaying small units of work of different systems. Sure, he could sell the book. I don't know of any cases of that. In addition, we do alter the code every ten years; we change the code. We don't change it in great detail but we change it sufficiently.

MR. SIEMILLER: That would give him an incentive to steal another book. I don't know whether that is good or bad.

MISS SMYTHE: I have no questions.

MR. MARTIN: Mr. Ware.

MR. WARE: This ties onto the one that has already been asked and clarified by Joe Weizenbaum and relates to what your book labels the extended search.

MR. WILBERDING: Yes.

MR. WARE: If I understand correctly, what happens

there, "A master record with a good chance of pertaining to the subject is returned." What that says to me is that you sometimes disseminate records on the basis of a probable but uncertain match.

MR. WILBERDING: Yes.

MR. WARE: So there is an instance in which dissemination is without the knowledge of the individual concerned, and it is not at his behest because he is not applying for insurance, but it is incidental to uncertainty of identification.

Do I understand all that correctly?

MR. WILBERDING: That is a possibility but I don't know how else you could do it to give the company a chance to evaluate it is the same man.

MR. WARE: You told me how to do it. You play the 20-games question before you disseminate the record.

MR. WILBERDING: We do that where the company has a question. I mean they do that where they have a question as to whether it is the same person. If you had to fill out one of those forms for every one of these replies, it would be totally unworkable.

MR. WARE: Would you hazard a guess at how many of these probable but indefinite hits might happen in the course of a year?

MR. WILBERDING: No, I don't know, because we send

the information back to the company on a basis that it is probably the right person.

MR. WARE: Then let me ask it differently: How many times does an extended search take place?

MR. WILBERDING: Very seldom, very seldom. I don't have the exact figure. I can get it, if you want. But it is not more than ten times a month, I believe.

MR. WARE: In a different direction, would you have any estimate, even a wild one, of what the cost of your security measures amount to as a percentage of your gross business, or any way you can state it?

MR. WILBERDING: No, I really couldn't give it. If you want it, I will try to get it up for you but I really don't know.

MR. WARE: It would be useful if you would because one of the questions we don't have good answers to is what is the cost of security. And you have a rather complete set of controls.

MR. WILBERDING: You mentioned security. We have a lot of things that are also part of security, too -- security correctness. When these reports come in to us from the companies before they go on the computer, we have a battery of proofreaders who are -- I think there is something like thirty proofreaders on the staff who read all this initial entry and then check it with the original report

sheet.

We will try to get you some information on that.

MR. WARE: It would be helpful.

MR. WILBERDING: I really couldn't give you a guess. Could you identify yourself, sir?

MR. MARTIN: That was Willis Ware.

MR. WARE: You would send it to these folks.

PROFESSOR WEIZENBAUM: Would you give your birth date?

(Laughter.)

MR. MARTIN: Professor Weizenbaum.

PROFESSOR WEIZENBAUM: You undoubtedly have -- let me put it in the form of a question.

Can you, should you discover a new hazardous occupation -- can you more or less easily extend your data base so as to put a mark into it that a particular individual is engaged in that profession? How difficult is that to do?

MR. WILBERDING: Well, you see a company could put that information in there now if they wanted to, say a new occupation, a totally new occupation.

PROFESSOR WEIZENBAUM: Yes. Suppose aviation didn't exist last year and it now exists and companies generally believe it to be hazardous, and so they would like a mark in the record showing whether an individual is engaged in that or not?

MR. WILBERDING: If it is a non-medical matter -- and occupation would be non-medical -- they can put in a code now which simply means "general non-medical matter. You had better get an inspection report here."

PROFESSOR WEIZENBAUM: So there is no indication in your records as to what the hazard might be?

MR. WILBERDING: In the case of non-medical activities such as occupation, no, there isn't. "Hazardous Sports," perhaps, "Aviation," "Finances."

PROFESSOR WEIZENBAUM: I am a little confused.

Suppose I am in fact an aviator --

MR. WILBERDING: Yes.

PROFESSOR WEIZENBAUM: -- and my name is in your records, which I wouldn't be at all surprised it is.

MR. WILBERDING: I think mine is, too, incidentally.

PROFESSOR WEIZENBAUM: If I were an aviator, would there in fact be a code such that if I had the code book and I looked at my own record -- would there be an indication that I am an aviator or would there be an indication that I am engaged in a potentially hazardous occupation?

MR. WILBERDING: The code would say "aviation."

PROFESSOR WEIZENBAUM: My question is how readily, just from a technical point of view, is it possible to extend your format such that a new occupation, such as uranium mining, could be added if you wish.

MR. WILBERDING: Our Executive Committee would consider that, consult with the actuaries and add such a new code to the list.

PROFESSOR WEIZENBAUM: It is a technically feasible thing to do?

MR. WILBERDING: Yes.

PROFESSOR WEIZENBAUM: This, then, would be entirely at the discretion of your Executive Committee?

MR. WILBERDING: Yes.

PROFESSOR WEIZENBAUM: Okay. If you were to decide or if the insurance industry were to decide that it is hazardous to engage in certain political activities in the United States, say for example to be a radical -- if you should decide where the atmosphere in the United States had changed --

MR. BAGLEY: This year to be a Republican.

MR. WILBERDING: Look, the life insurance business is interested in selling life insurance, not getting into this type of political hassle.

PROFESSOR WEIZENBAUM: But they are interested in computing the odds as finely as possible.

My conjecture is that if the political atmosphere in the United States were to change that it would be possible for a system such as you are maintaining to add information to individuals' records indicating something which we

may today not wish to indicate. Then the next question is as to who has access to it.

You have already said that you are subject to subpoena although this doesn't happen. But it also turns out, I believe, that the government itself is in the insurance business, and by way of its own --

MR. WILBERDING: They are not members of the MIB.

PROFESSOR WEIZENBAUM: Oh, they are not; I see.

MR. WILBERDING: Because they are not a life insurance company within the meaning of the Internal Revenue Act.

PROFESSOR WEIZENBAUM: Oh, I see. That makes me a little happier.

(Laughter.)

MR. WILBERDING: If such a thing would come up -- I don't know. I have dealt with these people on a committee for almost 30 years now and these are not people -- these are decent people and they get elected by the companies. Three of them get elected every year. It is not likely you could loan this to a bunch of Facists or whatever you call it. You can imagine such a thing in a James Bond novel but --

PROFESSOR WEIZENBAUM: Let me assure you I have no doubt about what you are saying and I am not terribly worried about it. However, we are concerned -- and I am certainly concerned -- with systems of this general type that do store

information about people and could potentially happen to them and how such systems could potentially be used, given a few very critical changes in our society, for example. You know, that system sits there and from a certain point of view it is conceivable that it may be looked upon as a time bomb.

MR. WILBERDING: I remind you again that we are examined periodically by the New York Insurance Department. Do you think they would sit still for such a thing?

PROFESSOR WEIZENBAUM: I hope not.

MR. WILBERDING: I know they wouldn't.

MR. MARTIN: Mrs. Hardaway.

MRS. HARDAWAY: One thing I would like to clear up for my own thinking: When I fill out an application for insurance I am not told that my facts go into your system; correct?

MR. WILBERDING: You might or might not. I don't know. That is up to the company. I don't believe you are in most cases, certainly.

MRS. HARDAWAY: Now, I become part of your files. Then, when I apply for insurance with another company and they search your files to see if I am a risk, I am not notified that they are doing that either, am I?

MR. WILBERDING: No, and it would be almost impossible to do it -- impractical, let's put it. Could I explain that?

MRS. HARDAWAY: Yes.

MR. WILBERDING: You probably know, I think, the figures the HEW has. Roughly one-quarter of the people in the United States live in a different address at the end of the year as they did at the first part of the year. Now, with 12 million entries, 12 million individuals in that sort of file, this would be at a rough guess somewhere around up to three million change of addresses every year -- change of address.

Now, our reports themselves only total 2.2 million.

MR. BAGLEY: But isn't that subsequent application such that it includes -- I think you have already said this -- it includes some type of authorization to -- I don't know whether it says search files --

MR. WILBERDING: It goes to any insurance company -- to any organization, insurance company --

MRS. HARDAWAY: My question is: You speak of security and of securing your system. Are you speaking of securing the system businesswise against non-member companies rather than securing the privacy of the individual?

MR. WILBERDING: The non-member company bit is so small that that is not a real consideration at all. We are thinking of protecting the individual himself. He may not know the details. He probably doesn't know some of the details or some of the facts about him, some of the

conclusions about him. He may not know these.

We understand from our medical advisors and from medical associations generally that it is not considered good practice to have a flat rule that an individual must be told his full medical facts about him. He may have cancer and not know it. That is only one example of the type of thing I am talking about.

This is why we try to proceed through the man's attending physician and why our companies try to proceed through his attending physician.

MRS. HARDAWAY: But if I do not even know that I am in there, I still don't understand how you are securing me as an individual. I am not even aware I am in there to begin with and really, once you have that information, I don't know it is in there, I also don't know what you are doing with it.

MR. WILBERDING: Well, we feel that the information is given to the companies and they react as an alter ego or file for them, have a brief resume of it.

We feel this information, even in the brief form we have, should not go to unauthorized people, other agents --

MRS. HARDAWAY: For business reasons?

MR. WILBERDING: No, it might be unfair to -- supposing anybody could come into the MIB, which I assure you they can't -- and get a record on Mr. Smith at any point they wanted to. Suppose they were a very active agent. They might

want to go around to Mr. Smith and say, "Mr. Smith, I understand you had a little bit of skin trouble last week. You had better think about buying some life insurance from me because I represent a company that skin trouble makes no difference to. We write all skin trouble people."

I am not joking about it, but it is the first example that comes to mind. There are other impairments as well that an agent or a broker who might want a prospect or a prospect list might want to get this information.

MRS. HARDAWAY: All right. Let me just ask one last question.

In your opinion, then, if you feel that I should be protected along those lines -- and I am glad that you do -- would you feel it was unreasonable for me to also want the protection of being told by the insurance company when I apply for insurance that my record is going to you, and that eventually some other company may also use it?

MR. WILBERDING: Well, that is a matter of opinion. You are asking me for a matter of opinion and I would say no. I don't feel I should be told that, and I have applied for insurance. I happen to know -- not because I looked it up but because I am a rated case. I am not too badly off but I am a rated case so I know my case is in the MIB. I haven't looked it up but I don't think that bothers me too much. Maybe it is because I work for it and am prejudiced.

MR. BAGLEY: From the insurance company's standpoint, wouldn't it be more of a protection to the industry if everybody knew, if everyone knew that their records were going in a file? Then they are less likely to try to defraud.

MR. WILBERDING: Well, their agent knows this now.

MR. BAGLEY: I am not excited about it but from your standpoint it would sound like it would be better to let everybody know.

MR. WILBERDING: Mr. Day reminds me of a point that I started out with about having these notes here. The MIB and its member companies do have some sort of a common law right, we believe, to exchange information among themselves to prevent fraud. Now, they can't do this viciously and negligently, but the laws recognizes the business; the anti-trust laws recognize that competitors can exchange information.

MRS. HARDAWAY: Right. And I am in total agreement with that. But I come back to my question: Also is there not a right on the individual's side to know what is happening to the information that is going into your system? Can the two things not go together, your right to know for business reasons, and my right to know that you are gathering data on me? That is not to say that it is wrong, but simply a right to know.

MR. WILBERDING: This is after the event, of course,

and I suppose in that sense it doesn't answer the question, but he does have the right to come to us and ask what his record is, and within the procedures that I spelled out before, if it is non-medical he will be told precisely what it is. If it is medical, the company must go back through our procedures.

MRS. HARDAWAY: How can he come to you if he doesn't even know he is part of your record?

MR. WILBERDING: Well, if he is turned down or rated for life insurance, he knows or ather his agent does -- he knows that there is something wrong with him from the insurance viewpoint. And the agents know of the MIB.

MRS. HARDAWAY: Let me ask one more time: Do you, in your opinion, see anything wrong with, along with your right, which we all agree you certainly have, the company when they are issuing insurance -- would there be any reason why the two things could not go together, my right to know that you enter into the picture through my application for insurance -- is there any reason that can't go hand in hand with your right to have the facts on me?

MR. WILBERDING: Well, once again you are asking me for an opinion and not a factual answer.

MRS. HARDAWAY: Yes.

MR. WILBERDING: In my opinion that would be an unworkable system. Individuals are not competent to judge

their medical record, first of all.

MR. MARTIN: The question, Mr. Wilberding --

MRS. HARDAWAY: That is not what I am saying. I am just saying my right to know --

MR. WILBERDING: -- that there is a record.

MRS. HARDAWAY: That there is a record.

MR. MARTIN: And how it is used.

MR. WILBERDING: In my opinion, no, I don't see any reason why you should have that right. I think it would be deleterious to our exchange. Now, if Congress wants to give him that right, it would have to see whether the life insurance business considered this exchange sufficiently valuable to continue it. I think it would have an adverse effect.

MRS. HARDAWAY: You are still missing my point.

MR. MARTIN: No, he has got it.

PROFESSOR WEIZENBAUM: He just don't believe it.

MRS. HARDAWAY: I am not arguing.

MR. WILBERDING: You ask me for a matter of opinion and I say no.

MR. SIEMILLER: He has got your point; don't worry.

MR. MARTIN: Professor Miller.

PROFESSOR MILLER: You don't want to tell us why you think it is deleterious to put one sentence into the insurance application form, perhaps right above the signature,

where the applicant signs a consent to investigation, simply telling him that the fruits will be put into a central industry file. Why would that be deleterious?

MR. WILBERDING: Well, because once again this is a matter of my opinion, sir. And I could be wrong. But anything that interferes with the the agent getting the signature on that application is a --

PROFESSOR MILLER: A blackjack would be a great assist or a narco analysis to get the signature on the paper. You can't really be serious.

MR. WILBERDING: Somebody already brought up this idea of informed consent. Is he going to have a battery of doctors and lawyers with him?

PROFESSOR MILLER: That doesn't seem to worry you when you get the consent to the investigation. Suddenly it worries you when you are asked to tell him something.

MR. WILBERDING: People do sign that authorization quite freely.

PROFESSOR MILLER: All right. Let me go to the questions that I was interested in.

I gather that you will accept from a member company information, particularly in the non-medical area, without question. If they come in and say "Aviator" or "Financial" -- I mean that is just --

MR. WILBERDING: If that comes in.

PROFESSOR MILLER: That comes in and you record it.

MR. WILBERDING: Yes.

PROFESSOR MILLER: You do not do any verification. MIB imposes no standards or parameters on its members for making a mark of that kind?

MR. WILBERDING: Well, they are supposed to be able to document any report they make to us.

PROFESSOR MILLER: But you don't ask them to. If it comes in "alcoholic" --

MR. WILBERDING: No, we don't demand every time. We could if we wanted to. We don't.

PROFESSOR MILLER: I didn't see anything in the general rules that laid out bench marks "An aviator is," "an alcoholic is," "a financial risk is."

MR. WILBERDING: The alcoholic is defined as such use of alcohol as to be significant to life insurance underwriting.

PROFESSOR MILLER: But that is a determination made by the member company and you just report it.

MR. WILBERDING: We will send you this information, but before we go on to that, remember, except in the case that you, sir, pointed out, where it might be a miss, not a hit, we don't give this information out to people who are member companies unless they have an application.

PROFESSOR MILLER: Oh yes, I understand that.

MR. WILBERDING: And second, they have to make their own independent investigation.

PROFESSOR MILLER: Surely. But you see I am somewhat troubled by your characterization of yourself as the alter ego of the company. You are really not. If you are the alter ego of anything, you are not the alter ego of the company that is creating the information. You are the alter ego and an amplifier and a disseminator to an industry.

MR. WILBERDING: No.

PROFESSOR MILLER: The standard of the inputting company on some of these things may be very different from the standard of the receiving company.

MR.WILBERDING: As far as we are concerned, we file that information for that company. It is the company's information. We can give it out only under certain limited understanding about it.

PROFESSOR MILLER: Okay.

MR. WILBERDING: But as far as that information in our file goes, that is that company's information.

PROFESSOR MILLER: About how many terminals have access to your system?

MR. WILBERDING: Five hundred.

PROFESSOR MILLER: Five hundred terminals. Those terminals are located in home offices only?

MR. WILBERDING: Home offices, home underwriting

offices.

PROFESSOR MILLER: And, as I understand your procedure, if an agent in the field sends a signed application to the home office --

MR. WILBERDING: Yes.

PROFESSOR MILLER: -- then the home office uses its terminal to deal with you.

MR. WILBERDING: Yes.

PROFESSOR MILLER: So that the agent in the field has no independent capability of gaining access to your system?

MR. WILBERDING: Absolutely not, as far as we can prevent it. And we also require that when a company gets a record back from us -- we specifically require that this is to be used only for home office purposes and not given to agents.

PROFESSOR MILLER: So the only agent we might be worried about from the security perspective is the agent in the home office who may be able to pat the back of the guy operating the terminal.

MR. WILBERDING: Except the company is required to keep a record.

PROFESSOR MILLER: Yes, that was the next question. The logs you mentioned are kept at the terminal?

MR. WILBERDING: There is a log kept there and a log kept for two years at the computer of every inquiry and

every reply.

PROFESSOR MILLER: And presumably the log indicates the raw information about who is making the inquiry?

MR. WILBERDING: The log in the company should indicate that sufficiently to identify who made the inquiry under what circumstances.

PROFESSOR MILLER: Under what circumstances? And do you people monitor those logs?

MR. WILBERDING: We have a procedure for doing that and we do, yes.

PROFESSOR MILLER: And the logs do indicate, let's say, the application for insurance --

MR. WILBERDING: The application, or if it is a trial application, they refer to that -- trial application.

PROFESSOR MILLER: Do you have any experience -- I gather from what you said before, the answer is probably no -- but do you have any experience of pressure being put on -- not on you, but at the terminal point, either from law enforcement agencies or credit bureaus or people who are moonlighting?

MR. WILBERDING: We have had several cases of pressure being put on home office people by agents to disclose information. We found out about it. In the last case it cost the company that was losing their security $7,000.

PROFESSOR MILLER: You don't know what happened

to the agent who was violating --

MR. WILBERDING: He was dropped.

PROFESSOR MILLER: Dropped. And could you reveal the nature of the pressure? I mean why did the agent want to misuse the system?

MR. WILBERDING: Why did the agent want to get into the system?

PROFESSOR MILLER: Yes. Was he selling real estate or something like that on the side?

MR. WILBERDING: No, not that. It wasn't real estate. It was a life insurance agent.

PROFESSOR MILLER: Sometimes they are both. I take it he was just prospecting.

MR. WILBERDING: He was prospecting. His particular company featured so-called substandard insurance at standard rates.

MR. MARTIN: I think we are going to have to draw this to a close; we are a little behind schedule now. So if those of you who have further questions could state them concisely and the answers similarly, maybe we will get through each item.

MR. IMPARA: Your files are built on the basis of paper documents sent in to you by members?

MR. WILBERDING: Yes.

MR. IMPARA: And you have people coding all this

stuff?

MR. WILBERDING: Yes. The source documents that come into our Boston office from our companies are paper documents, and we have something -- what is the name of that machine? The girls sit at a machine and type these out and they can see what they are typing and they print out a tape and that tape is proofread.

MR. IMPARA: Then what is --

MR. WILBERDING: We don't get the full file from the company, just the code number.

MR. IMPARA: I am talking about your input documents. You know you have tremendous security on all your machinery stuff. What do you do with your paper documents?

MR. WILBERDING: I store them for a period of two years and then we microfilm them and keep them for seven.

MR. IMPARA: And they are destroyed after seven years?

MR. WILBERDING: Yes.

MR. IMPARA: That is seven years after microfilming?

MR. WILBERDING: Yes.

MR. MARTIN: Senator Aronoff.

SENATOR ARONOFF: As I understand it, Mr. Wilberding, you indicated that the MIB doesn't concern itself with such things as morals and who is sleeping with whom and so

forth; is that correct?

MR. WILBERDING: Well, if an insurance company were concerned with a man's morals, they might report a general code to us that would indicate that "You ought to order an inspection report." If you order an inspection report you might get a report on who is sleeping with whom, but we don't have that.

SENATOR ARONOFF: But you do have it in the sense that an insurance company itself in its subjective investigation looked into the morals of a person or who is sleeping with whom, and then coded that to you in some sense, or even rejected the applicant, then you would receive that at your home base and then automatically wouldn't that -- if another applicant, another company, then made inquiry, wouldn't you push the red light button that says "get further information"?

MR. WILBERDING: We would give them back the code.

SENATOR ARONOFF: So in that case the morals of who is sleeping with whom does get into it?

MR. WILBERDING: That is not what I have been generally accused of in the Jack Anderson column.

SENATOR ARONOFF: I am not accusing you. I am really inquiring whether this would be another hazardous type of thing that would be beyond the medical records per se.

MR. WILBERDING: Yes. But remember the company must make their own independent investigation.

SENATOR ARONOFF: I understand that.

MR. WILBERDING: If they turned down and rated that case just because they got a general code indicating "You should make an investigative report," they would be violating our rules and it is a serious offense. We don't believe people do it and we check.

SENATOR ARONOFF: It could also be possible that a company in its individual criteria for who gets insurance or who doesn't, would look into an arrest record; is that right?

MR. WILBERDING: They might, yes.

SENATOR ARONOFF: And if they find an arrest record of some kind, would that ever get into your --

MR. WILBERDING: The arrest record would only get in through that general code.

SENATOR ARONOFF: In that general code of something hazardous other than medical?

MR. WILBERDING: Some non-medical reason justifying a consumer investigative report.

SENATOR ARONOFF: My last question, Mr. Chairman, is a somewhat facetious one, but don't you think that your title of Medical Information System is a little bit misleading? Doesn't it go well beyond medical information system in terms of all of the vast amount of knowledge that you have that is beyond medical information?

MR. WILBERDING: Ninety per cent of our codes are

medical codes -- over 90 per cent. I don't have an exact figure.

I inherited the name "Medical Information Bureau." It has been in existence since 1890.

SENATOR ARONOFF: Like the Downtown Health Club which is a house of prostitution.

(Laughter.)

MR. MARTIN: Mrs. Gaynor.

MRS. GAYNOR: There is only one thing I am concerned about and that is the transferring of medical information. And I want to know: Where do you get the consent to transfer medical information about someone who applies for insurance? You may, for instance, when you apply for insurance, say "I give you permission to ask my own physician so and so." Is there any consent that you really have from that person who applies for insurance to put the medical information in your file and disseminate it to anyone else?

On the one hand you tell me it is confidential and then, on the other hand, you are transferring it to other people.

I don't understand it. Help me.

MR. WILBERDING: I thought I had answered this previously, but when a person applies for insurance he does not sign a consent to do anything with this medical information.

MRS. GAYNOR: Why?

MR. WILBERDING: I don't know why. He submits it to the company because he wants some insurance. Now, you keep referring to my file -- it isn't my file.

MRS. GAYNOR: All I am saying is that you have the information in the medical information system.

MR. WILBERDING: The Medical Information Bureau represents the companies. It is an unincorporated association. As far as we are concerned the information still belongs to the company. They store it with us.

MRS. GAYNOR: Yes, I understand that. But if another company -- if I apply to another company, they can get the information from your sistem, right, about my medical information?

MR. WILBERDING: Right. If you apply to the other company they can get what is in our system.

MRS. GAYNOR: What I am trying to say is I don't understand how.

MR. WILBERDING: Well, there is a general principle in the common law that --

MRS. GAYNOR: -- says this?

MR. WILBERDING: Competitors, if they can get enough, can exchange information to prevent fraud.

MRS. GAYNOR: Medical information that is confidential?

MR. WILBERDING: It doesn't say anything about whether it is medical or not.

MRS. GAYNOR: The only reason I was asking is because --

MR. WILBERDING: We happen to be dealing with medical information. I wish we didn't because it makes a complicated thing. But nevertheless, how else can you do it when your business is vitally concerned with medical information?

MRS. GAYNOR: Well, you can do it by informing the person. For instance, if I work in a hospital and if a patient comes in there I say to him, "No one can have access to your records unless you give us your written permission."

MR. WILBERDING: And he does give written permission to look at the records. It is done.

This is the authorization form that he signs: "I hereby authorize any licensed physician, medical practitioner, hospital clinic or other medical or medically related facility, insurance company or other organization, institution or person that has any record or knowledge of me or my health to give it to the XYZ Life Insurance Company."

(Laughter.)

PROFESSOR WEIZENBAUM: That is everybody.

MR. WILBERDING: That is right.

PROFESSOR WEIZENBAUM: Okay.

MR. MARTIN: I think we will have to call a halt

here not to get too far behind schedule, and express to you, Mr. Wilberding, and your colleague, our gratitude for your willingness to come and in such a forthright way answer our questions and give us your clear presentation. I think that there were a few things that came up during the questioning which we have made note of and perhaps you have, too, that you are going to supply for the record. And there may be, since some members have not been able to ask all the questions they have, additional questions and perhaps the best way to proceed will be that we will write you a letter indicating the follow-on material we would like you to supply for the record, which we will try to get off in a few days.

MR. WILBERDING: I want to thank you, too. When you get upset about this type of thing, just remember this thing has been going for a long, long time. It is not run nor was it designed by a bunch of people who are trying to be hard on people. And you may think of things that you think, "Why don't you do this? Why don't you do that?" But you have to also understand the reality of the marketplace in terms of getting an individual to listen to this sort of thing and to explain it to him in some detail.

Medical information is difficult to handle. We do take what we think are very strong precautions, expensive precautions, to make sure it doesn't get in the wrong hands and be harmful to people.

about what we do, and conversely you can educate us about the concerns that you have that our particular industry might be giving so we can guide ourselves in the future.

Our company was basically founded about three years ago to provide, as I said, interactive computer services to medical-type environments. The basic packages we tend to offer are things like laboratory systems and pharmacy systems and automated history systems, those areas in a hospital environment that are concerned with the delivery of medical care, as opposed to the accounting aspects of the hospital, which we basically are not concerned with.

All of our systems are basically concerned with active patient data, data that is defined, when the patient is first admitted to a hospital. Again I use the word "hospital" but we have group practices, individual practicioners, commercial laboratories, and any area, if you will, that is a medical care delivery system.

Again our initial concept was to use our computer to provide a service to these customers in a very modular-type way. Where a hospital, itself, may have a need for many different areas, say pharmacy or laboratory or census, we typically involve a solution to a problem, start off in the hospital in one area, perhaps the lab, and in a few months go into the lab, et cetera.

Again, these are operational, on-line type systems

I think the fact that we have had so few cases in which individuals have either come to us or come to insurance departments or come to the Heart Committee or come to the FTCN which they alleged and could prove that they had been damaged by the MIB -- we don't know of any.

I think for an institution that has been going on as long as we have, we have a fair record.

MR. MARTIN: Thank you.

Mr. Pappalardo. I am sorry we have kept you waiting a little bit.

We will just take a minute more for our stenotypist to replenish her paper.

(Discussion off the record.)

MR. MARTIN: You may proceed now, Mr. Pappalardo.

MR. PAPPALARDO: My name is Neil Pappalardo. I am vice president of a company called "Medical Information Technology" in Cambridge, Massachusetts. And our company is basically -- we are a commercial company which was founded to offer remote information services for patient care activities via interactive access to central shared computers.

My associate is Nick Johnson, and together we come here today basically to tell you a little bit about the type of industry that we are part of and that has been founded in the past few years and will continue to grow in the future, in the hope that we will sort of educate you to some extent

where there are terminals in the medical environment connected through phone lines to central computers at our site.

The initial intent of the computer system is to serve as a communications system where, in one physical location in the hospital environment someone wants to transmit a message about a patient. And this message may be a doctor's order, i.e. ordering a laboratory procedure or ordering a medication for a patient, or the output of that -- after that procedure is done or what have you, let's say after ordering a laboratory test for a patient, to subsequently transmit the result of that laboratory procedure back to the physical location where it is needed.

In this sense, this information that is transmitted is typically extraction. That transmitted message is actually extracted and stored in the data base, or the data base is stored in the computer which forms the active medical record of that patient. And here the word "active" in our sense is defined for as long as that patient is active, as opposed to the previous speaker where you are typically storing inactive information or long-term medical information. This is short-term medical information lasting from a few days to a few months.

The second aspect of the system -- once you are starting to store medical information, then you basically get involved in what are called medical records systems, where

there are many situations where you are very much concerned about the content and the structure of the information going into a medical record, so that you can form an organized-type data base that subsequently -- and this can be measured in days -- when it is time to print out a summary of this information which will be part of the hospital's resume -- that you can print out a legible and organized medical record, a presentation of the information concerning the patient in such a form that it will be easy for the medical or para-medical types to deliver care from that record.

Now, historically I guess I could say at one time there wasn't much concern about security of medical-type information. And I, myself, have my own view on why that is true. And there is really two reasons for it. The first reason is that MD's basically wrote so illegibly that it was impossible to read the medical records. And the second reason is that the medical record was so disorganized, not only in structure, but also if you happened to pick up a medical record from one of our large medical institutions and opened it up and let's say uncovered it, it was for Sam Smith and you would find a lot of disorganized information. Also you would probably find information on Sally Jones. The information wasn't in any concise organized form. Perhaps security wasn't really a concern at that time.

With the advent of computer systems, the

expectation, of course, was to start printing out legible, organized, compact and structured medical information which could ultimately be put into medical records. And perhaps with the advent of this, people then started to become very, very concerned that now medical information is easy to read, easy to interpret, perhaps it might be misled, but it seems easy to gain access to the information.

So anyway we are at a point now where computers are being used today. And especially in our company, that is what we do. We use computers to provide medical care systems and hence have lots of medical-type information within our computers. And I will give you some examples.

We are a shared system. All of our customers share our computers rather than devote one large computer to one customer; you might get that one large computer with a fraction to Customer A and one to Customer B, et cetera. We have many, many computers in this point in time.

Security is now a problem. Over the last few years when we were out, if you will, selling our products, most MD's or administrators or paramedical types were always very interested in security. I really believe their questions that they asked were pretty much asked out of a sense of duty rather than a genuine concern for confidentiality. The reason I say this is because our system is certainly no worse than the system that they had themselves. If anyone

has gone into a large hospital, you would find one's ability to circumvent the limited access systems that they have there to be quite easily gotten around. It is quite easy to go up to the out-patient department and pick up a medical record that is lying on a bench and look through it.

So MD's and administrators who were aware of that situation typically weren't that concerned with imposing any tight security measures on us, and hence had little follow-through in making us do anything to secure our data, other than ask the question.

Lately, though -- and perhaps with the advent of your committee and things of that nature -- customers are becoming more and more concerned. And a fairly recent case is one of our customers who has a data base now of about -- I guess about 12,000 patients. This is a large group practice, if you will, where all of the patients in the group practice -- the information is kept for a much, much longer term. It is not a hospital situation; it is an out-patient situation. So as long as the patient has an active disease of some sort over a two- or three-year period a computerized record is kept of that whole patient file.

Anyway, this particular customer came to us with his genuine concern that one of the agencies that was monitoring him wanted to limit the prescription of certain dangerous drugs except by authorized MD's. And so they came to us with

a genuine concern that they wanted us to develop a technique which would allow them to have a particular MD order a drug -- again who had authority to order that drug -- and to make sure that no other MD or anyone could accomplish the same thing and conversely get access to that, get a print-out of that.

And the final assumption was -- the previous speaker talked about codes and many computer systems like ours use codes. The problem is that given a code, it is very easy for people to break codes. They also wanted to make sure that any of our technical types that run the system couldn't break the code, if you will. So we are at this point in time being forced to develop techniques which are technologically possible to allow us to write a program which allows a user of the system to come up with a code which allows him to encode information and decode that information back again without giving up that right and allowing ourselves or anyone else to have access to that information.

The other issue that we have been very much concerned with -- because again people tend to talk about security and confidential information -- it is just as important -- perhaps even more important today in time -- we are not as concerned with the security of individual information as much as we are concerned about the integrity of that information. So that when medical information is entered in a system and

authorized access back to that information is given, we are very much concerned that the information that is sent back out again is the right information, the correct information, presented in such an organized way that it doesn't confuse or mislead the recipient of that information.

Again I know we are running late in time and that is why I am trying to skim over most of the areas I was going to talk about today. But let me try to cover shortly a number of areas that we, as an industry, are concerned about. Again, it is a relatively young industry, I say a utility that offers medical-type information systems, and most of the problems that I will point out to you are ones that we, ourselves, are aware of and looking for appropriate solutions to.

One of the problems we have is that any new company that starts up with a new type of technology, Customer A, Hospital A, doesn't want to buy anything unless he is absolutely sure that someone else, i.e., Hospital B who is working with him, finds it an acceptable-type system. Therefore, referral selling is used a lot and there is a great tendency in the industry in referral selling to demonstrate someone else's system. And when you demonstrate someone else's system you tend to demonstrate their data base, also.

So there is a big tendency to try to not do that, but you are asked quite often "Let me see how such and such system runs before I get it." And again, since we have a

shared access computer system you can, by knowing the proper authorizations, quickly look at someone else's data base and programs and things.

The other area is we believe very strongly that this type of industry can best be served by centralizing the technology, much like the phone company centralizes its technology; that this is a better approach or more preferred approach than proliferation of many, many smaller computers in house -- okay, having a hospital with its own computer in house which it can maintain and run and operate. We believe it is a better approach, but once you do put information in a central-type system, you of course open the doors to the problems you people are concerned with here today.

Our systems are basically terminals used to enter information and retrieve information. If you look at our computer room, if you will -- it has about five or six computers in our large one in Boston, but has virtually no paper work. The whole thing is automated in a sense that the whole operation runs without any interference, if you will, from our own personnel. It is designed that way, because this is inherently, as far as we are concerned, a more reliable approach to the technology.

But it does have a benefit in the sense that people at our site don't have access to information. There are no hard-copy or paper-type records, or audit trails of any sort

that is left at our site. When customers enter information it is typically done at a cathode ray tube, a TV-type terminal where they can enter information, soft copy. Reports, of course are generated in hard copy at their site for inclusion in their medical records. Except for the programmers there is no medical hard copy printed out at our site.

Again, the assumption is it is easier for us to handle and process information if we leave it completely to the computer without having any people interact with the information in any way.

In general we destroy information, i.e. expunge it, delete it completely after the patient leaves the hospital, or in the case of an out-patient setting, when the patient is no longer an active part of that out-patient setting.

In doing this, of course, we are to some extent refraining from offering our information for statistical purposes for the research community that would like very much to look at collected medical information, that is supposedly accurately collected, and be able to process that. But at this point in time that is not our main business in any way and hence we are trying not to offer anything other than the operational type system that I described in the past.

Well, I won't get too much more into depth about our company. I had intentions today -- and still do -- of demonstrating to you -- I brought along a terminal which I

intend to dial on our computer here in Washington to demonstrate some of the medical information services that we provide. I guess I won't do it today -- or at this session, but I guess after dinner presumably there will be some time to demonstrate that for anybody who has an interest in seeing the type of medical information services that are offered to the hospital communities today.

MR. BAGLEY: Would you dial Richard M. Nixon and see what comes out?

(Laughter.)

MR. PAPPALARDO: He never gets sick, by the way.

MR. MARTIN: With respect to your demonstration, are there any general remarks that you would make or is it a kind of personal small-group demonstration?

MR. PAPPALARDO: There are no particular general remarks except that again it is slanted toward -- what I would be demonstrating would be the exact same terminal environment that would be in a medical or hospital type setting. And the packages that I show are part of the work that has been misused too much, but quote, medical type information systems. It is basically to show how information is entered into a computer and how the information is sort of structured in an organized way so that it can be displayed back again. So it is hard to talk about it wihout really showing it, and I guess at this point, based on the physical size here, perhaps

it would be better to defer that.

MR. MARTIN: Fine.

MR. BAGLEY: Senator Eagleton may be in it.

(Laughter.)

MR. PAPPALARDO: The only well-known person that has ever been in our system has been Vince Lombardi that I know of. He was, I guess, in Georgetown Hospital here -- had cancer, I guess. And I read about him in the papers one day, that he had been in Georgetown and I said that is one of our customers and he should be on our data base. And I was thinking about it seriously, should I really look at his record or not? And it turned out I really didn't. And subsequent to that I asked an MD there and he said, "He had a bunch of tests here," but I didn't because I didn't know the proper access codes to get on this system. That is the only famous person I know of.

MR. MARTIN: Because we are behind I would like to suggest that instead of going around the table we take the first four or five questions that are most urgently on members' minds and you take the opportunity later to ask Mr. Pappalardo questions. Are there any?

MR. SIEMILLER: To start with, I pass.

MR. MARTIN: Mr. Ware.

MR. WARE: I assume many customers share the same physical machine?

MR. PAPPALARDO: Yes.

MR. WARE: Would you identify the machine and operating system so we get what sorts of controls are in the hardware and software to keep one customer's set of data out of another's?

MR. PAPPALARDO: We right now own ten computers made by Digital Equipment Corporation. The operating system we use is one of our own design which happens to have an acronym of MUMPS, of all things. It is a system basically developed for -- it uses a high-level language which allows -- it is very nice for file-type systems where you are trying to store data and retrieve data. It is not in any large use at this point in time.

PROFESSOR MILLER: I had the mumps a couple of years ago and there was nothing high-level about it.

MR. BAGLEY: I hope it wasn't low level.

(Laughter.)

MR. MARTIN: Any other questions?

Mr. Anglero.

MR. ANGLERO: You said in general you destroy the information when the patient leaves. What is "in general"?

MR. PAPPALARDO: The reason I said "in general" is we have two types of patient, if you will, the patient who is in a hospital setting where the moment he walks into the hospital information is started to be gathered about him and

the moment he leaves that hospital it is all over. A final summary print-out of all the medical information about him is printed out in his record and the computer information is expunged.

The other type of patient we would have would be one in a group practice setting where, as long as he is an active patient for that doctor, which may be a five-month or a five-year type of thing, his record is active and hence his information is kept active as long as he remains associated with that doctor.

Another type of patient -- I will give you a for instance here. In town there is the narcotic treatment agency which is a methadone type program for treating addicts. That is a customer of ours today and they have somewhere around four thousand or five thousand people that are part of that program that are receiving medical-type care, if you will. You know drugs are given to them and hence it is a medical-type data base. So as long as they are part of that data base they are active.

So in general it depends on the type of customer.

MR. MARTIN: Professor Miller.

PROFESSOR MILLER: Basically your customers control the level of security they want?

MR. PAPPALARDO: Yes. We basically, being a technology offered, can spout many different theories of how you

might want to protect your data, and as I said earlier, the customers, hospitals, MD's, have been typically asking about security out of a sense of duty.

PROFESSOR MILLER: What have they actually done at the lecture?

MR. PAPPALARDO: Nothing. The reason I said that is because I said if you go to a major hospital today they give you the same lip service of what their concerns are, but we have generally found that they typically are not concerned.

PROFESSOR MILLER: And you don't feel it is your job to impose a level of security?

MR. PAPPALARDO: Well, as I said before, the reason we do -- we do impose a level. But it not for the sake of security as much as for the data integrity's sake.

PROFESSOR MILLER: You worried about --

MR. PAPPALARDO: We are worried about whether what information we provide is correct information. And if there is easy access to our system, it would be more prone for Customer A to massage Customer B's data base, et cetera. And that is what we are concerned about. So this is the main driving force that forces us to be concerned about it. So we do impose restrictions. It turns out most of the restrictions that we impose, you know things like Sino passwords, accessing to the terminal -- many different variations of the scheme -- almost all of them they tend to fit.

PROFESSOR MILLER: And that methodone group, which intrigues me -- they don't feel the need for any special security?

MR. PAPPALARDO: Oh yes, they do; we are very much concerned about that -- primarily as a selling point to sell to addicts, "Come join our program because we guarantee any data we receive from you will not be given to any agency come hell or high water."

PROFESSOR MILLER: How the hell can they enforce that?

MR. PAPPALARDO: Well, then enforced it by --

PROFESSOR MILLER: Suppose the D.C. police or some federal agency issues a subpoena against that group?

MR.PAPPALARDO: It has happened before. And again I talked about it before. The agency has been subpoenaed in the past. And in the past they just simply didn't keep any medical records; okay? That was their solution to the problem. If you don't keep any medical records on something, there is nothing to give.

PROFESSOR MILLER: Well, what is in the computer?

MR. PAPPALARDO: In the computer -- since they have joined us -- this was before. Since they have joined the computer, there is a problem. There are medical records. And there is a problem. I don't know how they have resolved it. To my knowledge, they haven't had anybody banging on their

doors for information. But again that is something they have to concern themselves with. We don't keep any hard records at all at our site.

PROFESSOR MILLER: Suppose you were hit with a subpoena?

MR. PAPPALARDO: I don't know what we would do because the case hasn't come up yet. Our first sense of duty, of course, would be to our customers, but I don't really know what the legality would be.

PROFESSOR MILLER: Well, you might look it up sometime before it happens.

MR.PAPPALARDO: Right.

MR. BAGLEY: You might have a doctor-patient privilege. I will give you a little gratuitous law.

MR. MARTIN: Mrs. Gaynor, did I see you itching for a question a minute ago?

MRS. GAYNOR: No, not really. I was just reacting to something about physicians and administrators in relationship to what was a duty. It is also a responsibility. Those records are legal records and they are confidential information. And I beg to differ with you in your posture in saying that they just did it out of a sense of duty. That is all.

MR. PAPPALARDO: It is an opinion --

MRS. GAYNOR: Well, it is not an opinion. It is a fact.

In relationship to your expunging of records -- to follow up on what Juan was saying -- you said once a patient leaves the hospital you send a hard copy back to the hospital.

MR. PAPPALARDO: We don't send any print-outs back. The terminals are at the hospital and they get their own print-outs.

MRS. GAYNOR: They get their own print-outs at the hospital. And then you destroy whatever you have?

MR. PAPPALARDO: Right. They destroy it by calling up a particular function which would expunge information in the computer. It is typically after a patient has left the hospital and been transferred out of the hospital. They can expunge that information in the computer.

MRS. GAYNOR: But the way most hospitals are set up they don't do this because they have their own records that follow the patient in-house and out. So I don't understand.

MR. PAPPALARDO: When a patient is discharged from the hospital, that is an active process. They inform the computer that the patient is discharged so they can free up that bank for somebody else to come in. And the moment they discharge that patient, that temporary transient record in the computer is flagged, if you will, and then the next available occasion for the computer, based on how busy it is, it goes ahead and deletes that information and frees up the storage

for some other type of information.

MR. MARTIN: Thank you very much, Mr. Pappalardo. I am sure that we all look forward to the opportinity of seeing your demonstration later.

We will recess now until four o'clock promptly.

We are running about 15 minutes behind schedule. Let's try not to run any further behind.

We will resume at four o'clock with the presentation on "Education Regarding Computers and their Impact on Society."

(Whereupon, a short recess was taken.)

MR. MARTIN: Could we come to order.

This panel presentation, and the REACT demonstration that will follow it, is intended to inform the committee as quickly and thoroughly as possible about:

1. The current state of education in elementary and secondary schools and in institutions of higher learning, with respect to the techniques of computer use, such as courses designed to teach students about the capabilities and appropriate applications of computer technology, the nature of algorithmic thinking, the structure of computer languages, and the methods of computer programming.

2. The current state of efforts to promote, through formal education, including post-graduate education, computer applications that so far have rarely been made or, when made, have not taken full advantage of the capabilities

of the technology; and

3. The current status of educational activities focused on conceptualizing and examining the societal implications, the deleterious as well as beneficial, of computer applications that have been or appear likely to have been made.

From the committee's point of view, a principal purpose of the panel presentation and ensuing discussion will be to identify educational initiatives that might increase public awareness and comprehension of how computerized data processing technology works, the reasons why it is well suited to the performance of certain kinds of tasks, its strengths and limitations as a tool of research and analysis, and its challenges to legally protected rights and immunities, for example, or to common expectations based on the heretofore segmented character of events and relationships in a person's life.

The first panel participant on whom I will call, because his work has been focused on the youngest age segment of our population, is Professor Seymour A. Papert, Professor of Mathematics and Co-Director of the Artificial Intelligence Laboratory at MIT.

I would encourage each of our participants, as they speak, to feel free to expose their privacy as much as they would care to, that is to say, what their backgrounds and experience have been in order to maximize the usefulness

of the dialogue that may occur.

I do not have lengthy vitae on all of you that have been distributed or that I will be able to introduce you from and if you can give some sense of where you are coming from, so to speak, the discussion that follows may be more fruitful.

With that, Professor Papert, and welcome.

PROFESSOR PAPERT: I would like to recount a little conversation I had this morning in Boston. I set out with my movie projector and somebody said, "Why are you taking that?" and I said, "To show a movie."

And somebody said, "It is in Washington. They have got movie projectors. Besides, they said they would have a movie projector set up for you."

I said, "They are people in Washington and they make policy about education and they screw up everything."

And they said, "You're out of your head. They can show a movie."

I was right. They can't show a movie.

(Laughter.)

I think it is significant, I must say.

I also think it's significant some people say technology is bad but I have never screwed up showing a movie. Not only that, but I had the following mind-blowing experience last month in England. There was a conference of math

educators in Exeter, England at the end of August over there and for the first few days of September, and I was asked to make a presentation, to give a talk as part of something called "The United States National Presentation" to this education conference. And the idea came up of giving a live presentation of some of the things we are doing with kids.

So this was quite a problem, because it involved using a very large computer system with a lot of devices that had been built in our lab and our home-made products and the question is: Can you transport all that to England and set it up and make it work? But we did. We transported it to England. We recruited ten- to twelve-year-old kids from the streets of Exeter and started them working in this lab, doing things which you might have seen in this movie.

Well, during the first week these kids came in for the appointed hour a day. By the third week the kids came at the crack lf dawn and were dragged away screaming by their parents when the parents thought it was too late for them to stay there any longer.

Now, I would like to mention that there are a few pieces of background to that.

First of all, I had a devil of a time persuading the organizers of this math congress to provide me with space, and especially to let me get into the building where the congress was going to be held three weeks ahead of time.

They said -- I have a whole file of correspondence about this. They said, "After all, you are only giving an hour and a half demonstration with the children. Why on earth can you possibly want a whole room for three weeks before the conference and all this staff to give an hour and a half demonstration? There are 17 other presentations involving children and they don't want anything that goes beyond the five minutes before the class starts."

I am telling the story not to complain about Exeter but to complain about the state of what is called research and innovation in education. Because you are not allowed in innovation in education to do anything that involves anything so extraordinary as actually needing three weeks to set up an experiment. And the three weeks may be symbolic, but I think the mind of the super-innovator in the education world is that their horizon of what can be done is limited to making very local changes to a system which everybody admits is thoroughly bad and is not working.

I think it is rather analogous to the situation that would have happened if, at the time when the Wright brothers built their first airplane, people said, "Well, that is nice. That flies. Now what we want is a plane that will fly at 600 miles an hour and carry 300 passengers," and so on, and describe a 747 and then lay down the following rules: That you have to progress from the Wright plane to the

747 by changing one part at a time, and you have got to justify each change by showing that the plane flies better after that little piece has been altered to be replaced by another piece.

Now it is obvious you would never get that. You would never get from a Wright plane to a 747 by making local changes piece by piece. And yet in education that is all that is ever done in so-called research on education.

You accept the school structure. You accept that there is a certain curriculum of what must be taught year by year, and you go in and you change the color in the textbook or the slight orders of the way some concepts might be explained, and you maybe decide, "I am going to use base 8 numbers as well as base 10 numbers," and some small changes of that sort.

Okay. That is by way of preface and complaint. I will talk about some more positive things.

Unfortunately this is going to be vague because I am afraid -- I really mean the following statement, that it is possible to set up a substitute for the current curriculum in education that is so different that it would certainly take me more than half an hour to describe it, and I am not sure that I could describe it at all without your having a chance to see and hear some of it, and you can't do that, so I will have to make a brave effort. But I will try to explain

some intentions and how the computer comes into this.

Well, let me raise one very general important question in the theory of education.

It is a part of our culture of this society that certain people are what is called by the layman mathematically minded, and others are not mathematically minded. In certain professional circles you are not allowed to say "mathematically minded." You have to say "mathematical spatial abstractive aptitudes" or other similar long-winded phrases, but it boils down to the same thing, that there are some people who have got it, who can do it, and some people who can't.

The question I would like you to consider for a while is: On what kind of evidence is this based?

Well, the evidence is very simple. Whether it is the layman's evidence or the ultra-sophisticated psychologist's evidence, it is all empirical. We have seen it. And you can see it for yourself. Just find a school there, if it weren't closed down by strikes, and go into the school and you will see a few of the kids are really doing well at mathematics and they come out knowing a lot about mathematics and most of them don't know anything. They don't learn thinking and they can't do mathematics when they emerge from those thousand hours of instruction in mathematics. So it is obvious some are mathematically minded and some are not.

Walk into the next room and you will find a

French class. The amazing thing is that the same situation obtains. There are some of the kids who are learning French very well. Most of them are not learning French at all. Most of them emerge from the school not being able to speak French any more than the others can do mathematics. So of course we conclude that some kids are Frenchly minded, and most kids are not Frenchly minded.

Well, why don't we conclude that? After all, the facts are just the same as in the mathematical case but we don't conclude it for a simple reason, that we know that it is absurd, because we know that if those very same kids grew up in another place across the Atlantic, they would have spoken French perfectly well.

So it is not that they are not Frenchly minded. I am not saying there isn't any difference between the kids, but the difference is not that some kids can't speak French.

And so in the case of the mathematics presumably the difference is not either that some kids can't do mathematics. There just isn't eny evidence at all that stands up to the slightest critical examination for believing that we know something about the seeding of mathematical activity of anybody.

Well, let me talk to you about some experiments that we are doing that have to do with probing that. And because time is brief I am going to state my arguments and

describe the situation in this rather loose analogical fashion, but of course I can and would and have in more technical writing spelled it out in more pompous sounding academic phraseology.

Let's say: What would we like to do to pursue the analogy between French, mathematics, and so on? The question we would ask is: Is there a place -- let's call it Math Land, a place where, if you grew up in that place, it would be to mathematics as growing up in France is to French. So in this place you would just learn mathematics quite naturally and easily like you learn your natural language. Could there be such a place?

Well, there isn't, I suppose, but we can create one. Maybe there is in isolated pockets. Maybe in some families for some badly-understood reasons such a corner of Math Land is created for some kids. I don't know about that. But what I do want to do is talk about how we might create a piece of Math Land.

The first place you might want to put in Math Land is a mathematical-speaking being so at least the kids can talk in mathematics. And you want this mathematic-speaking being to do some things that the kid might be interested in doing.

It might be a person, a human being, and that is what happens in so-called teaching. There are some people who

love mathematics so much that they infect children with it and draw them into it. And I have no doubt that is what is responsible for some people becoming good mathematicians. But we don't know well how to create large numbers of people of that sort. So I am going to tell you about another route, which doesn't exclude that one, of course, but this other route is to make some mechanical beings who will be mathematical speaking. And these mechanical beings are in a sense computers. In a strong sense they are involved in it. A computer is part of it. But it is not a computer in the image that one usually has of a computer in education. Oh, there are a lot of things bad or limited about the usual use of computers in education. One is that you imagine the computer programing the child. The computer says, "No, Johnny, 7 plus 3 is not 13," and so on.

I don't even want to talk about that use of computers.

There is a next layer up where you at least let the child program the computer so he gets a creative experience of learning math by doing it to some extent.

But the way this is usually done is limited by the fact that all the child can program the computer to do is the same old computations with numbers, adding them and subtracting them, maybe in a secret form. But most kids are turned off by that and don't particularly like numbers, and so,

although that kind of use of computers is very good for the kids who are already mathematically turned on, and sometimes turns on a few more, for most kids it is just boring.

To make it really interesting what we have tried to do is to tie onto the computer peripheral devices that would enable the kid to use the computer to do many things besides simply printing out numbers on a piece of paper.

Examples of those things are: Compose music. For example, on that film we have a picture of children in a class where they learn musical composition -- I mean musical composition. That is, they make up very complicated pieces of music. They make them up by first having learned a programming language and a mathematical notation for describing music. They then describe music to the computer and that music comes out.

Now, an amazing thing happens here, that the limit on how complex a piece of music you can experiment with is no longer set by your physical dexterity in playing an instrument. You can go far beyond your own ability to perform and you are limited only by your ability to conceptualize it, to describe it in a precise, formal language.

So for a kid -- most kids -- who would really like to play around with music, this carries a way in which mathematics becomes a living real thing which can be used for a purpose instead of being that ritualistic kind of activity in

the classrooms where you learn all those long division formulae on somebody's assurance that when you go out into the real world 12 years later it is going to be necessary for you in ways that remain totally obscure.

So the mathematics is made meaningful by creating a context in which the kid can use it for a purpose.

Music is one example. We have been trying to develop -- we have been developing a whole range of others, for example, computer-generated animated cartoons, pictures that move around a TV screen. In order to do this what you have to do to, say, make a man walk across the TV screen, is that first of all you look at yourself and you see what walking is, and you get much more objective and insightful about looking at yourself, which is a skill worth acquiring on its own right. Then having got an idea of what it is, you have to describe it in a formal way. And that involves using angles and functions and functional relationships and variables, and all our fifth-grade kids -- all of whom, by the way, are selected from average and below in school performance -- all of them, without any exception, pick up these ideas quite fluently and easily.

The idea of angle, which is a bugaboo for most fifth graders, is not a difficult idea in itself. It is a meaningless idea for those kids. It is like getting somebody to learn Sanscrit poetry when he doesn't know Sanscrit. It

is a terrible thing. You can't do it because it is meaningless to you. And I think this is true through a lot of the curriculum we tell the kids to learn. It appears difficult because it is not related to anything that is important to that kid. And so it appears hard, not that it is intrinsically hard.

Anyway, this is a use of computers, where the computer becomes, if you like, a familiar, an intimate, a companion, a powerful instrument, something that enables you to do things that you couldn't otherwise do, that extends your power to act in the world, and by extending your power to act in the world tells you the most important lesson to be learned in any intellectual discipline, which I illustrate in the case of mathematics but it is true in everything else. The most important thing about mathematics is that it is powerful. The important concept about mathematics is math power. If you haven't sensed that it is powerful, that ideas in mathematics enable you to master the world physically or conceptually to the point where you can do things you couldn't otherwise imagine doing, you have not seen the point of mathematics.

And so we see the role of the computer there as giving a sense of math power, or intellectual power in general.

So these are glimpses then of an experiment in creating a different curriculum, which doesn't particularly look like anything you are used to seeing in school. The

children are doing musical composition. The children are making animated cartoons. They are working with modular kits. This is one we haven't quite gotten to schools yet but it is developing fast. They have a kit like an erector kit but it has computer controlled muscles and sensors and the idea is to learn biology if you want to call it that by making cybernetic animals that will walk and balance and jump. And these are perfectly doable projects.

And I would like to end on that theme by considering what is involved in such a project of making a man-like animal, a model of a man that can balance.

First of all, there is a lot of physics. There is certainly a very special kind of biology that is contrasted to the biology where you cut up this frog and all this goo comes squishing out and you feel disgusted and sick and you wonder what you have learned about animals by learning how messy they are inside. And also there is something important called the semi-circular canal and you look and persuade yourself you can see it -- and why should you look very hard anyway?

That is contrasted with, if you want to make this thing balance you want a balancing device and three degrees of freedom, and you end up needing something very much like three semi-circular canals because we live in a dimensional space -- and I think you are learning something about yourself and you are learning about biology in a more meaningful way,

both more meaningful in the sense of interest and more meaningful in the sense of it is a kind of biology whose knowledge is really of value to somebody moving around in a real world of ideas and technology and education and modern science.

Well, so you are learning biology, physics, mathematics, of course. You are learning a kind of psychology, perhaps. You are learning an art of self-observation and self-description. You are learning an attitude towards intellectual power. You are learning how to conduct a long project that will take a long time on which you will work for several weeks or months.

So that is a picture of a school which is rapidly coming into being. Pieces of it we -- do I have five minutes to show you some slides?

MR. MARTIN: Yes.

PROFESSOR PAPERT: There is a slight degree of fantasy in what I just said because all that has never been put together in one total experience for children.

Our plan at MIT is to do that. In the meantime, what we have been doing is, in public schools in the Boston area, trying out pieces of this project. And I am going to show you with these slides a few pieces.

That object there is the first computer-controlled device made in our lab (indicating). It is called a Turtle. And the features of the Turtle is, first of all, that it is

a mathematical-speaking being. You speak to it through a typewriter keyboard. You speak to it in a language called logo, which is a computer language. This one happens to be a little better. I will say something about why in a moment.

What it can do is illustrated by -- first of all, if you look underneath you will see in its middle underneath is a pen. And if you say to it, "Pen down," it drops its pen. And when it is in the pen-down state, as it moves around it leaves a trace. So you can command it to move around and draw pictures for you.

It has another kind of mode of operation. If you look around its edges you will see there are rubber tubes and those are sensor organs that are sensitive to touch. So you can program it to go until it feels touch on its left and when it feels touch on its left to turn right or whatever, so you can program behavior into it.

That (indicating slide) is a fifth percentile kid, by the way, just incidentally.

That is a four-year-old kid with another model of the Turtle that you see on the writing board over on the left there. It is a simpler-looking Turtle but it obeys the same commands. This kid doesn't know how to read and write but has learned a computer language that is defined in terms of symbols corresponding to movements of the Turtle and she presses the buttons on that board in front of her, programing

the Turtle to move around.

We find that all the pre-school children we have worked with just take to it as a toy. They will play with it for periods never less than half an hour, sometimes two or three hours. And they certainly get the idea of angle in any sense that anybody would like to define, measuring angles by numbers. The way you get that thing to turn is by saying, "Turn so many degrees" and you say, "Turn so many degrees," by pushing a turn button and a number button. The numbers exist as numerals on the little keyboard.

This (indicating slide) is a picture of the Turtle in yet another form. On a television screen the Turtle exists as, you might say, a mock turtle or a display turtle. It sppears as a little triangle.

Typing the command "Forward" literally like that, "Forward 100," causes it to go forward a hundred units, which you see happens on the next step there. Then say, "Right 120" and it stays in the same place but changes its orientation, pointing down like that. "Forward 100" again, and "Right 120" and very quickly it has drawn a triangle.

So we have drawn a triangle in computer jargon by direct commands. Note it had to turn 120 degrees. Some of you might have thought why not 60 degrees. The reason why it is 120 degrees illustrates an aspect of what we call turtle geometry. I would parenthesize the remark about

turtle geometry. It is a branch of something more general called computational geometry which illustrates an aspect of computers that hasn't really reached the threshold of public consciousness very much, and that is that they exist not only as physical devices, they have given rise to new sciences and new conceptualizations of many subjects, including mathematical areas, and there is now a thriving branch of geometry called computational geometry which has to do with how computers manipulate and recognize figures. And it leads to a very different way of thinking about them than Euclidean and/or any of the static geometries in the past. And we think it is a much better introduction to teaching geometry than static Euclidean geometry. There are complex reasons but one is very simple, namely that the intuitive geometry that everybody knows before he gets to school that enables him to move around a dynamic geometry of action, and in computational geometry it is the action that is primitive.

Notice how some of the theorems come up here. The Euclidean theory say the angles of an equilateral triangle add up to 180. So to find the inside angle you divide by 3. But the amount you have to turn at one of those vertices is not 60 but 120 degrees, and the reason you know that is because of a much simpler theorem. Namely, if a Turtle makes a total trip, it turns 360 degrees and it doesn't matter whether it went around a triangle or around a circle or a square.

If you go around and come back so your end state is the same as your start state, you turned through 360 degrees. And if you did it in three goes you must have done it in 360 divided by 3 or 120 degrees each time. So here is a theorem much more general, much more powerful, much more intuitive than the Euclidean theorem. And it is not that we are smarter but this is a more natural kind of geometry. So this is the kind of theorem we teach those kids and they all pick up as a way of thinking. It is a way of making the Turtle do things rather than an abstract theory.

Now, I would like to show you a few things about this programing language, Logo. Maybe some of you don't know what a programing language is. It is a way of communicating with a computer. In order to make a computer do something, you don't have to know anything about transistors and how it works inside any more than to make a person do anything you don't need to know how his brain works. You don't have to know his physiology, you have to know a language to communicate things to him. Well, a language to communicate to the computer is a programing language. Logo is an example of a programing language that is very powerful, clean, and simple to learn.

Suppose you want to define a new word in this language like "tri."

The words that already exist are forward and right,

"Forward 50 and Right 120" which you see crossed out there, which makes the Turtle do certain things.

The command "tri" typed in the machine to draw a triangle -- I write the part in black, ignore the place where it says "semicolon angle." I write "Tri, Right 120, Tri," and then when I give the command "tri" to the computer it goes forward 50, 120, and then gives itself the command "tri" which causes the same thing to happen again. So it could keep going forever around a triangle. So it is a program and it is the kind of program you can write on the first ten minutes of contact with the machine.

Now you can make the program more complicated by adding in the new part which enables you to tell it instead of turning right always 120, it can turn right any angle. So if you say "Tri 90," it will draw a square.

If you say "Tri 45," it draws that. What other things might happen? If you say "Tri 180," why it will go away, turn 180 and come back and turn 180, so it will just draw a straight line, go up and down in a straight line. A good principle of discovery is if you saw something happening like this thing drawing a straight line, explore in its vicinity. So we teach the kids results of mathematical discovery like this. So this leads them to say 180 did something interesting. What about 175 or 179? 175 makes it do this, turn around and come back so it starts generating a

figure like that, an amazing surprise for most kids. And if one stumbled on it, the others come around and say "How did you do that?" These are various things that can be made with this.

So this is the kind of mathematics that has surprise to some people in it, totally missing in the inhumanity of elementary school mathematics; nothing surprising ever happens. You work it and it comes out right or wrong. You might be surprised that it comes out but nothing happens that makes you say "Wow, how could that have happened? Let's make something else happen."

Another thing happens if we change the program by tying in one little extra phrase. On the latter line, instead of saying "tri" to the angle, add one little phrase. They would say "Next time around increase the side a little." Let's not worry about how you say that. Let's see what it does. Each time it goes around it does a little more and it draws a thing which the child who made that for the first time said, "It is a squiral" and "squiral" is a real new mathematical term. It means something and it is there to stay. That is what I call mathematical discovery, not this nonsense called the discovery method where the teacher decides in advance what the children have to discover, like the poetry teacher who thinks the children must discover "Mary had a little lamb, Its fleece was white as snow."

When you can make squirals you might explore a little further. There is a squiral at the top. Then they say "Let's try it with 91" and that is what you get.

Something interesting is happening so let's go a little further and try it with 93 and that bottom thing happens, and you go a little further and eventually that happens and that (indicating) magnificent creation came about by that child following this phenomenon. It is the same phenomenon you saw in the previous ones but worked along looking for the right angles to make it happen in its spectacular form.

Here (indicating slide) is an even more spectacular one. That is called "Trick Rabbit" and discovered by a nine-year-old kid in a public school in Syracuse. That was drawn by a Turtle like the one you saw moving around on the ground and it is a spiral phenomenon. Start in the top left-hand corner. It went forward 100 and right 30; then it went forward a little less and then right 30, and then forward a little less. And you see, as it curves around into a spiral, it is getting smaller and smaller and smaller so it gets to be zero when you get to the top of his nose there, or whatever that is, and it gets to be negative and the Turtle backs out and you get the same thing generated on the other side through it.

I have seen kids going through an intellectual

crisis. They say, "How can you get bigger when you are subtracting?" They had been taught the rule well enough and even wrote the program, but when they saw it, it was for some of them an intellectual crisis, something inexplicable and something they had to come to terms with. And it is that sort of crisis indent that makes the child look inside himself, makes him determine whether he is going to get involved in mathematics and ever be able to do it and make it part of himself. And then the opportunism, turning it into a rabbit, is playing with mathematics.

Here (indicating slide) is another example. The kid wanted to make a man, a stick figure like that. We had often emphasized with these kids, "If the Turtle doesn't do the thing you told it you wanted it to do, let's see why did it do that," and by pursuing the mistake, "debugging," in computer terms, you understand why it did what it did and that gives you a source of powers to make it do what you want it to do.

So the kid wrote this program (indicating). You can't see all of it. It doesn't matter. And what it did when he wrote that terrible program is that it did that (indicating).

So we said to him, "Understand exactly why it did that." So he goes staring at that and staring at that and he can't understand it because it is too complicated.

So the kid came to me and said -- I haven't taught most of them, by the way; most have been taught by many other people but this particular incident was in a class I was teaching.

He said, "How do I get it right?" I said, "You know how."

He said, "How do I get it right?" and I said, "You know how."

And he said, "You mean divide it up into sub-procedures?"

Now I had been saying to these kids often -- because nobody wants to do that. If you want to draw a man or do anything, you want to jump in and do it. What you don't want to do is subdivide the problem and work on each part systematically. That is a kind of approach to carrying out projects that is terribly important but we have a resistance to doing it and only apply that discipline when we are forced to.

In school, especially elementary school, there is never any opportunity to be forced to do that and to acquire that sort of mental discipline.

DR. BURGESS: You should have been here this morning.

(Laughter.)

PROFESSOR PAPERT: So says the child -- this (indicating) is the program he eventually wrote -- "VEE, HEAD."

He had written separate programs defining the word "VEE" and the word "Head." And he meets one of the most important ideas in mathematics and science, that what you are working with is always simple, but once you have many simple things you can join them together in a simple way and get another thing and it gets very cimplicated in terms of your starting point but at each state you can comprehend something. And in fact we encourage these children always to write their programs so no program is much longer than that and it is always comprehensible in terms of previously defined notions.

So there (indicating slide) is his man again. You see the VEE's in the legs and arms and a separate thing called "Head."

Another example of bugs and debugging (indicating slide). Somebody wants to make a heart because it is Valentine's Day so he finds a triangle is a bit like a heart. The plan was to take a triangle and replace the first line of the triangle by the word "Top", a procedure which would draw it over into the right-hand corner. Only what happened was what you see down there (indicating) because the child had forgotten about a thing called a side-effect, another important thing in projects. So debugging to correct side-effects is really the substance of what these children are learning and we maintain maybe that is a more substantial thing than angles and lines, and maybe even biology and all

this stuff you are teaching in this way.

So if you didn't like that heart you can go a step further and turn it into this one (indicating slide) and make flowers, and there is no end to it.

Well, the slides were only meant to be an introduction to the movie, so you can't really see the exciting things they were doing because the movie involved action.

I will stop there for the present.

MR. MARTIN: However unfair it may seem to the other members of the panel to have to follow Professor Papert's presentation with all that exciting display, I think we will go ahead with all the panel participants' presentations before we throw it open for general discussion.

I suggest that perhaps we might ask Truman Botts to speak next. He is the Executive Director of the Conference Board of the Mathematical Sciences, and the report of the Committee on Computer Education of the Conference Board is among the documents which members received for this meeting. It contains the recommendations regarding computers and high school education which have been developed by the Committee on Computer Education, one of whose members, Dr. Atchison, will be speaking next.

Mr. Botts.

MR. BOTTS: Well, at least the members of the committee have copies of this report, and so I will comment on

it only very briefly and then try, along with my colleague, Professor Atchison, to answer questions. Professor Atchison is in many ways better qualified than I am to answer questions. He is a member of the committee that produced this report and he is, himself, a computer scientist, which I am not. My own background is in mathematics.

And before I start I might just say a word about what the Conference Board of the Mathematical Sciences is. It is an organization of organizations. It has ten members, each of which is a professional society with some interest in the mathematical sciences.

If you have a copy of this report, the ten member organizations are listed in italics on the inside front cover. They begin with the American Mathematical Society and go through alphabetically nine others.

Altogether these ten societies comprise perhaps a hundred thousand individuals, and the largest single one is the National Council of Teachers of Mathematics with 46,000 members, the great majority of which are, themselves, secondary school teachers.

The purpose of the organization is sort of two-fold. First of all, it maintains an office in Washington which is very small, which I run, directing primarily my own efforts. And it serves to exchange information between the professional mathematical community on the one hand and what

you might call the Washington scene, consisting of many government agencies, professional societies, and umbrella organizations like this in other fields, and so forth.

For that purpose it has a newsletter it produces four times a year, and this is distributed on a complimentary basis to all the chairmen of mathematical science departments in four-year colleges and universities, and it is also distributed rather widely to some 100 or 200 people in government agencies. It has position papers and also has informational articles.

The second thing that this organization primarily does is to concern itself with projects in the mathematical sciences that are broad e-ough so that they cut across the interests of several of our member societies. And that is the nature of this particular project which issued in a report called "Recommendations regarding computers in high school education."

I think those of you who have had a chance to look at them will agree that they do tend to bear, in one way or another, on all three of the areas of interest for this particular meeting which Mr. Martin read out at the outset.

One of those, of course, had to do with the current state of education in the second grade in elementary schools.

I might point out that while the primary thing that has been done in elementary schools has been to use computers

as an aid in instruction in one form or another -- and we have just heard of a very interesting form of that -- for secondary schools a massive and rather forbidding, and tiring to think about reading in detail, study has been made, and it is referred to at the back of this volume, and some, at least, of the members of the committee who are interested in following this out might want to know it is called "Survey of Computing Activities in Secondary Schools," Item 5 in the bibliography.

Well, the recommendations themselves delineate by implication things that are not being done today, but which are in fact needed. And to many of you it may seem a very surprising thing, but it is certainly the case that very few of the recommendations are being followed out except in a spotty way, an experimental way, in a few regions of the country.

We did find, by the way, that there are some regions of the country where interesting things are going on in a fairly massive way in urban school situations.

To name several of these, there is the region up around New York City. There is the Philadelphia region, the region around Minneapolis and St. Paul, Denver, and the San Francisco Bay region. All of these are fairly large urban concentrations, and there are some interesting things going on at the secondary school level in these areas.

Well, since I don't think everybody has a copy of this report and since I have been warned by Mr. Martin not to assume that anybody has read it anyway --

(Laughter.)

MRS. HARDAWAY: Boo.

DR. BURGESS: That is off the record.

MR. BOTTS: I would like to at least go through the motions of reading them through in their brief form as they appear on pages 1 and 2 and making a few brief comments about some of them, and then I will pass to our next speaker.

It says, first of all, "We recommend the preparation of a junior high school course in computer literacy designed to provide students with enough information about the nature of the computer so that they can understand the roles which computers play in our society."

That might be rather ambitious sounding if you took it literally, and there are a lot of us who really don't understand all of that, but at any rate perhaps a little more informal description of what is intended is sort of what every future citizen needs to know about computers. And the emphasis is perhaps on the "every" there because the conception of this course is that it would be given at the 8th grade, be approximately a semester course or be taught part time over the period of a year, but it would be aimed at almost all students, and wherever possible, as the course's

conception is described, a few pages farther on in the pamphlet here, it would hope to involve students in direct interaction with computers. Almost everybody on the committee felt you could hardly do anything without that.

But it is already an extremely severe restriction now as far as the present equipment lodged in secondary schools is concerned.

It was also hoped that the course would illustrate the wealth of applications of computers and that it would in some real sense address social implications and issues of the kind that were brought up earlier in connection with this committee's own work, that is, questions such as data needs on the one hand versus privacy on the other, the dangers of computer misuse, and so forth.

Our own organization is now preparing a proposal for the National Science Foundation to develop such a computer literacy course and the basic follow-up course on computer proficiency, which would also be a semester course, and of course would be highly introductory in nature, although it wouldn't perhaps aim to acquaint all students with that kind of thing.

Let me read -- I will read the second recommendation which comes in a slightly different way farther along in the report. It says, "We recommend that the process of preparing the text materials for the above course be such as to

provide wide and rapid dissemination of information about the availability and feasibility of the course." But behind that, if you read the report in a little bit more detail, you will find a conception of how these courses might best be prepared, in somewhat the model of what was used in the so-called new math, through intensive summary-writing sections that will bring together practicing gifted teachers on the one hand, and experts in the field of computer science on the other, who will jointly work on the writing. The writing will be tested in a limited sort of way in a variety of regions of the country during the succeeding academic year. There will be some test instruments developed and in the succeeding revision session,the following summary, it will be hoped that these materials can be pushed closer to the actual needs as the test year revealed them.

Well, the rest of these recommendations for a while, at any rate, are concerned with the kind of follow-up courses that would seem to be desirable. After one has a computer literacy course, a basic course in computer proficiency, which in fact would probably use a computer language called Basic, or parts of it -- and there, too, there are problems because there is no quite standard computer Basic for use in various kinds of equipment but that is a problem we don't think is terribly severe.

This would be followed by modules, small units that

would use computers both in connection with mathematics courses which offer special opportunities for this -- or opportunities of a certain sort, perhaps no greater opportunities, really, than other fields, and also in the field of science and other fields.

The actual recommendation says:

"We recommend text materials for a number of other courses be prepared drawing on 'An Introduction to Computing' as a follow-up to the computer literacy course, some models which integrate computing into high schools mathematics courses, others which utilize computers in simulating behavior of physical and social phenomena which enable the use of computers in courses outside mathematics."

Then the recommendations go on to the need for special programs for students who show special aptitudes or gifts in the direction of computer science, itself. It is felt that these probably cannot be carried out except in the neighborhood of a nearby university where you could interest computer scientists in guiding the work of such gifted students.

Each one of these, by the way, is elaborated in a good deal more detail in the body of this report.

It also calls attention and it says:

"We recommend a major effort aimed at making vocational computer training more generally available and at

the same time improving the quality of such training."

I will go on and read the rest:

"We recommend that the National Science Foundation provide support for the development of a variety of programs for the training of teachers and of teachers of high school courses involving computers."

And, finally:

"We recommend the establishment of a clearing-house for information about high school computer education."

I think that we must realize that in any general adoption of even a small part of a computer curriculum of this sort in secondary schools, there are two major obstacles among others.

One of these is that there must be, if we are going to go very far with any of this, computer access on the part of the children and teachers of the schools. And that does not really exist, except in a relatively modest number of places so far. But the technological prospects, at least I am told by people who know this better than I do, are really very bright for this in the future. I had somebody say to me not too long ago that he had seen the design of a computer which ought to be produced like two or three years from now which would have roughly the capacity of the IBM 704 in 1960. It would cost a few thousand dollars and the IBM 704 cost close to half a million dollars.

So these kinds of things are perhaps possible in the not-too-distant future, and that is talking about a single so-called free-standing computer.

The same sort of technological progress is to be anticipated in connection with time-sharing networks, where on a time-sharing basis a large number of terminals can gain access to a very large and capacious computer.

So that is one of the major problems, and it might even be an area in which HEW or at least the U.S. Office of Education could hope to play a major role, that is, in helping to provide this kind of equipment to school systems two or three years from now.

The other major area which will cause problems in the indefinite future unless it can be met and dealt with is this broad area of the training of teachers. The whole network will stand or fall with that, whether or not the teachers are in sufficient numbers and become sufficiently able to teach these courses with competence and authority.

There are short-term stop-gap kind of procedures which undoubtedly will have to be followed to some extent. That means the in-service training of teachers who are already in the game. They come back to learn more during the summers or during the academic year in special programs. But the feeling is that the really long-term solution to the problem has to come in the pre-service training of teachers at

universities and that is certainly where the major thrust of this recommendation is if you read it.

I think, as a matter of fact, I will stop right there and not try to go farther. I will be glad to yield to Professor Atchison and try to answer questions later on in the question and answer period.

MR. MARTIN: Like the concern about the social implications of computerized information systems which we have seen exists not just in the United States but throughout the world where computers are making their impact felt so, in other countries, concern exists about the need to overcome computer illiteracy and to enhance a sense of understanding about the social implications of computerized technology.

Professor William Atchison, a mathematician by training, will in the course of his remarks, I hope, indicate how it is that he comes to be qualified to share with us an insight about developments of this sort abroad, and also to contribute a beginning to our understanding of what is happening in this country.

Professor Atchison, who is Director of the Computer Science Center at the University of Maryland.

PROFESSOR ATCHISON: Well, I am not sure I am qualified, but let's put it this way, I have been involved in trying to promote, shall we say, computer science education for some 10 or 12 years, and let me try to face up to

the situation you mention there.

Unfortunately, of course, I don't know what this committee has been exposed to before so forgive me if I overlap something that has been said previously.

I would like to say a couple of things that overlap the two previous speakers. First of all, in trying to promote computer science education -- I don't know how many talks I have made in various and sundry places over the last few years and let me say to Papert here that frequently I have defended my talk by referring to your work, indicating the work that you have been doing and how it indicates people are capable of doing the kind of thing you were showing here which I think is an extremely important thing.

And in connection with what you were saying about developing the mathematical kind of land thing I was reminded about a committee Mr. Botts and I chaired a time ago in which we tried to evaluate some of the efforts that had taken place primarily in Africa. I remember we had a guy from our committee circulate around over Africa to see what was being done in the way of mathematics in Africa. The most impressive thing they said to me when they returned was they commented they had been in some kind of community way off deep in Africa somewhere where the kids hadn't been told they couldn't understand the modern approach to mathematics and did beautifully, just ate it up -- right? It is really a

different kind of thing. It was their attitude more than anything else that motivated them and let them go. I thought that was appropriate to add to what you are saying, by the way.

Let me give just a little bit of a background.

I have been working in computer science education for a long time and most of you, I am sure, know that computers and computer science education started in the graduate area and sort of worked its way down. You may have not seen the statistics. There are 206 Bachelor programs in computer science in universities right now. So this has come up very, very recently and has come up very, very rapidly. And it has been shifting very strongly to the secondary school area.

After having worked quite a lot in the college area -- and I did quite a bit of work in connection with something called "Curriculum '68" which was a complete undergraduate degree program in computer science, some of my friends in the secondary said, "Bill, come over and talk a little bit on the secondary school area so we can kind of move in the right direction." So, as a consequence of that, I got involved in a number of committees at the secondary area. And in that connection I would like to quote just a little bit from the report which Truman Botts mentioned, this report that was made by the ARI, the American Research Institute. I guess that came out in about 1970, and they said in there

there was about 13 per cent of high schools that were using computers for instructional purposes and 30 per cent using it for instructional and administrative purposes.

I spoke at a conference not very long ago at which some guy came up to me afterward -- an equipment manufacturer, I might add -- very unofficial -- and said, "We have run a fairly careful study and we feel at least 20 per cent of the high schools are now using computers in their instructional purposes." So this is an indication of how rapidly this thing is going. I think this is extremely important and I think it relates to your committee, if you please.

I think one of the most important things is to get these darned teachers to do a good job. They have to be properly motivated in order to do it right. And this is why some of the committees I am on are spending a lot of time in this business of teacher training because you know it just doesn't fly. I went into mathematics because I had a good mathematics teacher -- you need some guy that can motivate you and get you going. I think this is horribly important.

To switch a little bit -- as he ineicated here, he wanted to get a picture of what else is happening in the United States. Let me start out by pointing out that in 1970 there was this world science conference in Amsterdam and I thought it was an interesting collection. I don't think there was anything especially new that came out at that

particular conference but, on the other hand, there was a whole group of people from 42 different countries, I think, that had a chance to share their ideas in computer science education. And they came up at the end, if you please, with a set of recommendations which I am not going to read, about nine of them, but this set of recommendations really urged both national and local governments to work hard at this business of computer education, to work hard at the training, and particularly they emphasized this problem of teacher training which is horribly important.

The interesting thing to me is that at that conference there was a tremendous concern about what is happening at the lower levels. Maybe this is the proper place for me to say something to the extent that I think you may find even more concerns about the problems this committee is addressing in the smaller countries than you have in the United States, because where you have a smaller country they are really concerned about the privacy of files because they can do it a little bit quicker and faster and so on. I won't go into that. So I have been involved in a number of discussions like this.

This world conference was sponsored by something called the Federation of Information Processing. I have been associated with this group for some time. I am a member of this Computer Science Education Committee and again, because

of my interest in the secondary level, I ended up being chairman of a group on secondary education which again is at the international level. And the amount of interest that there is in essentially -- well, most of the countries involved -- is amazing, particularly at this level. They are concerned and they are concerned with getting education, getting people pointed in the right direction very soon.

In this committee which I have been concerned with here on secondary education, we have been a relatively active committee. We have published a little booklet -- in fact, we came out with what we called an orange booklet, an early version which we have revised to the blue booklet I am showing you here entitled "Computer Education for Teachers in Secondary Schools" supposed to be a guide for teachers. This, of course, is just an outline, and we are now involved -- at one time we thought we would try to write a complete course for teachers that would be usable on an international level. Obviously we ran into difficulties as we were trying to think about that. But what we are trying to do now is we have agreed to come up with a series of booklets to supplement this which will sort of be the basis for a course, and in this we will cite the kind of things that are done in different countries. France does it differently than Germany and so on, and we will try to get some illustrations of each one of those things.

So in Atlanta, Georgia, in June, our committee wrote the first of the series of booklets that will supplement this (indicating). The first one was entitled "Aims and Objectives of Computer Studies in General Education," and I just read the manuscript on that a few days ago and that should be available within roughly a month. And I am not going to read the series, but let me just point out that the last two, for example, booklets that are mentioned that we will do, one on the computers and subject disciplines -- we hope to have one to sort of indicate how computer methods can be used in many different subjects -- and I think this overlaps what he was talking about, if I can get back to some of the substance of it -- very strongly. And the tenth one in the series is computers in society.

Interestingly enough, when I made my report of the committee to the vice president or whatever he is of IFIP, the International Federation of Information Processing, he wrote back that those two bookets are extremely important, "you can ignore the rest of them" -- which I thought were important, too. But these are the two things where there is a great deal of emphasis.

And at any of these conferences I have gone to recently there is great concern with problems of privacy and problems of how we get these things and I feel very strongly of course that the education system is part of it. It is not

the whole solution probably, but I think it is an extremely important component.

In the work of this committee on secondary education, IFIP, we have been cooperating with the Organization for Economic Cooperation and Development, commonly known as OECD, and particularly the sort of sub-group of that, the Center for Research and Innovation. This group has been having a somewhat parallel effort on computer science education on the secondary level and we sort of come together every so often and have agreed to cooperate in the development of the ten booklets which will supplement this (indicating), and they have agreed to accept the major responsibility on the one in Computers in Society and in other subjects, and ours will carry the major responsibility on the other eight, so to speak. But we do work cooperatively on this.

Here is a book "Computer Sciences in Secondary Education" put out by OECD as a result of a conference they had in the secondary education field, and they have quite a few papers that are out also that relate to the same kind of thing.

So this again, I think, indicates the general emphasis on their kind of thinking.

I thought it was extremely interesting, shortly before the world conference on computer science education there was a Western European Conference on Computer Science

Education and I was one of two Americans who went and they didn't know we were there, I think, and so they made some cracks at Americans. I could tell you some amusing things. Some of the countries wanted some strong sets of recommendations that they could carry back to their countries and get something done in the area of computer science education.

Spain, for instance -- I remember this guy particularly -- they had to go back and change their laws before they could get something done at the secondary school level. So the problems in the different countries vary quite a lot. They were concerned that if they could get recommendations they could go back and get the laws changed to do more training.

Another indication of interest in this whole area was this summer there was a Conference on Computer Science Education in Rio de Janiero sponsored by IFIP and a number of other organizations, aimed primarily at countries and in addition to the university level education there was a lot of work at the secondary level. I chaired a panel here and couldn't get it stopped. We kept going way past the hour and in fact we went in and completely overlapped the next panel discussion. The people were greatly interested and concerned at what they could do at the secondary level in this training area.

At the next UNESCO meeting which is coming up in

October, IFIP in cooperation with some other international organizations will be making a presentation to UNESCO in connection with computer science education. There is a report being prepared at this time right now that will kind of reflect the computer science education area. So this is another one.

Let me also just point out one other thing which might be of interest to you.

As I was talking about the different countries, one of the members of our secondary education committee is back from France and he is a very vivacious kind of fellow and the French have taken a different approach than some others of the thing they are trying to do at the secondary level -- they have decided they will not have computer science courses at the secondary level. They don't use the word "computer science" but "informatics." They are not going to have the informatics courses at the secondary level but they are trying to get the methods of that interpolated into other subject areas, and they have been running courses on a national basis in order to train teachers. I think it was last year they had o-er 2,000 teachers that they trained and they were not predominantly mathematics teachers but teachers of many different subjects that were coming in and getting this training in order to use it.

I know we are running into a little bit of time

here but let me get back a little bit, if I may, to the local scene.

The Association for Computing Machinery -- I am chairman of their Education Committee. We have a number of committees concerned with education within ACM and one is an Accreditation Committee which concerns itself with the quality of work that is done. It started originally with commercial schools which do a pretty bad job and we have looked at that problem for a long while. Then we have a curriculum committee in Computer Science which developed Curriculum 68. And we have a committee within ACM which is trying to do something, but unfortunately we have had a little trouble in that committee because the secondary teachers can't come to the conferences. They don't have the financial backing. And then the Curriculum Committee or Computer Education for Management has recently produced a report in this area.

And just recently we started a junior and community college curriculum group. We hope we can get sometning going in that particular area.

So this is a kind of brief report on activities, I think, that are moving toward the computer science education problems we have and which I hope sooner or later will help solve the problem which your committee is wrestling with.

MR. MARTIN: Thanks very much, Professor Atchison.

Inducing change in education in America, as Professor Papert reminded us, is a very difficult task. The National Science Foundation and the U.S. Office of Education have bent their lances on that challenge for many years. The Office of Education as yet has not perceived the opportunity to address its efforts to the problems with which this committee is wrestling. Leadership on this front at the federal level is being taken by the National Science Foundation. The program director at the Science Foundation concerned with its effort to address computer impact on society, is Dr. Peter G. Lykos, who will be able, I think, to tell us something of what the aims and present activities of the Science Foundation are against a background of why it is seeking to do that which he will be describing.

Dr. Lykos.

DR. LYKOS: I have a couple of overhead transparencies so I will move up there, if you don't mind.

The chairman asked us to give a little bit of background about ourselves so you could put our remarks in context, and I ought to preface my remarks about the National Science Foundation with some of that background material.

I am a professor of chemistry on leave from the Illinois Institute of Technology, which is in Chicago, with the National Science Foundation for two years, and 14 months into that two-year period. You might wonder why a professor

of chemistry got involved with computers. My research is in theoretical chemistry and years ago I began to use computers. Professors involved in graduate research are also involved in undergraduate teaching and I brought the computer into use and one thing led to another and I lived through an evolutionary process of four generations of machines. I ended up building up an academic program in computer science. I guess it is a story that is familiar to many. I see Bill Atchison smiling because it is a story repeated many times.

I also had a nephew in a local high school who invited me to address a computer club in the high school and instead of giving that club 50 minutes of discussion I offered to repeat for them what I had been doing for juniors in physical chemistry. They were pleased to have that opportunity. As a consequence of that little introduction I found the high school kids were highly motivated and well able to master the basic ideas involved in computer programing, so I suggested we broaden that opportunity for kids in the greater Chicago area. And that touched off a cascading process which amazed a number of people, I guess.

It ended up that over a period of ten years a very comprehensive and elaborate program of Saturday sources for high school kids on our campus evolved, where the kids paid fees to come to our campus on Saturdays to learn about introduction to computer programing, languages, and computer

applications.

Shortly thereafter, because the kids were going back to their high schools and using these strange terms, we got appeals to do something for high school teachers and started generating Saturday workshops for high school teachers. We then got a one-hour course at the freshman level for those incoming freshmen who were deficient. We then started developing senior courses for teachers and that culminated in a master of science for teachers.

Some of the things that have been happening locally are the sorts of things the conference report is talking about.

I brought along several exhibits since I didn't know exactly what the interests of this group would be. I brought along one of each and brought along others which we can make copies of if there is interest.

There was a presentation made last April describing this master of science for teachers in computer science. It gives an outline of what the courses were and so on and something of how the whole program evolved. One of the courses is a course entitled "Computers in Society" and that is what got me to the National Science Foundation.

I also was involved in activities for the State of Illinois Board of Higher Education. It is trying to organize itself statewide and I got to know Mr. Gentile in that connection. I also got involved with the National Research Council,

which is a kind of action arm of the National Science Foundation, and chair a committee there on Computers in Chemistry. It is gathering information, transforming information, modeling information, and making predictions, and the computer is used in a way in chemistry which is unique to chemistry in terms of range and emphasis. As part of that activity we have infected the American Chemical Society, which is a large organization, to expand its short-course program in order that professional chemists could learn more about what is going on. So that is a technique for diffusion.

That was also used to infect the Association for Computing Machinery. Some of the techniques learned there were transferred to the Association for Computing Machinery.

In addition, that committee led to a week-long conference last summer concerned with computers in chemical education and research in an attempt to bring to the attention of the teachers in chemistry and researchers in chemistry the new things that could be done in pursuit of chemistry,now that the information processing machine was available. The sequel to that week-long conference last summer will happen in Yugoslavia in a conference of a week's duration.

The National Science Foundation in the Office of Computing Activities determined that it somehow wanted to come to grips with the impact of the computer on society -- and this is a very nebulous kind of thing. If you look at

that statement literally, you just have to examine every aspect of our life because the computer is impacting every area of human endeavor. So how do you begin to find some shape, some form, some handles -- and this is particularly relevent in the context of the National Science Foundation because it happens to be a federal agency which doesn't do in-house research. It makes grants and those grants are for specific projects and those projects have to address themselves to specific objectives and these have to stand up to the scrutiny of refereeing, a peer review kind of thing. Presentations have to be made to the Congress of this United States justifying the moneys which are being spent in this regard. So I thought it might be useful to perhaps give you a slight overview of the National Science Foundation and then comment on some of the programs being sponsored by the NSF which I think bear on the questions which are before you.

In a sense, this is a view of the NSF from within and without. You really can't appreciate the nature of the organization and how it operates until you have been in it for a while -- at least that has been my experience.

In the first place, it is an agency of the federal government. It is part of the Executive Branch. There is a director of the National Science Foundation who nominally reports to the President of the United States so this organization can be responsive fairly quickly to changes in national

policy as they affect policy. The director deals with the Office of Management and Budget and also the Office of Science and Technology.

It is unique as a federal agency in that it has a National Science Board which works closely with the director in determining policy, what kind of things will be considered. The Board is made up of 24 people, three groups of eight, so the appointments are staggered.

There are five assistant directorships within the National Science Foundation. The oldest one is the research directorate which I have over on your left (indicating chart). That was the original reason for the formation of the National Science Foundation. The Research Directorate is concerned with the welfare of health and science in our country and it does this primarily by making grants to university professors doing research.

Originally the research was largely in the so-called hard sciences, physics and chemistry. In 1968 its charge was broadened to include so-called soft sciences and things like social sciences came within the purview of the National Science Foundation. In addition, applied science or engineering came to be approached as well.

A fairly recent arrival on the scene is the so-called research applications directorate. That arrived about three years ago as a consequence of the realization

that here we have a lot of great things happening in terms of new technology, but very little of this seems to be affecting the man on the street. There is the usual cliche that we can put a man on the moon but can't collect the nation's garbage. The RAM program was developed. Incidentally, the numbers which appear under each of these letter designations are Fiscal 1973 programmatic funds in millions of dollars, to give you some idea of the size of the National Science Foundation. The overall budget is about $600 million a year and to put it into perspective, that is the annual budget of the Chicago public school system. You can read into that what you like.

We also have an Educational Directorate and this was concerned originally with a sort of three-pyramid structure. It is devoted to supporting the cause of science in education at the pre-college level, the undergraduate level, and the graduate level. It is undergoing a massive study and reorganization currently and I will comment a little bit more about that later on.

As you are well aware -- and you may have already had a presentation on it -- there has been formed the National Institute for Education and that raises the whole question about what is the structure and form of the Educational Directorate within the National Science Foundation.

The Directorates I have talked about very briefly

up to now make grants to individual researchers who submit proposals describing some work they want to do and how they plan to go about it and what they think it is going to take to accomplish it. But while these are primarily grants to individual investigators, the National-International Directorate supports facilities. The National Center for Atmospheric Research located out in Boulder, which has 600 staff and is concerned with the atmospheric sciences, is supported out of that Directorate. In addition, there are radio astronomy observatories scattered around the world and they would be supported out of that Directorate.

At the time the National Science Foundation wanted to formally recognize computer science it didn't know where to put it. The National Science Foundation has the same problem the universities have had, so, not knowing what to do with it, they created an Office of Computing Activities and put it in the National-International Directorate.

There is a fifth Directorate which is concerned with the administration and it does administration. It has lawyers to worry about the details of how contracts and grants are written and so on.

So there is the structure of the National Science Foundation.

There is a division concerned with social sciences and there is a division which has a number of special programs.

There is one called "Special Projects."

Within RAM there are several divisions and the one that comes closest to your concerns here is the one concerned with research applied for the nation's needs, and they are concerning themselves not only with the computer which is an information-processing machine which you can't discuss independently of two-way cable TV and so on, but they are taking these global views and have these global concerns.

In Education the computer has been reacted to not as strongly and in as concentrated a fashion as in OCA which I will comment on, but for the moment this master's of science for teachers in computer science which I mentioned before has been supported by the Educational Directorate of the National Science Foundation and there is an on-going program which started just a month ago called an Academic Year's Study Program sponsored by the Education Directorate and teachers from institutions taking this master's of science.

Now, within the National-International Directorate I put in OSIS as well as OCA. OSIS stands for Office of Science for Service, and that came into being because it was a separate and distinct act of Congress which wanted to have created within the National Science Foundation an entity which was going to concern itself with the publication of scientific results and material. And so that became the chief

sponsor which aided professional societies to upgrade or expand their publication effort.

It has gotten out of that business almost entirely in the recent past and has come to concern itself with computer networking information, data banks, things of this nature, and is also moving into the area of data banks involving actual data gathered in scientific experiments, whereas up until this point in time it concerned itself with author-literature references, abstracts, and things of that nature.

One of the things this office did was to be involved in a recent symposium that Professor Miller was involved in -- I don't know if he is still here -- of legal aspects of computerized information systems. And incidentally, I got hold of the recording of one of the after-luncheon speeches made there by a barrister from England, Paul Sigert, which I think is an outstanding, clear, capsule statement of the problem of confidentiality and the alternatives available to us in addressing that problem in addressing this situation. We can make that available to you.

The Office of Computer Activity, itself, has three sections in it. One is called Computer Science in Engineering. If that was all there were to it, it would be in the Research Directorate. That section provides support to university professors primarily who are doing graduate research in

computer science as a discipline.

Another is called Computer Innovations in Education. And that section has instituted a number of activities which have affected what has been going on in this country in terms of computers and education, including secondary education.

For example, the report that was cited which was done by the American Institite for Research -- that is an activity which was supported by the Computer Innovations in Education section in OCA.

A number of regional networks were created starting back in 1968 and we in IIT were part of it. An attempt was made to pick a university which had demonstrated by action programs a concern for the impact of the computer on undergraduate education and to try to diffuse some of the knowledge and experience which had been gained there. So starting back in '68 and since that time, almost 30 such regional networks were created around the country -- not really networks, techniques of remote access to a university computer from college campuses within a reasonable physical proximity. Associated with that was a program of curriculum development and an attempt to blend into the undergraduate curriculum problem-solving and decision-making.

In addition, out of the Computers Innovations in Education there was started recently a massive demonstration

program attempting to in one step better define something that has been around for a long time but isn't well in hand, namely computer assisted instruction. There has been a lot of discussion about this and a lot of misunderstanding about what it is, and I suppose in some sense what I am going to describe is a definition in itself. But there are two systems which are being supported as a demonstration, the system that the University of Illinois developed at Urbana, which is novel in a number of ways. It involves a massive computer interface of terminals in an innovative way using a TV channel, so the cost of supporting a computer remotely is driven way down.

In addition, it has evolved over many years of experience at Illinois so it had to come to grips with some of the basic problems and that is the so-called Plato TICCIT, Time-shared Interactive Computer Control Interactive Television. That is being done here in McLean, Virginia.

They are working together with a group at Brigham Young University, who are developing a program that is different in thrust, and I think that comes closer to the realities of our educational enterprise. That provides an opportunity for a small community to have its own system, but in many ways it is similar to the Plato system.

Educational Testing Service is a third body brought into that system for the purpose of independent

monitoring and evaluation. That involves some 20 millions of dollars over the next four years. So that is another kind of thing which has come out of the Computers Innovation in Education idea.

There are others, but I won't have time to develop all of them.

I was brought there to give some shape and form to this thing called Computer Impact on Society. There was no slot, so since I am a professor of chemistry doing research and have run a computer center and so on, they felt the best place to put me was in a third section called Computer Applications in Research. While I was there I got a couple of neat things going, but the background mode was the evolution of this new thrust.

This is a kind of interesting time to talk about this because there does not at the moment exist a formal entity within the National Science Foundation which bears this label. It is possible that by Monday it will. So we are that close. So it is a kind of timely sort of thing. So this is a kind of pre-announcement -- you know how things are in the federal government -- which may not come to pass.

But the question was: What do we envision as the impact of the computer on society? What are the kinds of things that can be done in approaching that problem? Of the things that can be done, what are the things that should be

done within the National Foundation? And of the things which should be done in the National Science Foundation, what is going on there and how can these be drawn together and so on so we can have concerted thrust?

And this (indicating) is sort of what we have come up with. This has not been published and when the final published form appears I am sure it will be different from this. We haven't heard from all the precincts yet, so the final returns aren't all in. But it sort of reflects chemistry in a way. In chemistry you talk about organic and inorganic chemistry. Inorganic is a word for saying it is not organic. So it is organic or not organic.

So we have the impact of the computer on organizations and the impact of the computer on the individual. Each of us has this balance problem, the problem of functioning as an individual and also the problem of being an element in a larger thing called society and it is the balance between these which dictates how we live.

It seemed to us the first thing we wanted to take a look at was what you might call management science or administration, that the major impact of the computer is in fact supportive to management and to decision-making. This brings us to one of the things that the Office of Computer Activities supported, which was alluded to by Bill Atchison earlier.

There was an ACM -- Association for Computing Machinery -- committee concerned with the impact of computing programs on administration. Part-way through they decided what this country needs is an extended master's degree program in management information systems. In fact, they came up with a detailed curriculum describing this and I will leave a copy of this with you and additional ones are available as well. And I think this is an extremely important document. For one thing, it focuses attention on the problem, namely if we are going to realize the potential that the information processing machine affords us, we have to close the gap between the people doing the administering and the availability and use of this tool.

The second reason it is important is it outlines a specific academic program put together by a committee with excellent credentials, sponsored by organizations with extraordinary credentials. That means if an administrator has sensed he has been in a bind and it is difficult for him to articulate that problem and he didn't have a platform from which to speak, he now has the club which he can use because he can say, "This is the kind of thing I am talking about. Now let's get together and do something about it."

The third thing it does is provide a checklist of competencies which are needed to implement this, and there are sociological elements present which have been overlooked

considerably up to now and that is brought forth as well.

I can't really do this thing justice, but there you are.

MR. MARTIN: Thanks.

DR. LYKOS: Each of us as an individual really moves through interacting spheres. One of these spheres is there are certain rules which represent the codification of social mores, which is our legal structure and that is based on our information technology. And therefore anything which provides a large enhancement to that has got to affect that.

The next one is an economic sphere and that is we have something we call money and that is used as a measure of value. Ultimately we have to project whatever we want to do to that yardstick. Our society has a finite number of resources, and the number of things people dream up that they want to do exceed those resources. So we have to project it on a scale and that is what the scale is and that again depends on informational technology. And how quickly this system can respond to changing needs again depends on informational technology.

Then we come to the problem of real time use, robotics and traffic flow, which I won't dwell on.

Then we look on the individual and say, How is this going to affect the individual? What are the key problems? What are the things we ought to focus on? The subject

of this meeting, information systems? What about the role of the individual in these information systems? We have to worry about ease of access, accuracy, intelligibility, confidentiality.

These are things which have to be identified, have to be spoken to and people who are doing research and development in computer science and engineering have a lot of tools to be brought to bear on this as it affects the citizen. We are not talking about specialized groups such as the people in the Department of Defense have been concerned with or people in hospital care units and so on, but the average citizen. A lot has been done which hasn't been pulled together in a way that it has addressed itself to groups of our various societal sections.

That sort of speaks to the second point.

And then we have the problem of impact on life styles. How are these changes going to be received? How are they going to influence the way people operate, the way people actually go about living their lives?

This means that anything which is done here is going to have to be done in very close cooperation with people who are experts in this area, people who are concerned with sociology. There has to be a blending of these technologies.

There are a couple of specific problem areas -- I will read them off to you -- which we see as immediate kinds

of objective. One of these is the role of mini-computers in and supportive to small administrative units of industry, government, and academia. This has a large potential available right now and is very far from being realized -- role simulation, gaming and modeling, in planning, analysis, and training supportive to administration.

The role of machine-based information technology in the creative arts and design -- which may seem perhaps a lower priority, but after all, people concerned with drama are trying to communicate that and information technology can be supportive to that. Even such things as a recording systems for choreography -- there is a system which can be reduced to machine form which hasn't been done.

The use by citizens of machine-based information resources.

And finally, the focus on gathering technology to facilitate communication through the human-machine interface.

These are the kinds of things which, having wrestled with this for a while, we perceive as thrusts that need to be addressed by this new program in the National Science Foundation.

There was a conference at Dartmouth in June of 1971 on computers and undergraduate curricula. An address was given by John G. Keminy who played a large role in really

bringing the computer to bear on many programs within Dartmouth College, and he became the president of Dartmouth College. His address was called "Use, Non-use, and Misuse of Computers." I brought with me a transcript of that presentation. One thing he called attention to was among all the other things we should be doing in terms of relieving computer illiteracy is we need to get after the accreditation societies, agencies, commissions. We need to ask such questions as: "What is your curriculum content and how well does that reflect what is actually happening in that discipline as far as the impact of the computer on it?"

As a chemist I can tell you chemistry hasn't reacted adequately and I doubt that chemistry is different from other disciplines.

This is not computer-assisted instruction. This is revision of the curriculum itself to take into account new and more powerful problem-solving techniques now the computer is available.

What about standards for teacher training? These things need to be addressed and the accreditation societies themselves need to be involved in this.

Within the Association for Computing Machinery, there are a number of operating entities called special interest groups. There is a special interest group called "Computers in Society." Here is a copy of their newsletter

and the people who can be contacted there. That is by way of information.

There is an organization -- and the incoming chairman of the board is Bill Atchison -- EDUCOM, which is an Association of institutions of higher learning, which has -- forgive me if I don't state this adequately -- but it is trying to, through cooperation among institutions of higher learning, discover ways in which they can enhance their efforts through cooperation, particularly in areas which involve information.

And there is an issue, a special issue of "Teaching Computer Science," which has an article "Computer Science for the Anti-Computer Non-Scientist," which I think is probably as nice an overview of a course outline on computer impact on society as you are likely to find.

So I will leave that with you.

The last thing that I have as a kind of exhibit is something I met at a local Unitarian Church last Sunday, and it sort of struck a responsive cord so I thought I would bring it to your attention. It is an announcement of a College for Community Change. The college's name is Comunitas. It is a two-year college but it is a two-year college at the junior-senior level, not at the freshman-sophomore level, and really addressing itself to the problem of how you get citizens educated and involved in things which concern

them in their every-day lives. And certainly the question of data and confidentiality is part of this. So I bring that to your attention as well.

I guess I can close with just two comments.

As far as I am concerned, the primary significance of the Computer for Society is its function as part of information technology.

On the other hand, the two major political parties have both adopted a platform planning opposing national data banks. So I think we have a real problem.

Thank you.

MR. MARTIN: Thanks, Peter.

I am going to seek the advice of the committee as to what we should do at this moment in time. We had expected to have completed this panel presentation and have had some discussion of what we have been told by our panelists and by now we had hoped to have been under way with what is scheduled as the last presentation of the day by John Williamson, who is prepared to tell us something about one of the only courses seeking to teach or offer the opportunity to participants to learn about the social implications of computers through an interactive program with a computer. John, how long do you expect your presentation to take?

MR. WILLIAMSON: Given the look on their faces, about ten minutes. I can give an overview and any depth we

can go into after supper with a demonstration.

MR. MARTIN: If we went ahead with John's presentation now, we might then perhaps have the discussion informally over supper in an individual way, or if you prefer, we could hold John's presentation until briefly after supper and have some discussion now. What is the pleasure of the committee?

PROFESSOR WEIZENBAUM: I am afraid if we postpone the discussion till later, some people may disappear and they may believe that silence, especially my silence, implies consent, and I don't want that implication to get around at all. So I vote for a discussion now. In particular, I vote for leave to speak for a minute or two.

MR. MARTIN: How do the rest of you feel? Shall we have John Williamson briefly now, and then a little discussion and then go to dinner? We have a few guests with us whom I should identify briefly who may wish to participate in the discussion: Park Anderson, Director of the ADP Management Training Center at the U.S. Civil Service Commission; Laurence Grayson, Division of Technology Development, National Center for Educational Technology; Herbert McArthur, Director of the Division of Education Programs at the National Endowment for the Humanities; Donald MacPherson, Educational Director of the Data Processing Management Association.

I think those are the only ones we invited who actually made it.

Don, did you have something?

MR. MacPHERSON: I wonder if anyone has brought to the attention of the committee a very large group of individuals, none of whom were discussed today or considered in the discussion as far as I can tell, and that is the adult who is working in an environment where he requires additional education to maintain his proficiency in his work. Our association is about 26,000 individuals representing these types of individuals, adults working in data processing as managers and first- and second-line supervision.

My function as an education director is to serve the needs of this group of people and therefore that makes me a little different breed of educator than perhaps the vast majority in this room.

The efforts of the Association are legion. The one I would draw most attention to, however, if I had this opportunity, is the certificate program offered by the Data Processing Management Association and one which we are attempting now to actively encourage -- with some success, I might say -- the interest of other technical societies. A little bit of introductory material respecting our association was passed out for the members of the committee during your coffee break.

The CDP program, certificate and data processing program booklet and another booklet is offered for your

consideration. If you have time to read half of what I have seen passed out today it will be a miracle. I wonder where our materials will fall in your hierarchy.

MR. MARTIN: They have been distributed.

MR. MacPHERSON: Yes, I know. This program is ten years old, the only one of its kind in existence and in recent months there has been a strong indication of genuine interest between our association officers and the hierarchy and the Association for Computer Machinery to consider in principle the implementation of the Computer Foundation offering certification and testing programs and hopefully other programs -- one, I might suggest, would be research. And this activity is open to other technical societies in the data processing industry. We have expressed interest in participation by these other societies.

Between ACM and DPA we have over 50,000 people making a living in this industry and therefore there is some demonstration of potential if this effort is successful.

I am merely taking the time to commend this program to your attention.

MR. MARTIN: Joe.

PROFESSOR WEIZENBAUM: Aren't we going to hear him?

MR. MARTIN: Yes, John, why don't you make your presentation and then we will get Joe's reaction, whatever it is going to be.

John Williamson is a research specialist at the Rand Corporation in Washington now. Previous to this he was working at the Northwest Educational Research Lab of the Office of Education and before that he did graduate work for a doctorate in the School of Education at Harvard.

MR. WILLIAMSON: Prior to coming to Washington this year -- by the way, with Mr. Ware here, I made up that name "Research Specialist;" is that right?

MR. WARE: I wondered where that came from.

(Laughter.)

MR. WILLIAMSON: For the past several years I have been in Oregon on various joint appointments between the public school systems in Portland and research and development institutions, the Northwest Regional Lab, and then an institution associated with the Oregon State System of Higher Education.

During the year 1969 I was associated with a curriculum development project at the Northwest Regional Lab known as REACT, and the purpose of that program was to develop a curriculum program of computer literacy primarily designed for teachers, but certainly with the intention that a parallel program would be developed for curriculum materials with students.

The idea for this curriculum was that it was to complement much of the work that had been going on in the

schools with respect to the computer in education, primarily that work taken from the point of view of computer sciences and computer careers orientation.

The orientation that we took came really from the point of view that, one, the obvious point, that the computer was to have a major and massive impact on the lives of individuals during the adult years of the students, and that this kind of impact was of a rather unique variety, particularly because the computer really was not a single well-defined machine in any sense. In fact, in a fundamental way, the computer is not a machine at all; it becomes a machine when it is programed. So you have a computer that is a data processor, one that is a theorem prover, language translator, a public utility, possibly, a continuous process controller, music synthesizer, and even the mock turtle.

So the computer is a lot of things. It is not one. And we were trying to take that perspective into account; in other words, that while relatively few individuals are probably ever going to be in the business of computer programing or actually solving problems through programing the computer, everybody was going to be living in an environment where he was continuously impacted by the computer.

So one of the points of view that we took in this curriculum development was that to try to develop a way of approaching the curriculum so the computer would become more

in the environment of the student, total environment of every student, rather than being confined to maybe 30 students in a computer science course in a high school.

From the subject matter perspective -- and it has been pointed out by a couple of the speakers that a computer is a valuable tool conceivably in almost every subject that is being taught in public schools. It can be programed to simulate a genetics experiment, a business, whatever -- an economic situation or whatever.

And so we took an approach to the problem in which we attempted to design, and we did design, prototype curricula that cut across all the subject matter areas. And so the books you were sent is one of, I think 11 and there is one of these in almost every one of the disciplines.

I will skip over a lot and get specifically to the interest of this group.

One of the things that we thought was critically important dwelt specifically on was the computer impact on society and approached it from the point of view that the impact was not well-defined, in other words, it wasn't something that you could tell students about in any didactic way. In other words, it was something that we were going to be involved in creating, in generating, that the real problems of the computer impact on society was how they dealt with the moral, ethical and social questions. And so what we hoped to

do was to develop a series of computer simulations in a variety of impact areas: Man-machine thinking, computer utility, machine learning, natural conversation, interaction, and privacy issue with personal data banks.

The idea was to develop computer simulations. For example, the one I brought with me is the one described in the book, a simulation of a data bank in which the data in the data bank was student information. These programs were designed -- for example, this info program was designed not to be an efficient data processor or retrieval system but strictly for instructional purposes. So it is a program that the student or teacher or whoever uses it doesn't need to know anything about a computer except how to turn out teletype and answer questions.

It is designed for instructional purposes, as you will see after supper.

And the idea of these simulations was that they should be sophisticated enough so that the significant variables involved in the questions of privacy, for example, with the data bank could be confronted by the student. In other words, the data in this program can be adjusted by the teacher but essentially it is set up to store a variety of kinds of information about the student. And these are mock students in there. But there is data that almost anybody would think, "Well, that is public information, like my age." There is

other information that is kind of semi-private, in other words, that a student might be willing to have a counselor know, but really isn't all that public.

And then there is some information like whether he has been under psychiatric care before or whether his parents are divorced or something like that that the student may feel to himself, "That is private. Why would anybody want that information?" but it could conceivably be used for statistical reasons. It could be seen that that would have some social value.

And so this is the data in the machine and the program is designed for interaction between the students and the program where he is really confronted with being able to look at data that he considers private, that in various contexts the computer, for example, can engage in certain statistical processes so he can see that maybe it is interesting information for somebody to know whether there is any correlation between the use of drugs and low grade point averages, for example -- that that might be important for a school to know, but the individual information is pretty private.

So the one that is of particular interest to this group is the one that was developed as a simulated information data bank. There is another one of possibly a little less interest but certainly it is on the agenda of this committee and I am sure is a community utility possibility. And then

the other one described in this booklet is a man-machine poetry-writing machine.

But all the programs have in common that it is on the one hand a reasonably sophisticated program that contains the variables that are important in the application. And yet it is hopefully designed so that it does not require a computer background, that it encourages natural interaction with no previous preparation or minimal previous preparation. And the important part is the curriculum materials developed surrounding it.

I won't go into detail here, but if you will look through the exercises that are attached to these programs you will see that they are really asking -- they aren't asking for specific answers, but they are asking students to really confront their own moral values, what they think about people having access to a lot of data, what they would do about it, the kind of policy they would create, what is the weaknesses in the program, how could they be changed, and so forth.

I do want to say a couple of other things -- and this is a closing comment. And a couple of them have to do with this type of instructional use of the computer and a couple of them are more general.

One is that I think that this particular type of instructional use of the computer is rather interesting and

possibly important because if you think about it a little bit, there is nothing inherent in these materials or in this way of approaching the problem that necessarily requires a school situation or a classroom situation.

For example, the League of Women Voters or any other community group with access to a teletype and a reasonably sized computer that uses the basic language, could use this same program for discussion purposes.

It can be used in a variety of settings, does not even require a teacher. The actual curriculum materials possibly would have to be adapted and they certainly should anyway. But it would have to be adapted for school uses but it would be a rather public way of education.

A couple of other comments -- oh, one other thing about this type of program. It is a prototype right now, but it seems to me that it could be well extended in certain areas. For example, there is no reason why sub-routines couldn't be programed to simulate various policy alternatives. For example, if the students or whoever say, "Well, I would like there to be stronger security codes on these so that certain people would be able to get at all the information and other people parts of it and so forth," that sub-routine could be flagged in and they could run the program with that policy or with the policy that individuals are able to look at their own information and make any corrections -- that

policy and talk about the pros and cons of that. So it could be extended in rather interesting ways.

The more general comment I have is that I think that structurally there is a real crisis, at least in the formal public school sector in educational curriculum for the computer impact. I say this for several reasons. I don't dispute the facts about how many schools the computer is in, but when I was with the Northwest Regional Lab we did a follow-up survey of some of those estimations and found that many of the schools that think they are using the computer -- it is a trivial use, if at all, and may be affecting a very small number of students, maybe as few as 15 or 20 in a school of a thousand.

There is not widespread education, even in the public schools, of the computer in any form.

Also I think that in a certain sense we are at a disadvantage -- because the high wave of enthusiasm over the computer in education has passed. In spite of the fact that I think in the survey that was done by the committee staff -- it is not that this is such an exemplary case of curriculum development. It is the only thing they could find. In spite of the fact there have been a lot of projects that have supposedly developed materials, curriculum materials for the computer, a lot of the work is very poor and you are going to be hard pressed to find something of any substantial value

around in curriculum. And so I think that there needs to be some sort of major effort in this area.

Also organizationally, the funding sources aren't there at the moment. There is one very small program in the Office of Education that does a little bit of funding, but from a very definite point of view. There is no general mandate to the Office of Education right now in the area of computer literacy, let alone computer impact on society.

Also there is no particular mandate in the new National Institute of Education and I am reasonably familiar with the planning going on there and you just don't hear the word "computer" around the halls. And I am very encouraged by the fact that it looks like Peter Lykos is going to have an established program on the Computer in Society but NSF also has this problem. So we are probably at a point now it isn't too bad we weren't at ten years ago when people were willing to spend the money because I think we are in better shape to know what should be done. But I think one of the big problems is just the support for education.

That is all.

MR. MARTIN: Thanks very much, John. I hope you will all have the opportunity during the dinner hour to take advantage of interaction with the program which John had such a large part to play in developing. I do know for a fact that he has spent a good many hours over the last several

nights -- if I understood more about computers and programing I would know more about what he is doing but it had something to do with getting the program for this on a computer in Atlanta and he was doing it by telephone at weird hours of the night.

Joe, before we break for dinner I think it would be most inappropriate of us not to hear what you were moved to comment by the panel.

PROFESSOR WEIZENBAUM: If you didn't give me the opportunity, I don't think I would be able to have dinner.

I will try to make it as mercifully short as I can.

I think some of the things our last speaker said were correct, particularly with respect to the poverty of the educational material that is presently available, that there just isn't a lot of good stuff around. I may have said this to this group before, quoted Will Rogers when he said, "It ain't what we don't know that hurts us; it's all the things we know that ain't so." And I think there are a lot of things that have been said here or at least implied that Will Rogers would criticize on that basis.

I think we are near the end of what may be a unique moment in history, that is, that there has been this enormous interest on both the part of the public and particularly on the part of educators on all levels in the computer. And there are many cries, as we heard just now, for major efforts

in instruction in computing and all its related sub-fields and so on.

It is clear to me that whatever is done -- and it may be too late -- is going to have very nearly irreversible effects. And so if we do things badly, if we do harmful things, then we are going to have to live with the history that we build up for a very long time.

And I think almost everything that I have heard -- and I might say I didn't hear Seymour's presentation, unfortunately, but I have heard it before, and assuming that he described the work that I know about, I exclude that as a singular and remarkable exception from what I am about to say.

Almost everything we have heard, I think, falls in the category of being fundamentally harmful and wrong. Whether it can be reversed or not, whether it can be stopped or not and something else substituted for it, I don't know.

Mr. Atchison said, I think correctly, that teacher training is a terribly important problem; it is a terrible necessity. And he also said that teachers at the moment are very highly motivated.

But motivation isn't enough. There also has to be understanding. And I think the computer community, itself, the professional community, itself, generally speaking widely misunderstands the computer. The kind of understanding that I think Seymour has and tries to communicate to his little

students is fundamentally correct, I think, and is fundamentally not shared except by an extremely small population of possibly ten or twenty adults, many of whom Seymour has trained himself, and perhaps 40 or 50 children trained by those adults and by Seymour. And Marvin Minsky and others, of course, are in this, too.

Just as an example of this is the recommendation that Basic be used as a fundamental computer language to teach to little ones. Now, Basic has done yeoman service at Dartmouth and in a sense I think Professor Kemeny really must be congratulated for the wonderful effort that he has made there. Yet something else has to be said about Basic.

Basic is a pedagogical disaster. There is no question that it can be easily learned. But what it teaches one about computers, computation, programing and computer languages is approximately 170 degrees, if not 180 degrees out of phase with respect to what it ought to teach and what especially youngsters should know about computers, computation, and computer languages.

For example, Seymour has demonstrated and I, in my own classes, have demonstrated that the idea of recursion -- I am speaking technically for just a moment -- that the idea of recursion comes quite naturally to children, that it is one of the deep mysteries to college freshmen -- and I by all means include MIT freshmen; perhaps I should say

particularly MIT freshmen -- that is, by students who have learned wrong and harmful computer languages and computer techniques earlier on. For them recursion, which is a very fundamental idea -- and it is just an example, just an example -- for them recursion is a deep, difficult mystery, perhaps as deep and as difficult as say quantum mechanics was to physics students in the 1920's.

Even when they learn it in some sort of mechanistic sense after some therapeutic instruction -- even then they fail to be able to use it naturally.

And I emphasize this is just one example. There are many, many other examples of this kind.

And the problem is that there are too few people in the computer community, itself, who understand what I am now saying and who are therefore in a position to educate the teachers who will then have to carry the burden. In the meanwhile, we rush along, you know, headlong, creating new generations of teachers, and so by a process of cascading and multiplication and so on, we deepen the harm that not only teaches children and other young people wrong things, but makes it very, very difficult for them to learn right things later on.

So much for that.

One more comment on this book that you have talked about and that I have seen. I saw it for the first time when

it was mailed to me.

It is another example of the kind of thing that I am talking about, where again, "it ain't what we don't know that hurts us; it's all of the things we know that ain't so."

This book is full of things that ain't so and are very, very harmful to teach, it seems to me.

With respect to the information retrieval program, for example, I think the illusion is created that these tiny little programs display problems in information retrieval in their generality. And it turns out that one of the difficulties that the computer profession as a whole is experiencing is that things don't just scale linearly, that simply because you can get an informational retrieval system going that retrieves one out of a hundred possible items or one item out of a thousand possible items, that those same techniques can be used for a very large information retrieval system, or that the same problems that you faced with respect to privacy or anything else in that little information retrieval system are the problems that you are going to face in larger information retrieval systems of the kind that we as a committee worry about.

The second point:

There is a little thing here, just a few pages on what I suppose is passed on to children as a sample of artificial intelligence. I am talking about this "Man-Machine

Into Action," which writes poetry. And the terrible thing it does, after saying in effect how terrible such things are, it then presents a counter-example -- "Everything is terrible except this," it says. The thing it does is to give young, impressionable people an impression of what a poem is which will probably disturb their future appreciation of poetry or their future ability to write poems and even to read them very seriously. It pretends that a poem is something that is a concatonation of words and what is important is the number of lines in each stanza and the number of syllables, and if the lines rhyme and scan -- I don't know if the program worries about scanning; I don't think it does from what I read -- then it is a poem.

I don't think that is what T.S. Elliott would call a poem, and I think when we have ten or 20 poets in one generation of the human species, then we should look at those ten or 20 poets, not at terrible stuff like this. And to impress students that this has anything to do with any kind of reality, I think is wrong and harmful to the extreme.

Finally, on page 101 of this book -- if I had more time I would make more detailed comments -- on page 101 of this book, there is a little self-quiz.

Question number 2 -- and there is room for the answer -- question number 2 asks a question, the answer to which could be the result of a research project lasting a

lifetime on the part of two or three good people. The question is, "Contrast the social impact of new technology in the past with the social impact of the computer" in so many words (indicating).

(Laughter.)

And again the illusion is being created, first of all, that there are answers to such questions -- this is, after all, a quiz -- and furthermore, that the answers to these questions are easy and short and definite, and that we know or that the teacher knows and he is going to look at this and he is going to grade it. He is going to say that is 80 per cent right, or 60 per cent, or it is a C, or a B, or whatever.

So I feel as if -- I apologize for these words in advance, but I just don't know any other words. I feel as if I have suddenly fallen among technological madmen. And this is enormously harmful. And I think it is an illustration of the kind of thing that I started to talk about in this committee on Day One, and I have been hard pressed occasionally to look for and to find and to present to you, my colleagues on this committee, vivid illustrations of the kind of thing I am talking about.

Well, now you have three or four.

MR. MARTIN: Arthur.

PROFESSOR MILLER: Without intending to disagree

with my learned technological collegue and not trying to delay the dinner hour, might I suggest that the committee look carefully at the quiz, because that much space (indicating) is offered for "proposed legislation to help resolve the ethical issues that may arise if the national data center is implemented." And, most fortunate of things, there is an answer which the book provides us, and I think that our committee report lies right here on page 106.

(Laughter.)

SENATOR ARONOFF: I move we adjourn for dinner.

MR. MARTIN: We will do that. We will resume in this room at about 8:15 to receive some thoughts which have been reduced to writing by members of the committee who saw fit, during the course of the afternoon, to continue the work that took place this morning.

Let me just say that tomorrow morning in this room, starting at 9:00 -- and I would hope that everyone could be here really promptly -- there will be a unique panel presentation for your benefit.

We have heard discussion, both in the context of criminal justice systems and credit reporting and employment systems, of the problem of the failure of the end of the story, which starts with an arrest or a creditor lawsuit to be written in all the records in which the start of the story appears.

As near as I can learn from Nancy Kleeman, who deserves credit for helping to organize this panel presentation with Richa-d Penn of the National Bureau of Standards, tomorrow's discussions will be the most concentrated, involving the most people who are in positions to influence the situation, to help diagnose the problem to begin with, that has ever been held, and nearly all the participants and the discussants have in one way or another urged that this committee give very serious consideration, depending on how well it goes tomorrow, to publishing separately and apart from anything else it does, the proceedings of tomorrow's discussion for wide dissemination in order to focus attention on the problem which the committee has identified.

Obviously, that discussion will benefit from having all the time scheduled for it and having as many members as possible here to participate in it. With those words, I bid you a good dinner.

(Whereupon, at 6:40 p.m., a dinner recess was taken until 8:15 p.m.)

EVENING SESSION

MR. MARTIN: Let's resume the business of the meeting.

Let me first say, for those of you who have perhaps been wondering, the chairman designated three members of the committee to serve as the subcommittee to consider about a meeting outside of Washington, sometimes referred to as a regional meeting. The committee consists of Guy Dobbs, Don Muchmore, and Florence Gaynor, who have had some interaction with the chairman by telephone, perhaps also with each other, who will welcome any insights or advice or comments that any member cares to provide them with, and will have something to say on Saturday at the committee discussion meeting, about regional meetings.

What is your pleasure now as we resume our consideration of the report? We have a new piece of paper, the product of an afternoon session involving Layman Allen, Gerald Davey, Guy Dobbs, Bob Gallati, John Gentile, and Jim Impara. And you also have in your folders some materials that were prepared by Willis Ware. I believe they are on the left side of your folder.

MR. WARE: They are on the right side of mine.

MR. MARTIN: Excuse me. They are on the right side of your folders.

Guy, were you sort of the chairman of the afternoon

discussion?

MR. DOBBS: I guess as close as we came to having a chairman, I was it.

MR. MARTIN: Do you think it would be appropriate to draw the rest of the members of the committee into what you came out with?

MR. DOBBS: Sure.

MR. MARTIN: Would you like to do that? Does everybody have a copy of the memorandum of September 28 headed "Recommendations with respect to the Advisory Committee's Final Report."

MR. DOBBS: What we tried to do in our little session was to accomplish a couple of objectives, only one of which we really got to in any detail.

It seemed to us this morning we were having some problems with scope of the report, and so we tried to spend some time trying to refine the scope of the report as we saw it in several dimensions. And if you will look at that piece of paper without my really trying to read everything, you will note that we tried to talk about the format that we thought that the ultimate report would take, some of which had been addressed in the staff outline already.

We tried to talk about one of the more important reports, the one that we called the pamphlet-length report, which we see as receiving fairly wide distribution,how it

ought to be structured.

We tried to pin down the kind of systems that we were going to make recommendations about and we make some statements in there about that.

We tried to limit the scope of the report to the United States so as to make it manageable -- including Puerto Rico, of course.

Then we talked about the form that the recommendations would take in terms of the kind of instruments, that is legislation, policy determinations, education, and technological safeguards and recommended that it may be necessary for the committee to sort of break down into four groups to discuss recommendations or deal with recommendations in each of these areas.

So, briefly, that is what we tried to accomplish with what you see here, and I guess that the rest of the committee can take a sharp knife and cut away and ask questions about and/or elaborate on any of this.

The second thing we tried to deal with a little bit was the structure of the recommendations, themselves, from the viewpoint of how we ought to go about providing a framework for stating the recommendations. And we essentially ended up saying that Arthur's suggestion of this afternoon, which really was broken into four parts, which says that we should state our recommendations almost as a statement

of principle, as an initial statement of principle in bold face or black letter statements, as he puts it; that (b) there should be an exposition which articulates the basis, the evidence that we can cite, at least for the principle, that sort of dictates the policy and the pros and cons; (c) that we should illustrate how the principle applies or doesn't apply; and finally (d) caveats and warnings and cross references that ought to be associated with the recommendation, itself.

Having gotten to that point, the next exercise that we were about to embark upon was to take some of the statements from the staff, particularly the two pages of issues which relate to individual privacy, and to try to frame some principles from that set in the format that I have just described.

That was about as far as we got.

I guess the other thing that came out of that which really was sort of at the tail end was the issue which Willis raised and I guess Gerald Davey responded to, and that is: To what degree do we really have consensus on the philosophy or the principles amongst the committee?

And I guess Jerry felt that there had been very strong consensus all along on various issues, and I made the statement to Willis that when we looked at those statements of individual privacy in the report this morning, when we looked at those two pages, I didn't hear anybody in the room

stand up and shout and say, "Gee, I really don't agree with those." But Willis points out that he, at least, didn't stand up and say he doesn't agree with them but on the other hand he doesn't necessarily agree with them, either. He points out, and rightfully so, that the question wasn't framed that way.

Is that a fair statement?

MR. WARE: That is correct.

MR. DOBBS: So the issue as to whether or not we are, quote, "together" or not on philosophy I guess is still moot in Willis' mind.

MR. WARE: And where we are together, what is the argument and/or data that supports it?

I don't have any trouble with most of what is written down here until I get down to VI and VII. And that is the stumbling block that we have been hitting all the time: What are these recommendations?

MR. DOBBS: Okay, the trouble that you have is that we haven't made those recommendations? You haven't any trouble with those four categories?

MR. WARE: I don't know whether I do or not because I don't know yet what the recommendations are to be.

MR. MARTIN: Guy, just at the very end you were starting to deal with a particular substantive recommendation, weren't you?

MR. DOBBS: Yes.

MR. MARTIN: Do you think it would be fruitful to do what you were saying, to test this model by taking up that specific recommendation and starting to see if we can develop a consensus around a substantive recommendation?

MR. WARE: But let's not get sidetracked in trying to cast it into the Miller form.

MR. MARTIN: No, no. First we have to define the recommendation.

MR. DOBBS: Let's try one. I guess the particular one that Layman had left us with was the problem of the record holder having an obligation to notify the supplier of information that the data that he was supplying --

MR. GENTILE: Is this it?

MR. DOBBS: The way he put it was: "Unless there is a compelling social justification, the responsible member or members of institutions maintaining personal data systems shall have a duty to individual subjects to notify individuals of the liability of data to disclosure by subpoena."

That is the way Layman had stated that.

MR. WARE: Will you whip around that one again.

MR. DOBBS: "Unless there is a compelling social justification" -- and presumably one would have to list what some of these compelling social justifications are -- "responsible members of the institution or institutions maintaining

personal data systems shall have a duty" -- and "duty" you might want to put in quotes -- "to individual subjects to notify individuals of the liability of data to disclosure by subpoena."

MR. WARE: Doesn't he mean unless there is a compelling social justification to the contrary?

MR. DOBBS: Yes, to the contrary.

PROFESSOR WEIZENBAUM: Well, that is extremely poorly worded, to say the least. I am sorry Layman isn't here. Perhaps he wrote it --

MR. DOBBS: Do you want to supply some better wording?

PROFESSOR WEIZENBAUM: No, I wasn't finished. It is not just that I worry about syntactic structure or the kind of thing you just called attention to, but clearly if this were to be implemented, say by law --

MR. WARE: What would you implement by law there?

PROFESSOR WEIZENBAUM: That a law is passed that unless there is a compelling social justification, et cetera, various government groups would have the responsibility of notifying subjects that the information, et cetera. Okay, if that were in the law, then it would imply that the responsible agency has to also notify the subject that a record is being kept on him. And that is a very strong thing to suggest. Perhaps we do want to suggest it, but it is a very

strong thing to suggest. And if such a strong thing is to be suggested it should not be suggested inferentially. It should be suggested directly.

Clearly if I have a responsibility to notify someone who is giving information to me that the information he is giving to me may be subpoenaed, I am in the process of also telling him that I am keeping information on him.

MR. WARE: Okay.

PROFESSOR WEIZENBAUM: And that is much, much stronger than what this is intended to recommend. And clearly the strong statement should be explicit and things that can be inferred to it may be or may not be explicit.

MR. IMPARA: We took that because it seemed to be a fairly straightforward one and what you are saying is recognized and could be changed "that at the point of collecting from the individual the collecting agency," et cetera. At that point the person knows the data is being collected about him.

MR. GENTILE: I think you are right, Joe. The language could be improved. The main thrust there was on the subpoena matter. We did talk about a separate recommendation saying that if a record is held we have to notify the person and intended to treat that separately.

MR. WARE: Forgive me but I think that is a trivial point.

PROFESSOR WEIZENBAUM: The one I just made?

MR. WARE: No, the one Guy read.

PROFESSOR WEIZENBAUM: I was going to say that of all the recommendations we could begin to chew on, this is by far not the most meaty, it is by far --

MR. DAVEY: That was by design.

MR. DOBBS: Remember, we are talking about this merely in terms of whether there is consensus. We are not going to put any merits on its priority.

MR. WARE: But you haven't even picked the right words. What you want to do to the respondent who gives information is to make him aware of the legal consequences of his action of which the subpoena is probably just one.

PROFESSOR WEIZENBAUM: Yes, and perhaps the least important in many cases.

MR. DOBBS: I hear what you are saying, fellows. I say, accepting the fact that the subpoena is just one of those possible actions, do you agree? Is there consensus?

PROFESSOR WEIZENBAUM: Oh, I agree.

MR. WARE: But I wouldn't make a recommendation to that effect.

MR. IMPARA: This was selected to go through the format. We didn't think it would get a lot of argument.

DR. GALLATI: Why wouldn't you make a recommendation?

MR. WARE: Because I think it is trivial. All it

speaks to is a lack of knowledge of the law on the part of the citizenry and I don't know why we should ask for an executive order to clarify that. There must be a whole host of things on which the citizenry is uninformed.

MR. IMPARA: The other thing we talked about is if we could come up with a list of issues as on page 16 and 17 which is not exhaustive, some method of prioritizing them. From what you said, this one would have a low priority and may not be a recommendation. This was thought of as something on which agreement could be made to demonstrate a model for going through the rest of them which would have a higher priority. We didn't want to get argument on the substantive part of it but were just looking at the model.

MR. GENTILE: Willis or Joe, would you like to substitute a different type of recommendation on a different subject so we could use that in developing an example format?

PROFESSOR WEIZENBAUM: Yes, certainly.

By the way, I didn't get a chance to say it earlier, but I think especially Chapter V -- altogether I think the staff obviously worked its fanny to the bone on this stuff and should be congratulated. Whether one agrees with every word or not, there is obviously a hell of a lot of work in this and I was very much impressed, not only with this document but with all the other documents we got.

I think almost any of the duty-right pairs qualify

for the kind of template sort of test that you suggested.

For example, one might as well start with a random number like 1.

MR. DOBBS: We started with a random number on the second page.

PROFESSOR WEIZENBAUM: But the reason it is on the second page is because a lot of cognitive background had been laid by reading all the previous ones, so I think that makes a difference.

Let's take 1 for example. Can we test whether there is consensus in the committee that barring compelling social or legal or whatever justification, which would have to be made explicit, that an institution gathering records on individuals has the duty to inform each individual that a record is being kept on him?

That is as good a test case as any. Okay. Barring explitly stated justification to the contrary --

MR. WARE: What are we doing, seeing whether we agree? Do you want to take a straw vote?

PROFESSOR WEIZENBAUM: Of course it would have to be a larger body than this, but --

SENATOR ARONOFF: A straw vote would be interesting. I am fully prepared to vote on the one you have there. I wonder in terms of your logical place to start, is there consensus that there is a right of individual privacy that

should be recognized and protected, a broad statement of number 1 where you start on the committee? But that doesn't get into specific recommendations and so forth, but you have to almost start there as your starting point.

MR. WARE: Let's take that as a premise to get going.

SENATOR ARONOFF: You are just assuming that nobody disagrees with that.

MR. WARE: I say for the purpose of argument accept as a premise that the right of privacy exists and should be protected.

SENATOR ARONOFF: Which is a non-existent right right now.

MR. WARE: Agreed.

SENATOR ARONOFF: All right.

PROFESSOR WEIZENBAUM: Parenthetically -- I don't want to launch a debate on this point, but just parenthetically I think we should in the final report start even further back, that the government, HEW in particular and the Secretary most particularly, recognizes the dignity of individuals to be absolutely fundamental, that it must not be violated, and that many of the rights and duties that we are talking about here flow from that consideration.

For example, I don't believe that privacy is a fundamental, so to speak, axiomatic principle of human conduct.

I think it is a derived principle of human conduct, derived from the much more fundamental principle, namely of the dignity of the human individual.

Okay, once you deny his dignity his privacy may as well disappear. I don't mean practically, but then it can't flow from anything. And I would like to see in the final report such a derivation. I am not talking about pages and pages but a sentence or two. So there are even more fundamental things here.

SENATOR ARONOFF: Yes.

PROFESSOR WEIZENBAUM: But I think if we could agree on the sort of thing that is listed here on pages 16 and 17, then to find the wording that does the kind of derivation that I personally would like to see -- the committee may or may not go along -- would be relatively simple.

MR. GENTILE: Can we get back to the specific example, number 1, that you very well stated.

PROFESSOR WEIZENBAUM: Yes.

MR. IMPARA: I am kind of curious how many are in agreement with the statement that Joe made.

(Show of hands.)

MR.IMPARA: I would like to get more clarification.

MR. DOBBS: What clarification?

MR. IMPARA: Are you going to inform at the time data are collected?

MR. WARE: That is sufficient.

MR. IMPARA: In other words, if I am collecting data on you from a third source --

MR. WARE: In some cases it would amount to an extra line on the form for which you signed.

RPOFESSOR WEIZENBAUM: I learned something today for which I am very grateful -- what Arthur said today about a restatement,you know the principle is stated and then by means of examples and caveats and so forth -- that is the way I think this should be treated as opposed to trying to get all the ifs and buts and neverthelesses and howevers into the one statement.

MR. IMPARA: I understand but there are two situations, at least two situations in which a record can be informed. One is I ask you for information and you give it to me. The other is I ask Jane for information about you and you give it to me.

PROFESSOR WEIZENBAUM: I would say the principle, neglecting the whereases and buts and so on, should be that barring some compellingly overriding consideration, an institution that gathers a record on an individual must inform that individual of that fact, period; okay?

Now it may be that that record is gathered inferentially, as a consequence of his having used a credit card, say. That may be covered in the ifs and buts and howevers

that are covered in the restatement. But I think the principle should cover all of these things. Then we recognize and will find wordage, ultimately, to differentiate between this kind of record-gathering and exempting that kind of record-gathering and all that. But the general principle I think should be clear.

MR. MARTIN: Taking the model that the group this afternoon worked on --

MR. DOBBS: You are talking about the other thing in terms of the instruments?

MR. MARTIN: Yes. John's suggestion was we take a recommendation, and for the moment there appears to be consensus among those present that that is the recommendation the committee would wish to make.

The next question I would take it would be: In what form, under recommendation 6, will it be cast for purposes of implementation? Is this to be by legislation, policy determination?

MR. DOBBS: These are not mutually exclusive.

MR. MARTIN: No, I realize that. But isn't that the step you go to next? Isn't this your recommendation, to inform an individual that a record is being kept or is to be kept?

MR. IMPARA: No.

SENATOR ARONOFF: The first thing you want to do

is get your consensus on the principles, the restatements that you are talking about, and then after you've got your list there I think you go and figure out --

MR. MARTIN: I see. Add some more recommendations first.

SENATOR ARONOFF: Yes, get your consensus of the committee this way.

PROFESSOR WEIZENBAUM: For example, in this particular case I could see this being implemented in all the four ways listed here, that is, in part legislation, sometimes policy determination, certainly education of people who do question asking, and certainly technological safeguards that the computer itself automatically generates the notice and mails it. This could be all of these in this particular case, I would guess -- that is a guess.

MR. MARTIN: Understand you are not going to be able to leave it as a guess.

PROFESSOR WEIZENBAUM: No, I understand. I am addressing myself sort of to the group dynamics.

MR. DOBBS: I guess what we are working on is trying to make sure that Willis' point is addressed, and that is: Is there consensus on these things, no matter how they may be stated? And we are okay on number 1; is that right?

MR. WARE: It seems so, at least tonight.

PROFESSOR WEIZENBAUM: I think many members have caveats that they will agree to this providing a sufficient restatement can be generated.

MR. GENTILE: And we have the mechanism now to add those caveats to the bottom of the paper.

DR. GALLATI: This will take working up but at least the black letter part has been agreed.

MR. DOBBS: All right, we have number 1. What about number 2?

MR. IMPARA: You are pressing your luck.

DR. GALLATI: Shall we go to number 2?

MR. WARE: If we do this for a while what it is going to amount to is what is called sometimes an information bill of rights -- that is not quite the right phrase.

MR. IMPARA: Before we go to number 2 could we pursue the model a little more and see what kind of descriptive phrases we have about number 1? The reason I say that is we don't have very many people here and I would hate to do it and have to redo it in the morning. So if we can work on the model as far through as we can get it tonight and review it tomorrow or Saturday morning or whatever and then begin going through the rest of them --

MR. DOBBS: I guess according to Arthur's model, without trying to word the statement of that principle which I guess we all understand, the next part would be an

exposition articulating the basis or the facts that support this principle, both pro and con.

SENATOR ARONOFF: This is where I would disagree with Jim, though. I think we ought to go as far as we can tonight.

MR. DOBBS: Even without the rest of the group?

SENATOR ARONOFF: Just for once let's see how much consensus we have on just going up and down the group here and then break down and do one that you are talking about. But we never seem to get off 1 once we start getting all the individual caveats in.

MR. GENTILE: I think if we do that, Stan, we are going to get hung up on one of the issues --

SENATOR ARONOFF: I guess I am in the minority.

PROFESSOR WEIZENBAUM: When that happens we can simply say, "Okay, there is controversy about that; let's skip it," and go on.

PROFESSOR MILLER: I must say the experience I have had in working up a document of this kind indicates that in dealing with the exposition and the examples and the caveats, it is typically better to work against a draft, to have a sort of a stalking horse. Because the dynamic typically is whether a particular idea gets pushed up into the black letter part or comes in by way of illustration. And if you have a sort of concrete document in which you can be

manipulating real sentences, it is often better. But if you just want to play your way through on it, it still might be useful. But you can get awfully hung up when you do it in the abstract.

And I think the group will come to appreciate the fact that there is real negotiation that goes on as to which portion of the four sections a particular thing goes into. Indeed, that is one of its great virtues, that you can satisfy virtually everybody by putting his thoughts somewhere.

(Laughter.)

PROFESSOR WEIZENBAUM: My mind boggles.

MR. MARTIN: Well, do you want to play it out, as Arthur suggested, or do you want, as Stan suggests, to go to the next recommendation?

MR. WARE: Let's work through the black pieces.

PROFESSOR MILLER: We are going to make lawyers out of all of you.

MR. WARE: I know what "head note" means, too.

MR. MARTIN: What is the next step then, Guy?

MR. DOBBS: Where are we?

SENATOR ARONOFF: Take number 2.

MR. WARE: Yes, let's work it on the rights column.

MR. DOBBS: Okay. Working with the rights of the individual, "It shall be the right of the individual" --

again with the caveat of no compelling social reason -- "to be informed of the content of the record containing information about him."

Do we agree with that?

(Show of hands.)

MR. IMPARA: Say it again.

MR. WARE: Let me comment. I am uncertain because I don't understand the implications of the word "be informed of the content."

MR. DOBBS: Okay. I guess "content" could mean two things. "Content" could mean a description of the fact that the record contains certain kind of data, data elements. That would be one way to describe content.

Another way to describe it would be the specific values of data that apply to the individual.

There are two levels.

MR. WARE: And "be informed of" -- does that mean have visual access to or have a third party certify to him or any of a half dozen other things?

MR. DOBBS: All of the above. Stipulate that there may be various levels of access and/or information for varying kinds of systems.

For example, in the case of the things Bob Gallati deals with, knowledge of the fact that a fingerprint record, if that were the case, being held in machine

processable form by an individual may be an important thing for him to know, whereas the specific values of his finger-print identity may not be a very meaningful thing to him.

That is a kind of fuzzy example.

MR. GENTILE: Why don't we just state number 2 in the affirmative and then when we come back to fight it out on the qualifications --

MR. WARE: What this discussion has done is partly filled in what the second part is of the restatement.

PROFESSOR MILLER: That is exactly right; that is exactly right.

PROFESSOR WEIZENBAUM: Now, without attempting to in any way formulate any aspect of this restatement, I would wish that document to reveal our intent as to what we mean by this in that it has wording in there that, for example, would lead people to read it that we mean the maximum feasible content or maximum feasible under the circumstances, so that, for example, in some circumstances the person has a right to know yes, there is a psychiatric record here, but for various reasons it is not feasible to reveal the psychiatric diagnosis to the person.

In other cases there may be a financial statement, and under those circumstances it would be well within maximum feasibility to actually give the individual the numbers.

The reader of this ultimately understands we mean

various things but it is the maximum feasible, so that if, for example, the issue is taken to a court it is then left to the court to determine whether this criterion of maximum feasibility has been met in the specific instance under adjudication.

MR. MARTIN: Joe, let me see if we can go a little further with this. It isn't going to get to court, I think, on the strength of the committee's report.

PROFESSOR WEIZENBAUM: No, I mean suppose it were incorporated in law. The intent of the framers is made clear in the way you have just indicated.

MR. MARTIN: How would either of these -- if it isn't premature to ask the question -- be implemented? What does one have in mind for those two? Would those be proposed statutes?

PROFESSOR WEIZENBAUM: I would say--again, I am just talking off the top of my head -- that there would be in fact statutes which would incorporate the idea and then the discussion in the Congress would clearly indicate the intent of Congress with respect to this sort of thing I have just said, for example. So that would be one form of implementation.

Now in a specific records system there might in fact be a portion of computer procedure which on request generates and produces the kind of record that the subject is

entitled to under those circumstances.

Okay. Now, that might then be contested by the subject. For example, there may be an entry there saying "A portion of the record has a psychiatric diagnosis." Then he may go back to the agency and say "I have a right to know the content of my file. I want to know what that diagnosis is."

The agency comes back and says, "No, that is not feasible." And ultimately it might then go to a court of law and the court of law would then determine that under these circumstances revealing to him the fact that there is a diagnosis but not the diagnosis is within the threshold that the law intended.

So there is both a legislative implementation and a technical implementation in the form of a computer procedure.

I wouldn't be surprised if almost all of the things we talk about here have these various facets.

PROFESSOR MILLER: Actually this one, if you were thinking about the resolution of a dispute under it, could be in any one of a number of forms -- in some context it might be in a statute -- indeed it is already in the Fair Credit Reporting Act. The courts will be dealing with exactly this question when cases under the Fair Credit Reporting Act get to the court.

Conceivably under other conditions this principle

will be mandated by administrative regulation.

In still other situations it may be part of an implied or explicit contract between the individual who gives data and the agency that is recording using the data.

Ultimately any one of these structures could be resolved by a court of law.

MR. DOBBS: Also on this issue of what "informed" means, again there are two uses. There is the informed if the individual requests to know, or does the system itself in some way automatically or by definition inform.

DR. GALLATIN: To answer Dave's specific question of how you would implement it, in terms of our implementing it we were going to assign groups to each of these four categories and they would take each of the recommendations on which there was consensus and the legislative group would say, "Legislation would apply in this group." The policy determination group would say, "Administrative determinations apply in this group."

The Education group would say, "We need to have in-house and in-service education in HEW on this thing and that is something we should do or not do as the case may be."

And the technological group would say it.

So each of these would be looked at from each of these four aspects and the amalgamation of it would be how we would implement it.

MR. MARTIN: When did you have in mind that these groups would do this?

MR. DOBBS: In process. I don't think we have to wait to come back.

MR. MARTIN: Oh, I see.

MR. DOBBS: In continuous process after we leave here is what we thought. I guess we concluded that if we could name those four groups before we got away from here this time, and if we could make physical arrangements to get some of the complete transcripts into the hands of people who felt they wanted to refer back to them, that people could then begin to work right on.

MR. MARTIN: As individuals?

MR. DOBBS: As individuals, probably with a co-ordinator of each of the sections to sort of take inputs.

Did we put number 2 to bed?

MR. WARE: No, we never voted.

I interrupted the proceedings by asking that question.

MR. DOBBS: One of the things that I guess I just mentioned was whether the business of being informed means a forced informing or a requested kind of informing. Do we really mean both in terms of the statement?

PROFESSOR WEIZENBAUM: Well, especially for purposes of the discussion, I would prefer to reword that. Instead

of "to be informed of the content" to read "to know of the content." You know how he comes to know that is down below in the restatement.

MR. WARE: Guy is asking a slightly different question, I think. He is saying: Is this on demand or is there some ritual that tells him periodically about these things?

PROFESSOR WEIZENBAUM: I have substituted an even more vague word.

MR. DOBBS: Yes, you have.

PROFESSOR MILLER: I think Joe is ducking that question.

PROFESSOR WEIZENBAUM: Yes.

MR. WARE: He is trying to but I don't think he has.

SENATOR ARONOFF: But he has for purposes of the statement of the principle.

PROFESSOR MILLER: Because the exposition may then describe various models of informing stretching from automatic notification right through to an intermediary having the right of access and then passing on what is relevant.

PROFESSOR WEIZENBAUM: Besides, I like the idea of having a right to know as opposed to a right to be informed, because the idea of being informed implies another party. It may be informed by a machine, to be sure, or it may be -- in any case there is an informer implied, and we don't intend that.

What we really mean is that the individual has a right to know what is being said about him, what is being recorded about him. That is what we mean and we may as well say it.

Now, in order to know he may have to be informed, so again it is a derivative thing and we should say the thing that is higher on the hierarchy rather than the thing that can be derived in the statement of the general principles.

MR. ANGLERO: I think it is a good substitution.

I would ask: Would that include also, in cases of insurance companies or in a case where an individual applies for a benefit, to get a copy of the document, for example?

PROFESSOR WEIZENBAUM: We will see. What I am saying is that I believe he has a prima facie right to know, which simply shifts the burden of the proof to the other side when someone says, "No, in this case you don't have a right to know."

Again I take as my model the Freedom of Information Act in the government, which simply says that it is the government who has to show that you don't have a right to know when it thinks you don't. And then there are remedies.

Now whether that works well or not is another question.

MR. ANGLERO: I agree personally. I am only thinking of the question of somehow it could be, in a case that was filed by anyone -- to have a copy of that questionnaire.

I don't think we have at this moment -- never. What we once put into the questionnaire --

MR. WARE: That is your shortcoming. You can Xerox anything you please.

MR. ANGLERO: You know we don't have a representative --

PROFESSOR WEIZENBAUM: There goes the stock.

MR. WARE: Down.

MR. ANGLERO: We might have access to that, but you know that the problem is we file a lot of things in the bank and other places and we don't get a copy and we don't ever remember.

PROFESSOR WEIZENBAUM: Nor do we want to most of the time. But if it is established that I have a right to know, then I may write to the insurance company and say, "Hey, what have you got on me?"

MR. ANGLERO: No, I am asking: Should it be that it could be established that in many instances I should get a copy. If I file an application for insurance, okay, whatever the decision comes, I must have a copy of that.

PROFESSOR WEIZENBAUM: When the decision comes.

MR. ANGLERO: On any decision.

MR. DOBBS: He is stating a general principle which says that the data contributor should always have a copy of the source document.

MR. WARE: Of what he contributed.

MR. DOBBS: Of what he contributed. It is a slightly different principle.

PROFESSOR WEIZENBAUM: But I think as a matter of law it is a difficult thing to legislate about, since there is no impediment as it is to your having a copy of the document.

MR. WARE: Okay, ten cents, a Xerox machine.

MR. ANGLERO: If we do that that would never work. What if a person has no access to a Xerox machine? So let's talk about them now.

PROFESSOR MILLER: There you are talking about the form that is being filled out, have an extra copy.

MR. ANGLERO: That is right, to have an extra copy of that.

MR. DOBBS: Guarantee a copy of the source.

MR. ANGLERO: We get five copies and it says one for the bank, one for the university and so on --

SENATOR ARONOFF: We are trying to write the material underneath before we write the principle. The principle is the right to know.

PROFESSOR MILLER: On the other hand, Stan, if all this is being recorded, then whoever has to write the exposition can just contribute it. So it doesn't hurt to talk about it.

MR.DOBBS: Do we agree?

MR. WARE: Call for the vote.

SENATOR ARONOFF: All the rest of the reasons and the "beware of" and so forth is for the reacting group?

MR. WARE: Do we believe it or not?

MR. DOBBS: We believe it.

MR. MARTIN: I am not sure what the record will show on this. Will somebody state what was just agreed to?

MR. IMPARA: That the individual has a right to know.

MR. DAVEY: We are not saying that this is binding on the rest of the committee in any respect.

MR. MARTIN: Could you state it, Jim?

MR. IMPARA: Yes, that the individual upon whom the information is collected has the right to know the content of the information collected.

PROFESSOR WEIZENBAUM: Of the record.

MR. IMPARA: The record.

MR. DOBBS: The record.

MR.ANGLERO: His record or the record?

MR. DOBBS" "It" -- "his."

SENATOR ARONOFF: Have we disposed of number 2 in the sense that there is consensus on the principle of the right to know?

MR. DOBBS: Yes.

MR. DAVEY: As far as the group here is concerned.

MR. DOBBS: I think we have really disposed ot it.

SENATOR ARONOFF: This is really over-simple but until you get your broad-based thing -- the next thing is the right to correct or expunge.

DR. GALLATIN: All in favor --

MR. WARE: No, I think the wording is something more like he shall have the right to assure the accuracy of his record.

PROFESSOR MILLER: You wouldn't want that, Bob?

DR. GALLATIN: The right to expunge.

PROFESSOR MILLER: You have my print and I say, "I want my print back"?

DR. GALLATIN: Yes, I think this would be part of the explanation.

PROFESSOR MILLER: But I think Willis' formulation gets at it more directly.

DR. GALLATIN: I am looking at this in the light of the general context, the right to expunge, the right to correct, the right to add to where the record shows something which is not sufficiently explicit but some added words or an explanation will tell what the real story is.

There was the famous case of where the people were picked up on a criminal charge for picketing. By not showing what the charge was, you damage that person's record. By

adding that it was picketing for peace, it makes the criminal record the same thing but --

MR. WARE: Assure the accuracy and completeness of his record.

PROFESSOR MILLER: That doesn't touch the situation, though -- and this is really a tough policy question -- of defining those situations in which he really should have the right to expunge, the arrest without probable cause, for example. That goes beyond ensuring completeness and accuracy. It may be a situation which is a right of destruction or expungement.

MR. DOBBS: We could separate that from this anyway.

PROFESSOR MILLER: Yes, I just want to identify it.

SENATOR ARONOFF: The next would be to insure the completeness and accuracy of the record, before you get to the expunging.

PROFESSOR MILLER: Yes.

MR. DOBBS: Do we all agree on that?

(Show of hands.)

(Discussion off the record.)

SENATOR ARONOFF: We are up to number 5 now.

MR. IMPARA: Did we handle expungement?

SENATOR ARONOFF: No, accuracy and completeness

was one and expungement the next one, and the next you have on your list is access.

MR. WARE: There wasn't any discussion or agreement on expungement.

MR. MARTIN: The record will be clearer for anyone who seeks to use it if we speak one at a time. It is very hard for the stenographer.

MR. WARE: We agreed to separate expungement but we never treated it.

SENATOR ARONOFF: All right. May I state the principle then: The right to expunge a record.

PROFESSOR MILLER: Here we need qualifying language.

PROFESSOR WEIZENBAUM: Oh, yes.

MR. WARE: Right in it, though.

MR. DOBBS: Yes, because it can't stand by itself.

PROFESSOR MILLER: No, that is right. And that, I would guess, will take some very crafty draftsmanship.

PROFESSOR WEIZENBAUM: Yes. I suggest we skip that and put it on our wish list.

SENATOR ARONOFF: But fill in the next of the sentence.

DR. GALLATIN: Under operation of law.

PROFESSOR MILLER: That is a cop-out.

DR. GALLATIN: No, there are many cases now where you can expunge by law; depending on the explanation you can

say there are some examples. You can say what it is intended to do and "here are some examples." You would have to give different cases of expungement.

PROFESSOR MILLER: All I want to say is that there are cases and a few statutes dealing with the right of expungement, but I think one of the real policy questions is whether those statutes and cases are sufficient to meet the contemporary problems. And I simply ask whether or not we shouldn't give some thought to trying to formulate a series of words as a qualifier on the right to expunge that seemed to capsulate those situations in which we think the law should say there should be a right.

DR. GALLATIN: One of which would be where the data is stale data, for example, the next obligation.

PROFESSOR MILLER: I think in terms of no probative value.

PROFESSOR WEIZENBAUM: Yes.

PROFESSOR MILLER: Where the existence of the file -- I am just blue-skying now -- where the existence of the file has a greater capacity for injury than its social utility.

DR. GALLATIN: Yes.

PROFESSOR MILLER: Where the record was created erroneously or without justification -- I am thinking of the "no probable cause" situation.

I am just thinking of the situations in which I

think there should be a right to expunge.

MR. DOBBS: Maybe we should put a question mark because we know this is a tough one and we know we have to come back to it and deal with it but see if we can go on and get consensus on the easier ones.

MR. DAVEY: But it is interesting from the standpoint there isn't any question as to the desire for this type of thing. It is a question of how to phrase it and how to express it.

MR. DOBBS: Yes.

SENATOR ARONOFF: You wouldn't want to cop out by speaking in terms of a qualified right of expungement.

PROFESSOR MILLER: We may end up that way, Stan.

(Discussion off the record.)

MR. DAVEY: Next.

MR. ANGLERO: Did we vote on that?

MR. DOBBS: It is a tough one but we seem to have consensus that it is going to stay in but we don't know how to word it.

MR. ANGLERO: On the last one: Do you have the right to add to?

MR. WARE: That is part of the assurance of completeness and accuracy.

MR. DAVEY: Completeness and accuracy takes care of that.

MR. ANGLERO: I would ask: If I am supposedly this person who is correcting, I don't think I need some kind of information on the individual. Should I add to the record what the individual thinks he must have there?

DR. GALLATI: If it is reasonable, yes.

MR. ANGLERO: I am just asking the question.

PROFESSOR WEIZENBAUM: Not unconditional, no.

MR. ANGLERO: I just want to get something. I want to get the whole story.

DR. GALLATI: It is subject to the test of reasonableness, and if you want to add something to your record so that your record will not give a false impression, I think you should be able to add it. That is not saying you are going to be able to put your whole biography into the record.

MR. ANGLERO: All right. If we are going to postpone it, okay. Because when it says "correct," that covers it.

MR. DOBBS: I think Willis intended to take care of your problem with "completeness."

MR. ANGLERO: Probably. What I mean is to add, in both places; you are also entitled to add to.

SENATOR ARONOFF: Let's try the next one anyway.

MR. DOBBS: All right.

SENATOR ARONOFF: I have one question. I am looking at the right side of the ledger and some are looking at

the left, but the next would be the right of access on the right-hand side of the ledger that staff prepared.

MR. DOBBS: Right of access.

PROFESSOR WEIZENBAUM: No, the next one is to be notified of access.

MR. DOBBS: No.

PROFESSOR WEIZENBAUM: Oh, I'm sorry.

MR. WARE: I wonder what that means.

DR. GALLATI: Unless there are compelling social reasons to the contrary, he should have the right to consent to grant access to the record.

MR. DOBBS: Does that mean grant someone else access to the record? Is that what it means?

MR. IMPARA: Yes.

MR. MARTIN: I can clarify what was intended by these words since I wrote them.

(Laughter.)

The intent was to say that a record-keeper may not grant access to another without the consent of the person whose record it is.

PROFESSOR WEIZENBAUM: Yes. The problem with that sentence is that it tries to say something fundamentally negative in a positive way.

(Laughter.)

You know, as it is written it gives him the right

to consent if he wishes, and if he doesn't wish, well, so he doesn't consent. But it doesn't say about what happens, whether the access is granted or not independent of whether he gives consent or not.

I think what wants to be said here is that there is a limitation to the extent that information about him can be propagated without his consent. And I think that that has to be reworded.

MR. DOBBS: Maybe just the right to grant access to the record.

PROFESSOR WEIZENBAUM: No, it is the right to limit the dispersion of diffusion of information.

DR. GALLATI: Dissemination.

PROFESSOR WEIZENBAUM: Or the dissemination of information about him subject to his consent.

MR. DAVEY: This has something to do with linkage, does it not?

PROFESSOR WEIZENBAUM: Yes. Anyway, it is the right to limit something, not the right to extend something that we are after here.

PROFESSOR MILLER: There is another strand that I think you may have been trying to capture, Dave, when you say, "to prohibit access to a record by anyone other than those persons to whom access has been formally granted by the individual," which to me goes back to a problem I think we have

skipped over, namely, the obligation of the data collector to inform the individual the purposes for which the information is being collected and the potential, or at least originally conceived audience for the data.

MR. WARE: That is part of number 1, isn't it?

MR. DOBBS: That should be part of item 1.

MR. MARTIN: That is covered by the second one on the next page.

PROFESSOR MILLER: There is a relationship between what the individual knows at the collection point --

MR. WARE: Not really. I don't think it is.

PROFESSOR MILLER: -- and whether you have to go back to him to widen the audience to the information.

MR. DOBBS: I think if you expand number 1 you solve that dilemma because he has a right to be informed that a record is to be kept and for what purposes.

MR. WARE: And to whom disseminated.

PROFESSOR WEIZENBAUM: That could be included under what purposes, for the purpose of disseminating to so and so. And furthermore then, that the information he gives under that rule is protected against dissemination beyond what he has granted.

Now, one may wish to make two or three clauses out of that, or one, I don't know, but I think that is what we are after.

MR. IMPARA: Something to the effect that social reasons notwithstanding and under the conditions of 1 above, data may not be transmitted to any parties other than those for whom specific approval has been authorized.

PROFESSOR WEIZENBAUM: I think what we are after is that there is a kind of contractual relationship between the giver of the information and the receiver of the information, and that the contract may be violated or may be amended only by further mutual agreement unless there are overriding reasons, and so on.

MR. IMPARA: I am thinking of situations like Bob Gallati may run into, a local police station may arrest someone and fingerprint him and send this information to Bob Gallati. The local police station says, "We are going to send this to the New York Intelligence Systems," and as far as the local people know, that is all.

Bob, under his agreement, also sends it to NCIC, and NCIC sends it to the National Security Agency. The original collector of data may not know all the various places and it would put him under a terrible strain without some kind of situation --

PROFESSOR WEIZENBAUM: It is a hard problem.

DR. GALLATI: I think there are two different kinds of data. In the area of law enforcement where a person is compelled to give this information by law, I don't think

he has these rights inherently. I think we are talking generally here about where a person gives it voluntarily or to secure a right to which he is entitled. I think these are two different types of situations.

MR. IMPARA: Let me pick up a different example. Because of the ramifications of yours, it seemed like a good example.

Let me pick up the family who are on welfare and they are applying for welfare and in addition some health benefits.

All right. Because their record is on some welfare file, if the school that the child happens to be attending wants to apply for some federal aid, one of the conditions for certain federal aid is the percentage of children in the school who are on welfare or in families who are on welfare. And in order to get that information, they have to know which kids belong to families on welfare. And this may not be known at the time the data were collected, that this school was going to apply and therefore that the data would be needed.

There are a variety of ramifications. You know the hospital may want to know the same information: Is this a charity patient or is it a non-charity patient?

There are a lot of ramifications to this prohibition of access which can be both to the detriment and to the benefit.

PROFESSOR MILLER: Indeed there may be circumstances -- this obviously is something that you would handle in the discussion -- in which there are supervening reasons for breaching this principle, such as a situation in which access to a man's medical record beyond the range of his original consent is imperative to save his life.

PROFESSOR WEIZENBAUM: You weren't here, Arthur, I think, when we first began, that all of these formulations that we started start out with something like "unless there are compelling social, legal, medical reasons to the contrary, it shall be" -- some language like that in all of these.

PROFESSOR MILLER: Yes. And I think from a structural perspective then it would be desirable for each of these recommendations to carry an illustration of just such an exception.

PROFESSOR WEIZENBAUM: Yes.

SENATOR ARONOFF: This may not work because it is too simple, but the group that did one of the -- Work Group No. 3 -- I don't know who was a part of it -- in the declaration of privacy area, it gets you out of some of your language problems by the shortest sentence at the top -- I am not disagreeing with anything that has been done right now, but it almost is a double restatement. The first is an oversimplified thing, "The right to know," then comes your black letter statement and then your statements, "the right to

inspect," "the right to correct," and then your longer sentence which goes on and then your correcting statements underneath, "The right to trace," "the right to audit trail," and just taking these things right here they really have keypunch words in there that get you into the subject generally. Then your black letter restatement and then your other qualifying statements underneath.

Is that too simple an approach? I ask you that.

PROFESSOR MILLER: No, we could be terribly creative and innovate the concept of the caption.

(Laughter.)

PROFESSOR WEIZENBAUM: What concept is that?

PROFESSOR MILLER: That every statute has a caption.

PROFESSOR WEIZENBAUM: Oh.

SENATOR ARONOFF: What I am saying is that there has been some pretty good work done already by that group that seems to catch it, at least in terms of what you immediately conjure up with the caption.

PROFESSOR MILLER: Yes.

MR. ANGLERO: Layman was there.

PROFESSOR MILLER: And Bob.

DR. GALLATI: Yes, Juan Anglero.

MR. MARTIN: I am afraid the hour has come when we have to think of adjourning.

MR. DOBBS: Why are you afraid?

(Laughter.)

MR. MARTIN: We are obliged to be started out of here by 9:30.

Could I suggest that at least the members of this group, having gotten into things as much as you have this evening, between now and Saturday morning -- I realize we have a full day and evening tomorrow -- take, each of you, two -- that would cover all of the rights and duties -- of these and write them up in the manner in which you understand you are aiming to do, so that on Saturday morning we have some candidates for discussion.

MR. DOBBS: Okay.

MR. MARTIN: And do try, if you see your colleagues who were not here tonight, to tell them to be very prompt tomorrow so we can get that session started.

(Thereupon, at 9:27 p.m., the meeting was adjourned, to reconvene at 9:00 a.m. Friday, September 29, 1972.)